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College of Computer Science, Faculty of Information Technology, Beijing University of Technology, Chaoyang, Beijing, China; College of Computer Science, Faculty of Information Technology, Beijing University of Technology, Chaoyang, Beijing, China; Human Genetics Resource Center, National Research Institute for Family Planning, Beijing, China; Human Genetics Resource Center, National Research Institute for Family Planning, Beijing, China	IEEE Transactions on Neural Systems and Rehabilitation Engineering	20 Aug 2021		2021	29		1604	1613
Department of Informatics, Athens University of Economics and Business, Athens, Greece; Department of Informatics, Athens University of Economics and Business, Athens, Greece	IEEE Transactions on Mobile Computing	4 Mar 2022		2022	21	4	1305	1316
State Key Laboratory for Novel Software Technology, Nanjing University, Nanjing, China; State Key Laboratory for Novel Software Technology, Nanjing University, Nanjing, China; State Key Laboratory for Novel Software Technology, Nanjing University, Nanjing, China; Center for Networked Computing, Temple University, Philadelphia, PA, USA; State Key Laboratory for Novel Software Technology, Nanjing University, Nanjing, China; School of Computer Science and Technology/Suzhou Institute for Advanced Study, University of Science and Technology of China, Hefei, China; State Key Laboratory for Novel Software Technology, Nanjing University, Nanjing, China	IEEE/ACM Transactions on Networking	16 Feb 2022		2022	30	1	285	298
Faculty of Department of Industrial and Systems Engineering, KAIST (Korea Advanced Institute of Science and Technology), Daejeon, Republic of Korea; Faculty of School of Business, Chungnam National University, Daejeon, Republic of Korea	IEEE Transactions on Automation Science and Engineering	6 Apr 2022		2022	19	2	1120	1136
Hunan Provincial Key Laboratory of Intelligent Computing and Language Information Processing, Hunan Normal University, Changsha, China; Key Laboratory of Hunan Province for New Retail Virtual Reality Technology, Hunan University of Technology and Business, Changsha, China; Department of Computer and Information Sciences, Northumbria University, Newcastle upon Tyne, U.K.; School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, China; School of Electronic Engineering and Computer Science, Queen Mary University of London, London, U.K.	IEEE Internet of Things Journal	25 Apr 2022		2022	9	9	6597	6610

SKEMA Business School, Université Côte d'Azur - Sophia Antipolis Campus, SOPHIA ANTIPOLIS CEDEX, France; Department of Management, Ca' Foscari University, San Giobbe, Cannaregio 873, Venezia, Italy; Applied Research Division for Cognitive and Psychological Science, IEO, European Institute of Oncology IRCCS, via Giuseppe Ripamonti 435, Milan, Italy; Applied Research Division for Cognitive and Psychological Science, IEO, European Institute of Oncology IRCCS, via Giuseppe Ripamonti 435, Milan, Italy	IEEE Transactions on Engineering Management	17 Mar 2023	2023	70	5	1966	1976
Department of Computer Application and Technology, School of College of Computer Science and Technology, Jilin University, Changchun, China; Department of Computer Application and Technology, School of College of Computer Science and Technology, Jilin University, Changchun, China; Department of Editorial, Journal of Jilin University (Engineering and Technology Edition), Jilin University, Changchun, China	IEEE Transactions on Geoscience and Remote Sensing	21 Jul 2021	2021	59	8	7011	7026
Department of Computer Science, Central University of Rajasthan, Ajmer, Rajasthan, India; Department of Computer Science, Central University of Rajasthan, Ajmer, Rajasthan, India	IEEE Transactions on Parallel and Distributed Systems	30 Nov 2022	2023	34	1	416	428
School of Computer Science and Technology, Shandong Technology and Business University, Yantai, China; School of Information and Electronic Engineering, Shandong Technology and Business University, Yantai, China; School of Information and Electronic Engineering, Shandong Technology and Business University, Yantai, China; School of Information and Electronic Engineering, Shandong Technology and Business University, Yantai, China; Information Science and Technology College, Dalian Maritime University, Dalian, China; School of Computer and Information Technology, Liaoning Normal University, Dalian, China	Chinese Journal of Electronics	15 May 2023	2023	32	3	647	654
Surrey Business School, University of Surrey, Surrey, Guildford, U.K.; Department of Automatic Control and Systems Engineering, The University of Sheffield, Sheffield, U.K.; Department of Automatic Control and Systems Engineering, The University of Sheffield, Sheffield, U.K.	IEEE Access	29 Jul 2021	2021	9		103950	103966
School of Electrical Engineering, Yanshan University, Qinhuangdao, China; School of Electrical Engineering, Yanshan University, Qinhuangdao, China; Department of Automation and the Engineering Research Center of the Ministry of Education for Intelligent Control System and Intelligent Equipment, Yanshan University, Qinhuangdao, China; Department of Automation and the Key Laboratory of System Control and Information Processing, Ministry of Education, Shanghai Jiao Tong University, Shanghai, China; Institute of Advanced Technology, Nanjing University of Posts and Telecommunications, Nanjing, China	IEEE Transactions on Industrial Informatics	19 Nov 2020	2021	17	2	1363	1374
Integrated Power Services, Litchfield, MN, USA; Reliance Electric/Rockwell Automation and Siemens, Eugene, OR, USA	IEEE Transactions on Industry Applications	19 Jan 2023	2023	59	1	104	107
Guandong Provincial Key Laboratory of Urbanization and Geo-Simulation, School of Geography and Planning, Sun Yat-sen University, Guangzhou, China; Surveying and Mapping Institute Lands and Resource Department of Guangdong Province, Guangzhou, China; Surveying and Mapping Institute Lands and Resource Department of Guangdong Province, Guangzhou, China; Surveying and Mapping Institute Lands and Resource Department of Guangdong Province, Guangzhou, China; Surveying and Mapping Institute Lands and Resource Department of Guangdong Province, Guangzhou, China; Guangdong Provincial Key Laboratory of Urbanization and Geo-Simulation, School of Geography and Planning, Sun Yat-sen University, Guangzhou, China	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	20 Apr 2023	2023	16		3760	3770
School of Artificial Intelligence, University of Chinese Academy of Sciences, Beijing, China; State Key Laboratory for Management and Control of Complex Systems, Institute of Automation, Chinese Academy of Sciences, Beijing, China; School of Artificial Intelligence, University of Chinese Academy of Sciences, Beijing, China; Beijing Municipal Institute of City Planning and Design, Beijing, China; Beijing Municipal Institute of City Planning and Design, Beijing, China; Department of Computer Science, University of Helsinki, Helsinki, Finland; Department of Computer Science, University of Helsinki, Helsinki, Finland; School of Artificial Intelligence, University of Chinese Academy of Sciences, Beijing, China; School of Artificial Intelligence, University of Chinese Academy of Sciences, Beijing, China; State Key Laboratory for Management and Control of Complex Systems, Institute of Automation, Chinese Academy of Sciences, Beijing, China	IEEE Transactions on Intelligent Transportation Systems	10 Aug 2022	2022	23	8	13190	13202
State Key Laboratory of Networking and Switching Technology, Beijing University of Posts and Telecommunications, Beijing, China; State Key Laboratory of Networking and Switching Technology, Beijing University of Posts and Telecommunications, Beijing, China; South Research Institute, China Electronic Corporation, Beijing, China; Research Institute, China United Network Communications Corporation, Beijing, China; College of Engineering, Qatar University, Doha, Qatar; Department of Computing, Hong Kong Polytechnic University, Hong Kong, China	IEEE Transactions on Cloud Computing	7 Mar 2023	2023	11	1	692	703
School of Computer, Hangzhou Dianzi University, Hangzhou, China; School of Computer, Hangzhou Dianzi University, Hangzhou, China; School of Computer, Hangzhou Dianzi University, Hangzhou, China; School of Computer, Hangzhou Dianzi University, Hangzhou, China; School of Computer, Hangzhou Dianzi University, Hangzhou, China	IEEE Access	23 Mar 2023	2023	11		27662	27675
School of Information and Control Engineering, China University of Mining and Technology, Xuzhou, China; School of Artificial Intelligence, Xidian University, Xi'an, China; School of Artificial Intelligence, Xidian University, Xi'an, China; Department of Electrical Engineering and Computer Sciences, University of California at Berkeley, Berkeley, CA, USA; School of Software, Tsinghua University, Beijing, China; School of Artificial Intelligence, Xidian University, Xi'an, China	IEEE Transactions on Cybernetics	11 Mar 2022	2022	52	3	1798	1811
Xuzhou Key Laboratory of Artificial Intelligence and Big Data, School of Information and Control Engineering, China University of Mining and Technology, Xuzhou, China; Xuzhou Key Laboratory of Artificial Intelligence and Big Data, School of Information and Control Engineering, China University of Mining and Technology, Xuzhou, China; Xuzhou Key Laboratory of Artificial Intelligence and Big Data, School of Information and Control Engineering, China University of Mining and Technology, Xuzhou, China	IEEE Transactions on Systems, Man, and Cybernetics: Systems	18 May 2021	2021	51	6	3771	3780
Shanghai Institute for Advanced Communication and Data Science, School of Communication and Information Engineering, Shanghai University, Shanghai, China; Jiangsu Key Laboratory of Media Design and Software Technology, Jiangnan University, Wuxi, China; Jiangsu Key Laboratory of Media Design and Software Technology, Jiangnan University, Wuxi, China; Jiangsu Key Laboratory of Media Design and Software Technology, Jiangnan University, Wuxi, China; School of Software Engineering, Xi'an Jiaotong University, Xi'an, China; Jiangsu Key Laboratory of Big Data Security and Intelligent Processing, Nanjing University of Posts and Telecommunications, Nanjing, China; Fujian Provincial Key Laboratory of Information Processing and Intelligent Control, Minjiang University, Fuzhou, China; Jiangsu Key Laboratory of Big Data Security and Intelligent Processing, Nanjing University of Posts and Telecommunications, Nanjing, China; Jiangsu Key Laboratory of Media Design and Software Technology, Jiangnan University, Wuxi, China	IEEE Transactions on Systems, Man, and Cybernetics: Systems	15 Jun 2021	2021	51	7	4078	4090
Sun Yat-Sen University, Guangzhou, China; Sun Yat-Sen University, Guangzhou, China; Sun Yat-Sen University, Guangzhou, China	IEEE Signal Processing Letters	26 Aug 2021	2021	28		1650	1654
Changsha Social Laboratory of Artificial Intelligence, Hunan University of Technology and Business, Changsha, China; Changsha Social Laboratory of Artificial Intelligence, Hunan University of Technology and Business, Changsha, China; Faculty of Data Science, Shiga University, Hikone, Japan; Department of Electrical, Computer, and Software Engineering, University of Auckland, Auckland, New Zealand; Faculty of Computer and Information Sciences, Hosei University, Chiyoda-ku, Japan; Faculty of Human Sciences, Waseda University, Tokorozawa, Japan	IEEE Transactions on Industrial Informatics	21 Jun 2023	2023	19	7	8218	8228
Department of Information Technology, Institute of Graduate Studies and Research, University of Alexandria, Alexandria, Egypt; Department of Information System, Higher Institute for Management and Information Technology, Kafr El-Sheikh, Egypt; Department of Information System, Higher Institute for Management and Information Technology, Kafr El-Sheikh, Egypt; Higher Institute of Computers and Information Systems, Abo Qir, Alexandria, Egypt	IEEE Access	26 Jul 2022	2022	10		76268	76280
Key Laboratory of Advanced Process Control for Light Industry (Ministry of Education), Jiangnan University, Wuxi, China; Jiangsu Provincial Engineering Laboratory of Pattern Recognition and Computational Intelligence, Jiangnan University, Wuxi, China; Jiangsu Provincial Engineering Laboratory of Pattern Recognition and Computational Intelligence, Jiangnan University, Wuxi, China; Department of Electronic and Information Engineering, The Hong Kong Polytechnic University, Hong Kong	IEEE Transactions on Circuits and Systems for Video Technology	28 Oct 2022	2022	32	11	7746	7757
School of Computer Science and Information Security, Guilin University of Electronic Technology, Guilin, China; School of Computer Science and Information Security, Guilin University of Electronic Technology, Guilin, China	IEEE/ACM Transactions on Audio, Speech, and Language Processing	19 Aug 2022	2022	30		2689	2695
School of Computer Science and Technology, Soochow University, Suzhou, Jiangsu, China; School of Computer Science and Technology, Soochow University, Suzhou, Jiangsu, China; School of Computer Science and Technology, Soochow University, Suzhou, Jiangsu, China; School of Rail Transportation, Soochow University, Suzhou, Jiangsu, China; School of Computer Science and Technology, Soochow University, Suzhou, Jiangsu, China; Department of Computer and Information Sciences, Temple University, Philadelphia, PA, USA	IEEE Transactions on Services Computing	7 Apr 2023	2023	16	2	1093	1106
Department of Management Science and Information Systems, Leavey School of Business, Santa Clara University, Santa Clara, CA, USA; Department of Engineering, GEIRI North America, San Jose, CA, USA; College of Business Administration, University of Rhode Island, Kingston, RI, USA; Department of Information Systems and Analytics, Santa Clara University, Santa Clara, CA, USA; Department of Computer Science, Peking University, Beijing, China; Department of Research, Huawei Technologies Company Ltd., Singapore	IEEE Transactions on Dependable and Secure Computing	8 Jul 2021	2021	18	4	1605	1619
School of Mathematics, Tianjin University, Tianjin, China; School of Mathematics, Harbin Institute of Technology, Harbin, China; Center for Applied Mathematics, Tianjin University, Tianjin, China; School of Computer Science and Technology, China University of Mining and Technology, Xuzhou, China; Institute of Science and Engineering, Kanazawa University, Kanazawa, Japan	IEEE Internet of Things Journal	6 Feb 2023	2023	10	4	3165	3178
Department of Electronics Engineering, Indian Institute of Technology, Dhanbad (ISM, Dhanbad), Dhanbad, India; Department of Electronics Engineering, Indian Institute of Technology, Dhanbad (ISM, Dhanbad), Dhanbad, India; Department of CSE, ASET, Amity University, Noida, India; Department of Artificial Intelligence, Lviv Polytechnic National University, Lviv, Ukraine	Big Data Mining and Analytics	24 Nov 2022	2023	6	1	44	54
College of Mathematics and Statistics, Hebei University of Economics and Business, Shijiazhuang, China; College of Mathematics and Statistics, Hebei University of Economics and Business, Shijiazhuang, China; School of Mathematical Sciences, Hebei Normal University, Shijiazhuang, China	IEEE Access	8 Jun 2023	2023	11		54679	54691
Colorado School of Mines, Intelligent Robotics and Systems Lab, Golden, CO, USA; Colorado School of Mines, Intelligent Robotics and Systems Lab, Golden, CO, USA; GAC R&D Center Silicon Valley, Sunnyvale, CA, USA; Colorado School of Mines, Intelligent Robotics and Systems Lab, Golden, CO, USA	IEEE Robotics and Automation Letters	15 Dec 2021	2022	7	2	762	769
Key Laboratory of Submarine Geosciences, Second Institute of Oceanography, Ministry of Natural Resources, Hangzhou, China; Key Laboratory of Submarine Geosciences, Second Institute of Oceanography, Ministry of Natural Resources, Hangzhou, China; College of Geodesy and Geomatics, Shandong University of Science and Technology, Qingdao, China; Key Laboratory of Submarine Geosciences, Second Institute of Oceanography, Ministry of Natural Resources, Hangzhou, China; Key Laboratory of Submarine Geosciences, Second Institute of Oceanography, Ministry of Natural Resources, Hangzhou, China; Key Laboratory of Submarine Geosciences, Second Institute of Oceanography, Ministry of Natural Resources, Hangzhou, China; Key Laboratory of Submarine Geosciences, Second Institute of Oceanography, Ministry of Natural Resources, Hangzhou, China; College of Geodesy and Geomatics, Shandong University of Science and Technology, Qingdao, China	IEEE Transactions on Geoscience and Remote Sensing	8 Jun 2023	2023	61	1	16	
Computer Science Department, Illinois Institute of Technology, Chicago, IL, USA; Computer Science Department, University of Iowa, Iowa City, IA, USA; Computer Science Department, University of Iowa, Iowa City, IA, USA; Computer Science Department, Illinois Institute of Technology, Chicago, IL, USA	IEEE Computer Architecture Letters	1 Sep 2021	2021	20	2	114	117
Department of Computer Science and Information Technology, Hazara University, Mansehra, Pakistan; Department of Computer Science and Information Technology, Hazara University, Mansehra, Pakistan; Department of Computer Science and Information Systems, Pennsylvania Western University, California, PA, USA; Department of Communication Technology and Networks, Universiti Putra Malaysia (UPM), Serdang, Malaysia; Department of Computer Science and Information Technology, Hazara University, Mansehra, Pakistan	IEEE Access	29 Jul 2022	2022	10		77614	77632
Industrial Artificial Intelligence (IARI) Research Lab, Escuela Superior Politécnica del Litoral (ESPOL), Guayaquil, Ecuador; Facultad de Ingeniería en Mecánica y Ciencias de la Producción (FIMCP), Escuela Superior Politécnica del Litoral (ESPOL), Guayaquil, Ecuador; Industrial Artificial Intelligence (IARI) Research Lab, Escuela Superior Politécnica del Litoral (ESPOL), Guayaquil, Ecuador; Industrial Artificial Intelligence (IARI) Research Lab, Escuela Superior Politécnica del Litoral (ESPOL), Guayaquil, Ecuador; Industrial Artificial Intelligence (IARI) Research Lab, Escuela Superior Politécnica del Litoral (ESPOL), Guayaquil, Ecuador	IEEE Access	27 Jul 2021	2021	9		103110	103119

School of Automation and Guangdong Key Laboratory of IoT Information Technology, Guangdong University of Technology, Guangzhou, China; School of Data and Computer Science, Sun Yat-sen University, Guangzhou, China; Energy Research Institute @ NTU, Nanyang Technological University, Singapore; Energy Research Institute @ NTU, Nanyang Technological University, Singapore; School of Data and Computer Science, Sun Yat-sen University, Guangzhou, China; Guangdong-HongKong-Macao Joint Laboratory for Smart Discrete Manufacturing and 111 Center for Intelligent Batch Manufacturing Based on IoT Technology, Guangdong University of Technology, Guangzhou, China	IEEE Internet of Things Journal	5 Feb 2021	2021	8	4	2364	2378
Department of Electronic Engineering, Institute for Ocean Engineering, and the Beijing National Research Center for Information Science and Technology (BNRist), Tsinghua University, Beijing, China; Department of Electronic Engineering, Institute for Ocean Engineering, and the Beijing National Research Center for Information Science and Technology (BNRist), Tsinghua University, Beijing, China; School of Management, China University of Mining and Technology (Beijing), Beijing, China; Department of Electronic Engineering, Institute for Ocean Engineering, and the Beijing National Research Center for Information Science and Technology (BNRist), Tsinghua University, Beijing, China	IEEE Transactions on Geoscience and Remote Sensing	25 May 2022	2022	60	1		16
Jiangsu Provincial Key Laboratory of E-Business, College of Information Engineering, Nanjing University of Finance and Economics, Nanjing, China; Jiangsu Provincial Key Laboratory of E-Business, College of Information Engineering, Nanjing University of Finance and Economics, Nanjing, China; Jiangsu Provincial Key Laboratory of E-Business, College of Information Engineering, Nanjing University of Finance and Economics, Nanjing, China; College of Computer Science and Engineering, Nanjing University of Science and Technology, Nanjing, China; Jiangsu Provincial Key Laboratory of E-Business, College of Information Engineering, Nanjing University of Finance and Economics, Nanjing, China; Jiangsu Provincial Key Laboratory of E-Business, College of Information Engineering, Nanjing University of Finance and Economics, Nanjing, China	IEEE Transactions on Industrial Informatics	5 Mar 2021	2021	17	6	4390	4400
Department of Management Information Systems, College of Business Administration, King Faisal University, Al-Ahsa, Saudi Arabia; School of Theoretical and Applied Science, Ramapo College of New Jersey, Mahwah, NJ, USA	IEEE Access	28 Jun 2022	2022	10		66449	66466
School of Computers, Chongqing University, Chongqing, China; School of Computers, Chongqing University, Chongqing, China; Department of Electrical and Computer Engineering, New Jersey Institute of Technology, Newark, NJ, USA; Chongqing Engineering Research Center of Big Data Application for Smart Cities, Chinese Academy of Sciences, Chongqing, China; College of Information, Liaoning University, Shenyang, China; School of Computers, Chongqing University, Chongqing, China; School of Computers, Chongqing University, Chongqing, China; College of Computer and Communication Engineering, China University of Petroleum, Qingdao, China; Digital Fujian Internet-of-Things Laboratory of Environmental Monitoring, Fujian Normal University, Fuzhou, China	IEEE Transactions on Automation Science and Engineering	1 Jul 2021	2021	18	3	1012	1025
Department of Applied Mathematics and Statistics, Stony Brook University, Stony Brook, NY, USA; Department of Applied Mathematics and Statistics, Stony Brook University, Stony Brook, NY, USA; College of Business, Stony Brook University, Stony Brook, NY, USA; Department of Applied Mathematics and Statistics, Stony Brook University, Stony Brook, NY, USA	IEEE Transactions on Knowledge and Data Engineering	12 Sep 2022	2022	34	10	5037	5050
Engineering Management Department, Center for Advanced Studies in Engineering, Islamabad, Pakistan; School of Management, Air University, Islamabad, Pakistan; Business Department, Torrens University Australia, Adelaide, SA, Australia; School of Mathematics and Computer Science, University of Wolverhampton, Wolverhampton, U.K.; Center for Artificial Intelligence Research and Optimization, Torrens University Australia, Fortitude Valley, Brisbane, QLD, Australia; Department of Computer Science, College of Computer and Information Systems, Umm Al-Qura University, Mecca, Saudi Arabia	IEEE Access	4 Oct 2021	2021	9		133594	133610
Department of Computer Science, Hong Kong Baptist University, Kowloon Tong, Hong Kong SAR; Centre for Artificial Intelligence, University of Technology Sydney, Ultimo, NSW, Australia; Department of Computer Science, National University of Singapore, Singapore; Centre for Artificial Intelligence, University of Technology Sydney, Ultimo, NSW, Australia; Department of Applied Social Sciences, City University of Hong Kong, Kowloon Tong, Hong Kong; Global Business College of Australia, Melbourne, VIC, Australia	IEEE Transactions on Knowledge and Data Engineering	7 Jul 2021	2021	33	8	3129	3140
Fujian Provincial Key Laboratory of Networking Computing and Intelligent Information Processing, College of Computer and Data Science, Fuzhou University, Fuzhou, China; Fujian Provincial Key Laboratory of Networking Computing and Intelligent Information Processing, College of Computer and Data Science, Fuzhou University, Fuzhou, China; Fujian Provincial Key Laboratory of Networking Computing and Intelligent Information Processing, College of Computer and Data Science, Fuzhou University, Fuzhou, China; Fujian Provincial Key Laboratory of Networking Computing and Intelligent Information Processing, College of Computer and Data Science, Fuzhou University, Fuzhou, China; Fujian Provincial Key Laboratory of Networking Computing and Intelligent Information Processing, College of Computer and Data Science, Fuzhou University, Fuzhou, China	IEEE Transactions on Circuits and Systems for Video Technology	28 Oct 2022	2022	32	11	7924	7937
School of Computer Science, Nanjing University of Posts and Telecommunications, Nanjing, China; School of Internet of Things, Nanjing University of Posts and Telecommunications, Nanjing, China; Northern Information Control Research Academy Group Company, Ltd, Nanjing, China; School of Computer Science, Nanjing University of Posts and Telecommunications, Nanjing, China	IEEE Signal Processing Letters	24 Feb 2023	2023	30		140	144
School of Engineering, Computer Science and Mathematics, University of Exeter, Exeter, U.K.; Department of Computer Science, University of Exeter, Exeter, U.K.; Alliance Manchester Business School, University of Manchester, Manchester, U.K.; University of Jyväskylä, Faculty of Information Technology, University of Jyväskylä, Jyväskylä, Finland	IEEE Transactions on Evolutionary Computation	28 Jan 2022	2022	26	1	1	11
Department of Shanghai University of Electric Power, Shanghai, China; Department of Shanghai University of Electric Power, Shanghai, China	IEEE Signal Processing Letters	28 Jan 2022	2022	29		434	438
Department of CSE, International Institute of Information Technology Bhubaneswar, Bhubaneswar, India; Department of CSE, International Institute of Information Technology Bhubaneswar, Bhubaneswar, India; Department of Data Science and Information Technology, INTI International University, Nilai, Malaysia; Department of Computer Engineering-AI, Manavdi University, Rajkot, Gujarat, India; Department of Electronics and Instrumentation Engineering, Odisha University of Technology and Research, Bhubaneswar, India	IEEE Access	28 Sep 2022	2022	10		100376	100396
Centre de Recherche en Économie et Statistique (CREST), École Nationale de la Statistique et de l'Administration Économique (ENSAE), Institut Polytechnique de Paris, Palaiseau, France; Department of Economics and Business, Pompeu Fabra University, Barcelona, Spain	IEEE Transactions on Information Theory	19 May 2023	2023	69	6	4014	4026
Computer Science and Electrical Engineering, Graduate School of Science and Technology, Kumamoto University, Kumamoto, Japan; Big Data Science and Technology, Faculty of Advanced Science and Technology, Kumamoto University, Kumamoto, Japan	IEEE Access	24 Mar 2021	2021	9		45078	45094
Department of Industrial Engineering, School of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, China; Department of Industrial Engineering, School of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, China; School of Automation, Nanjing University of Information Science and Technology, Nanjing, China; Department of Industrial Engineering, School of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, China; Department of Industrial Engineering, School of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, China; Asia-Pacific Academy of Economics and Management, University of Macau, Zhuhai, China; Ministry of Education of China, the Shanghai Engineering Research Center of Intelligent Control and Management, and the Department of Automation, Key Laboratory of System Control and Information Processing, Shanghai Jiao Tong University, Shanghai, China	IEEE Transactions on Intelligent Transportation Systems	8 Nov 2022	2022	23	11	21833	21847
School of Computer Science and Technology, University of Chinese Academy of Sciences, Beijing, China; Key Laboratory of Intelligent Information Processing, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China; School of Computer and Information Engineering, Jiangxi Normal University, Nanchang, Jiangxi, China; State Key Laboratory of Information Security (SKLOIS), Institute of Information Engineering, Chinese Academy of Sciences, Beijing, China; Key Laboratory of Intelligent Information Processing, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China	IEEE Transactions on Pattern Analysis and Machine Intelligence	14 Sep 2022	2022	44	10	6393	6408
School of Artificial Intelligence, Xidian University, Xi'an, China; School of Artificial Intelligence, Xidian University, Xi'an, China; School of Artificial Intelligence, Xidian University, Xi'an, China; School of Artificial Intelligence, Xidian University, Xi'an, China; School of Artificial Intelligence, Xidian University, Xi'an, China	IEEE Transactions on Circuits and Systems for Video Technology	8 Mar 2022	2022	32	3	1048	1060
MIS Department, College of Business, University of Jeddah, Jeddah, Saudi Arabia; LARODEC Laboratory, Institut Supérieur de Gestion de Tunis, Université de Tunis, Tunis, Tunisia; Knowledge Discovery & Web Mining Laboratory, University of Louisville, Louisville, KY, USA; MIS Department, College of Business, University of Jeddah, Jeddah, Saudi Arabia	IEEE Access	10 May 2023	2023	11		43778	43792
Goa Institute of Management, Goa, India; Department of Computer Science and Engineering, Indian Institute of Technology, Kharagpur, India; Department of Computer Science and Engineering, Indian Institute of Technology, Kharagpur, India; MSIS Department, Rutgers University, New Brunswick, NJ, USA; MSIS Department, Rutgers University, New Brunswick, NJ, USA	IEEE Transactions on Emerging Topics in Computing	3 Dec 2021	2021	9	4	1901	1913
College of Mathematics and Computer Sciences, Key Laboratory of Spatial Data Mining and Information Sharing, Ministry of Education, and the Fujian Key Laboratory of Network Computing and Intelligent Information Processing, Fuzhou University, Fuzhou, China; School of Computer Science, Northwestern Polytechnical University, Xi'an, China; School of Computer Science, Chongqing University, Chongqing, China; College of Mathematics and Computer Sciences, Key Laboratory of Spatial Data Mining and Information Sharing, Ministry of Education, and the Fujian Key Laboratory of Network Computing and Intelligent Information Processing, Fuzhou University, Fuzhou, China; School of Computer Science, Northwestern Polytechnical University, Xi'an, China	IEEE Internet of Things Journal	5 Aug 2021	2021	8	16	12934	12946
Department of Electrical and Computer Engineering, Florida International University, Miami, FL, USA; College of Business and Engineering, Wilkes University, Wilkes-Barre, PA, USA; Knight Foundation School of Computing and Information Sciences, Florida International University, Miami, FL, USA; Department of Computer Science And Engineering, Indian Institute of Technology, Palakkad, Kerala, India; Department of Electrical and Computer Engineering, Florida International University, Miami, FL, USA	IEEE Transactions on Vehicular Technology	17 Oct 2022	2022	71	10	10442	10457
Collaborative Innovation Center of Railway Traffic Safety, School of Electronic and Information Engineering, Beijing Jiaotong University, Beijing, China; Collaborative Innovation Center of Railway Traffic Safety, School of Electronic and Information Engineering, Beijing Jiaotong University, Beijing, China; Department of Electrical and Computer Engineering, University of Windsor, Windsor, Canada; Beijing Key Laboratory of Transportation Data Analysis and Mining, School of Computer and Information Technology, Beijing Jiaotong University, Beijing, China; Frontiers Science Center for Smart High-Speed Railway System, School of Electronic and Information Engineering, State Key Laboratory of Rail Traffic Control, Beijing Jiaotong University, Beijing, China; Department of Electrical and Computer Engineering, University of Victoria, Victoria, Canada	IEEE Journal on Selected Areas in Communications	18 Jan 2023	2023	41	2	432	445
School of Computer and Information Technology, Beijing Key Laboratory of Traffic Data Analysis and Mining, and Beijing Key Laboratory of Security and Privacy in Intelligent Transportation, Beijing Jiaotong University, Beijing, China; School of Computer and Information Technology, Beijing Key Laboratory of Traffic Data Analysis and Mining, and Beijing Key Laboratory of Security and Privacy in Intelligent Transportation, Beijing Jiaotong University, Beijing, China; Beijing National Research Center for Information Science and Technology and Department of Electronic Engineering, Tsinghua University, Beijing, China; State Key Laboratory of Rail Traffic Control and Safety and Beijing Engineering Research Center of High-Speed Railway Broadband Mobile Communications, Beijing Jiaotong University, Beijing, China; School of Electrical and Electronic Engineering, University of Manchester, Manchester, U.K.; Department of Electrical and Computer Engineering, Hong Kong University of Science and Technology, Hong Kong	IEEE Internet of Things Journal	5 Mar 2021	2021	8	6	4802	4815
Departament d'Informàtica, Universitat de València, Valencia, Burjassot, Spain; Departament d'Informàtica, Universitat de València, Valencia, Burjassot, Spain; School of Computing, Engineering and Physical Sciences, University of the West of Scotland, Paisley, UK	IEEE Access	13 Oct 2022	2022	10		107477	107487
Chair of Computer Architecture and Parallel Systems, Technical University of Munich, Garching, Germany; Chair of Computer Architecture and Parallel Systems, Technical University of Munich, Garching, Germany; Chair of Computer Architecture and Parallel Systems, Technical University of Munich, Garching, Germany; Chair of Computer Architecture and Parallel Systems, Technical University of Munich, Garching, Germany; Department of Computer Science and Engineering, Indian Institute of Information Technology, Kerala, Kottayam, India	IEEE Access	26 Jan 2022	2022	10		9059	9084
VTT Technical Research Centre of Finland, Oulu, Finland; Graduate School of Informatics and Engineering, The University of Electro-Communications, Tokyo, Japan; VTT Technical Research Centre of Finland, Espoo, Finland; Graduate School of Informatics and Engineering, The University of Electro-Communications, Tokyo, Japan; College of Information Science and Electronic Engineering (ISEE), Zhejiang University, Hangzhou, China; Centre for Wireless Communications, University of Oulu, Oulu, Finland; Department of Electrical Engineering and Computer Science, The Catholic University of America, Washington, DC, USA; Information Systems Architecture Research Division, National Institute of Informatics, Tokyo, Japan	IEEE Journal on Selected Areas in Communications	16 Dec 2021	2022	40	1	243	258
National Mobile Communications Research Laboratory, Southeast University, Nanjing, China; National Mobile Communications Research Laboratory, Southeast University, Nanjing, China; College of Information Engineering, Shenzhen University, Shenzhen, China; Department of Informatics and the Simula Metropolitan Center for Digital Engineering, University of Oslo, Oslo, Norway	IEEE Internet of Things Journal	20 May 2021	2021	8	11	9084	9098
Departamento de Sistemas Informáticos, ETSI Sistemas Informáticos, Universidad Politécnica de Madrid, Madrid, Spain; School of Computing, University of Eastern Finland, Joensuu, Finland	IEEE Access	24 Dec 2021	2021	9		166531	166541

Fujian Provincial Key Laboratory of Networking Computing and Intelligent Information Processing, College of Computer and Data Science, Fuzhou University, Fuzhou, China; Fujian Provincial Key Laboratory of Networking Computing and Intelligent Information Processing, College of Computer and Data Science, Fuzhou University, Fuzhou, China; Fujian Provincial Key Laboratory of Networking Computing and Intelligent Information Processing, College of Computer and Data Science, Fuzhou University, Fuzhou, China	IEEE Transactions on Intelligent Transportation Systems	8 May 2023		2023	24	5	5172	5185
Department of Engineering, Università degli Studi di Padova, Padua, Italy; Statwolf Data Science, Padua, Italy; Statwolf Data Science, Padua, Italy; Department of Engineering, Università degli Studi di Padova, Padua, Italy; Department of Engineering, Università degli Studi di Padova, Padua, Italy	IEEE Transactions on Automation Science and Engineering	4 Jul 2022		2022	19	3	1491	1502
Department of Applied Economics (Mathematics), Campus EL Ejido, University of Málaga, Málaga, Spain; ITIS Software, Campus Teatinos, University of Málaga, Málaga, Spain; Department of Applied Economics (Mathematics), Campus EL Ejido, University of Málaga, Málaga, Spain; Department of Applied Economics (Mathematics), Campus EL Ejido, University of Málaga, Málaga, Spain	IEEE Access	9 Aug 2021		2021	9		10861	10872
Faculty of Engineering and Technology, Multimedia University, Melaka, Malaysia; Faculty of Information Science and Technology, Multimedia University, Melaka, Malaysia; Faculty of Engineering and Technology, Multimedia University, Melaka, Malaysia; Department of Econometrics and Business Statistics, School of Business, Monash University Malaysia, Subang Jaya, Malaysia; Institute for Intelligent Systems Research and Innovation, Deakin University, Waurn Ponds, VIC, Australia	IEEE Access	1 May 2023		2023	11		39866	39878
Blockchain Platform Research Center, Pusan National University, Busan, South Korea; School of Computer Science and Engineering, Pusan National University, Busan, South Korea; School of Computer Science and Engineering, Pusan National University, Busan, South Korea	IEEE Access	1 Sep 2022		2022	10		89714	89731
Department of Mathematics, Faculty of Science, Suez Canal University, Ismailia, Egypt; Faculty of Computers and Informatics, Cairo University, Giza, Egypt; Department of Mathematics, Faculty of Science, Suez Canal University, Ismailia, Egypt	IEEE Access	3 Sep 2021		2021	9		120309	120327
Department of Electrical, Computer and Biomedical Engineering, Ryerson University, Toronto, ON, Canada; Department of Electrical, Computer and Biomedical Engineering, Ryerson University, Toronto, ON, Canada; Department of Electrical, Computer and Biomedical Engineering, Ryerson University, Toronto, ON, Canada	IEEE Transactions on Wireless Communications	9 May 2022		2022	21	5	3279	3290
College of Information Science and Engineering, Xinjiang University, Urumqi, China; College of Software, Xinjiang University, Urumqi, China; College of Software, Xinjiang University, Urumqi, China; College of Software, Xinjiang University, Urumqi, China; College of Information Science and Engineering, Xinjiang University, Urumqi, China; College of Software, Xinjiang University, Urumqi, China; College of Information Science and Engineering, Xinjiang University, Urumqi, China	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	30 Nov 2022		2022	15		10041	10054
Business School, Jiangsu Normal University, Xuzhou, China; College of Systems Engineering, National University of Defense Technology, Changsha, China; College of Systems Engineering, National University of Defense Technology, Changsha, China	IEEE Access	4 Jan 2021		2021	9		445	457
Harbin Institute of Technology, Harbin, Heilongjiang, China; Department of Computer Science and Technology, Harbin Institute of Technology, Harbin, Heilongjiang, P.R. China; Harbin Institute of Technology, Harbin, Heilongjiang, P.R. China, Harbin Institute of Technology, Harbin, Heilongjiang, P.R. China; Damo Academy, Alibaba Group, Hangzhou, P.R. China; SUNY Buffalo, Buffalo, NY, USA; Harbin Institute of Technology, Harbin, Heilongjiang, P.R. China	IEEE Transactions on Knowledge and Data Engineering	7 Dec 2021		2022	34	1	205	218
Department of Computer Science and Engineering, Guangdong Provincial Key Laboratory of Brain-inspired Intelligent Computation, Southern University of Science and Technology, Shenzhen, China; Department of Computer Science and Engineering, Guangdong Provincial Key Laboratory of Brain-inspired Intelligent Computation, Southern University of Science and Technology, Shenzhen, China; Department of Computer Science and Engineering, Guangdong Provincial Key Laboratory of Brain-inspired Intelligent Computation, Southern University of Science and Technology, Shenzhen, China; Research Institute for Trustworthy Autonomous Systems, Southern University of Science and Technology, Shenzhen, China; Department of Computer Science and Engineering, Guangdong Provincial Key Laboratory of Brain-inspired Intelligent Computation, Southern University of Science and Technology, Shenzhen, China	IEEE Transactions on Intelligent Transportation Systems	29 Mar 2023		2023	24	4	4189	4202
Key Laboratory of Intelligent Information Processing, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China; School of Computer Science and Technology, University of Chinese Academy of Sciences, Beijing, China; School of Computer Science and Technology, University of Chinese Academy of Sciences, Beijing, China; School of Cyber Science and Technology, Shenzhen Campus of Sun Yat-sen University, Shenzhen, China; School of Computer Science and Technology, University of Chinese Academy of Sciences, Beijing, China	IEEE Transactions on Pattern Analysis and Machine Intelligence	5 May 2023		2023	45	6	7668	7685
State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, Wuhan, China; State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, Wuhan, China; State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, Wuhan, China; State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, Wuhan, China	IEEE Transactions on Geoscience and Remote Sensing	17 Jan 2022		2022	60		1	16
Department of Electrical Engineering, The City College of New York, New York, NY, USA; Department of Electrical Engineering, The City College of New York, New York, NY, USA	IEEE Access	2 Mar 2023		2023	11		20381	20398
Department of Computer Science and Biomedical Informatics, University of Thessaly, Lamia, Greece; Department of Computer Science and Biomedical Informatics, University of Thessaly, Lamia, Greece	IEEE Access	8 Apr 2021		2021	9		51970	51982
Center for Advanced Computer Studies, School of Computing and Informatics, University of Louisiana at Lafayette, Lafayette, LA, USA; Center for Advanced Computer Studies, School of Computing and Informatics, University of Louisiana at Lafayette, Lafayette, LA, USA; Center for Advanced Computer Studies, School of Computing and Informatics, University of Louisiana at Lafayette, Lafayette, LA, USA; Center for Advanced Computer Studies, School of Computing and Informatics, University of Louisiana at Lafayette, Lafayette, LA, USA; Key Laboratory of Knowledge Engineering with Big Data, Ministry of Education, Hefei University of Technology, Hefei, China	IEEE Transactions on Neural Networks and Learning Systems	1 Mar 2021		2021	32	3	1228	1240
Institute of Information and Computational Technologies, Almaty, Kazakhstan; CIC, Instituto Politécnico Nacional, Mexico City, Mexico; Institute of Information and Computational Technologies, Almaty, Kazakhstan	IEEE Access	30 Dec 2021		2021	9		168141	168153
State Key Laboratory of Industrial Control Technology, College of Control Science and Engineering, Zhejiang University, Hangzhou, China; State Key Laboratory of Industrial Control Technology, College of Control Science and Engineering, Zhejiang University, Hangzhou, China; Alibaba Group, Hangzhou, China; Pangang Group Xichang Steel and Vanadium Company Ltd., Sichuan, China; Alibaba Group, Hangzhou, China; Alibaba Group, Hangzhou, China	IEEE Transactions on Instrumentation and Measurement	21 Dec 2020		2021	70		1	13
Jiangsu Key Laboratory of Big Data Security and Intelligent Processing, Nanjing University of Posts and Telecommunications, Nanjing, China; Jiangsu Key Laboratory of Big Data Security and Intelligent Processing, Nanjing University of Posts and Telecommunications, Nanjing, China; Jiangsu Key Laboratory of Big Data Security and Intelligent Processing, Nanjing University of Posts and Telecommunications, Nanjing, China; Department of Computer Science, Colorado School of Mines, Golden, CO, USA; Jiangsu Key Laboratory of Big Data Security and Intelligent Processing, Nanjing University of Posts and Telecommunications, Nanjing, China	IEEE Internet of Things Journal	22 Sep 2021		2021	8	19	14971	14984
Department of Computer Engineering, Middle East Technical University, Ankara, Turkey; Department of International Relations, Koç University, Istanbul, Turkey; Department of Computer Engineering, Middle East Technical University, Ankara, Turkey	IEEE Access	26 Oct 2021		2021	9		142982	142996
School of Computing, Mathematics and Engineering, Charles Sturt University, Wagga Wagga, NSW, Australia; School of Information Technology and Mathematical Sciences, University of South Australia, Adelaide, SA, Australia; Artificial Intelligence and Cyber Futures Institute, Charles Sturt University, Bathurst, NSW, Australia; School of Information Technology and Mathematical Sciences, University of South Australia, Adelaide, SA, Australia; School of Information Technology and Mathematical Sciences, University of South Australia, Adelaide, SA, Australia; School of Information Technology and Mathematical Sciences, University of South Australia, Adelaide, SA, Australia; School of Computing, Mathematics and Engineering, Charles Sturt University, Wagga Wagga, NSW, Australia; Defence Science Technology Group, Department of Defence, Edinburgh, SA, Australia	IEEE Access	6 Apr 2023		2023	11		32826	32841
IOT Perception Mine Research Center and the School of Information and Control Engineering, China University of Mining and Technology, Xuzhou, China; IOT Perception Mine Research Center and the School of Information and Control Engineering, China University of Mining and Technology, Xuzhou, China; IOT Perception Mine Research Center and the School of Information and Control Engineering, China University of Mining and Technology, Xuzhou, China; State Key Laboratory of Advanced Design and Manufacturing for Vehicle Body, College of Mechanical and Vehicle Engineering, Hunan University, Changsha, China; School of Information and Control Engineering, China University of Mining and Technology, Xuzhou, China; Institute of Electrodynamics and Microelectronics, University of Bremen, Bremen, Germany	IEEE Transactions on Instrumentation and Measurement	20 Mar 2023		2023	72		1	14
School of Computer Sciences, Universiti Sains Malaysia, Penang, Malaysia; School of Computer Sciences, Universiti Sains Malaysia, Penang, Malaysia; School of Computer Sciences, Universiti Sains Malaysia, Penang, Malaysia	IEEE Access	19 Apr 2022		2022	10		39833	39852
School of Management, The State Key Lab for Manufacturing Systems Engineering, The Key Lab of the Ministry of Education for Process Control and Efficiency Engineering, Xi'an Jiaotong University, Xi'an, China; School of Management, The State Key Lab for Manufacturing Systems Engineering, The Key Lab of the Ministry of Education for Process Control and Efficiency Engineering, Xi'an Jiaotong University, Xi'an, China; School of Management, Xi'an Jiaotong University, Xi'an, China; Department of Logistics and Maritime Studies, The Hong Kong Polytechnic University, Hung Hom, Hong Kong	IEEE Transactions on Engineering Management	2 Dec 2022		2023	70	1	40	54
College of Equipment Management and UAV Engineering, Air Force Engineering University, Xi'an, China; School of Computer Science and School of Artificial Intelligence, Optics and Electronics (IOPE), Northwestern Polytechnical University, Xi'an, China; School of Computer Science and School of Artificial Intelligence, Optics and Electronics (IOPE), Northwestern Polytechnical University, Xi'an, China; School of Computer Science and School of Artificial Intelligence, Optics and Electronics (IOPE), Northwestern Polytechnical University, Xi'an, China; School of Computer Science and School of Artificial Intelligence, Optics and Electronics (IOPE), Northwestern Polytechnical University, Xi'an, China	IEEE Transactions on Cybernetics	13 Jan 2023		2023	53	2	1260	1271
School of Computer Science, Chengdu University of Information Technology, Chengdu, China; School of Computer Science, Chengdu University of Information Technology, Chengdu, China; School of Computer Science, Chengdu University of Information Technology, Chengdu, China	IEEE Access	28 Jan 2022		2022	10		8518	8528

School of Information and Electronic Engineering, Shandong Technology and Business University, Yantai, China; School of Computer Science and Technology, Shandong Technology and Business University, Yantai, China; School of Information and Electronic Engineering, Shandong Technology and Business University, Yantai, China	IEEE Journal of Translational Engineering in Health and Medicine	20 Oct 2022		2022	10		1	9
Department of Computer Engineering, Erzurum Technical University, Erzurum, Turkey; MiSOFT Software Technologies Corporation, Ankara, Turkey; Department of Computer Engineering, Hacettepe University, Ankara, Turkey; Information Technology Group, Wageningen University and Research, Wageningen, The Netherlands	IEEE Access	22 Feb 2021		2021	9		29505	29529
School of Computer Science and Engineering, Sun Yat-sen University, Guangzhou, Guangdong, China; School of Information and Electronics, Beijing Institute of Technology, Beijing, China	IEEE Transactions on Knowledge and Data Engineering	12 Sep 2022		2022	34	10	4947	4958
School of Computer Science, and Engineering, South China University of Technology, Guangzhou, China; School of Computer Science, and Engineering, South China University of Technology, Guangzhou, China; School of Computer Science, and Engineering, South China University of Technology, Guangzhou, China; School of Computer Science, and Engineering, South China University of Technology, Guangzhou, China	IEEE/ACM Transactions on Audio, Speech, and Language Processing	10 May 2021		2021	29		1570	1581
Faculty of Information Technology, Beijing University of Technology, Beijing, China; BNU-UIC Institute of Artificial Intelligence and Future Networks, Beijing Normal University at Zhuhai, Zhuhai, Guangdong, China; School of Information, Renmin University of China, Beijing, China; Department of Computer Science, Erik Jonsson School of Engineering and Computer Science, University of Texas at Dallas, Richardson, TX, USA	IEEE Transactions on Cloud Computing	6 Jun 2023		2023	11	2	1608	1621
Department of Artificial Intelligence, Media Analytics and Computing Laboratory, School of Informatics, Xiamen University, Xiamen, China; Guangxi Key Laboratory of Multi-Source Information Mining and Security, Guangxi Normal University, Guilin, China; SeetaTech, Beijing, China; Department of Artificial Intelligence, Media Analytics and Computing Laboratory, School of Informatics, Xiamen University, Xiamen, China	IEEE Transactions on Neural Networks and Learning Systems	27 Oct 2022		2022	33	11	6627	6639
School of Computer Science and Technology and the Mine Digitization Engineering Research Center of the Ministry of Education, China University of Mining and Technology, Xuzhou, China; SUSTech Institute of Future Networks, Southern University of Science and Technology, Shenzhen, China; Center for Applied Mathematics, Tianjin University, Tianjin, China; Department of Computing, Hong Kong Polytechnic University, Hong Kong; Federal University of Piaui, Teresina, Brazil	IEEE Internet of Things Journal	24 Mar 2022		2022	9	7	5051	5064
Beijing Key Laboratory of Traffic Data Analysis and Mining, Beijing Jiaotong University, Beijing, China; Beijing Key Laboratory of Traffic Data Analysis and Mining, Beijing Jiaotong University, Beijing, China; Beijing Key Laboratory of Traffic Data Analysis and Mining, Beijing Jiaotong University, Beijing, China; Beijing Key Laboratory of Traffic Data Analysis and Mining, Beijing Jiaotong University, Beijing, China	IEEE Geoscience and Remote Sensing Letters	20 Oct 2022		2022	19		1	5
Department of Industrial Engineering and Management, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan; Department of Industrial Engineering and Management, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan; Department of Industrial Engineering and Management, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan; Institute of Photonics Engineering, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan	IEEE Access	28 Dec 2021		2021	9		167458	167476
Guangdong Provincial Key Laboratory for Urbanization and Geo-simulation, School of Geography and Planning, Sun Yat-sen University, Guangzhou, China; Guangdong Provincial Key Laboratory for Urbanization and Geo-simulation, School of Geography and Planning, Sun Yat-sen University, Guangzhou, China; Guangdong Provincial Key Laboratory for Urbanization and Geo-simulation, School of Geography and Planning, Sun Yat-sen University, Guangzhou, China; Guangdong Provincial Key Laboratory for Urbanization and Geo-simulation, School of Geography and Planning, Sun Yat-sen University, Guangzhou, China	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	6 Jun 2022		2022	15		4297	4306
Guangdong Provincial Key Laboratory of Urbanization and Geo-Simulation, School of Geography and Planning, Sun Yat-sen University, Guangzhou, China; Guangdong Provincial Key Laboratory of Urbanization and Geo-Simulation, School of Geography and Planning, Sun Yat-sen University, Guangzhou, China; Guangdong Provincial Key Laboratory of Urbanization and Geo-Simulation, School of Geography and Planning, Sun Yat-sen University, Guangzhou, China; Division of Landscape Architecture, Faculty of Architecture, The University of Hong Kong, Hong Kong SAR, China	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	6 Jul 2022		2022	15		5163	5176
School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, China; School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, China; Department of Computer Science, Brunel University London, Uxbridge, U.K.; School of Computer Science and Technology, China University of Mining and Technology, Xuzhou, China	IEEE Transactions on Vehicular Technology	15 May 2023		2023	72	5	6625	6638
Department of Electrical and Computer Engineering, University of Denver, Denver, CO, USA; Department of Electrical and Computer Engineering, University of Denver, Denver, CO, USA; Engineering and Smart Grid, ComEd, Oakbrook, IL, USA	IEEE Transactions on Power Systems	19 Feb 2021		2021	36	2	842	850
Beijing Key Laboratory of Multimedia and Intelligent Software Technology, Faculty of Information Technology, Beijing Institute of Artificial Intelligence, Beijing University of Technology, Beijing, China; Beijing Key Laboratory of Multimedia and Intelligent Software Technology, Faculty of Information Technology, Beijing Institute of Artificial Intelligence, Beijing University of Technology, Beijing, China; Discipline of Business Analytics, The University of Sydney Business School, The University of Sydney, Camperdown, NSW, Australia; Beijing Key Laboratory of Multimedia and Intelligent Software Technology, Faculty of Information Technology, Beijing Institute of Artificial Intelligence, Beijing University of Technology, Beijing, China; Beijing Key Laboratory of Multimedia and Intelligent Software Technology, Faculty of Information Technology, Beijing Institute of Artificial Intelligence, Beijing University of Technology, Beijing, China	IEEE Transactions on Image Processing	23 Nov 2022		2022	31		7191	7205
College of Computer Science, Chongqing University, Chongqing, China; College of Computer Science, Chongqing University, Chongqing, China	Big Data Mining and Analytics	9 Jun 2022		2022	5	3	257	269
Kazakh University of Economics, Finance and International Trade, Astana, Nur-Sultan, Kazakhstan; Kazakh University of Economics, Finance and International Trade, Astana, Nur-Sultan, Kazakhstan; Kazakh University of Economics, Finance and International Trade, Astana, Nur-Sultan, Kazakhstan; Kazakh University of Economics, Finance and International Trade, Astana, Nur-Sultan, Kazakhstan	IEEE Access	1 Dec 2021		2021	9		156556	156565
Peoples' Friendship University of Russia (RUDN University), Moscow, Russia; Peoples' Friendship University of Russia (RUDN University), Moscow, Russia; Tampere University, Tampere, Pirkanmaa, Finland; Tampere University, Tampere, Pirkanmaa, Finland; Peoples' Friendship University of Russia (RUDN University), Moscow, Russia; Tampere University, Tampere, Pirkanmaa, Finland; Peoples' Friendship University of Russia (RUDN University), Moscow, Russia	IEEE Transactions on Vehicular Technology	2 Apr 2021		2021	70	3	2657	2672
School of Computer and Artificial Intelligence, Zhengzhou University, Zhengzhou, China; National Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences, Beijing, China; National Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences, Beijing, China	IEEE Transactions on Image Processing	30 Nov 2022		2022	31		7363	7377
School of Information Technology and Management, University of International Business and Economics, Beijing, China; Department of Information Management, School of Economics and Management, Beijing Jiaotong University, Beijing, China; Division of Engineering and Information Science, Pennsylvania State University, Malvern, PA, USA	IEEE Systems Journal	7 Jun 2021		2021	15	2	2906	2917
School of Electrical and Information Engineering, Tianjin University, Tianjin, China; School of Electrical and Information Engineering, Tianjin University, Tianjin, China; School of Electrical and Information Engineering, Tianjin University, Tianjin, China; School of Electrical and Information Engineering, Tianjin University, Tianjin, China	IEEE Signal Processing Letters	27 Jun 2022		2022	29		1387	1391
Electronics and Communication Engineering Discipline, Khulna University, Khulna, Bangladesh; Department of Computer Science, College of Computers and Information Technology, Taif University, Taif, Saudi Arabia; Department of Quantitative Sciences, International University of Business Agriculture and Technology, Dhaka, Bangladesh; Electronics and Communication Engineering Discipline, Khulna University, Khulna, Bangladesh; School of Computer Science and Engineering, University of Electronic Science and Technology of China, Chengdu, China; Computer Science and Engineering Discipline, Khulna University, Khulna, Bangladesh	IEEE Access	20 Jan 2021		2021	9		10263	10281
School of Business and Management, Institut Teknologi Bandung, Bandung, Indonesia; School of Business and Management, Institut Teknologi Bandung, Bandung, Indonesia; School of Business and Management, Institut Teknologi Bandung, Bandung, Indonesia; Engineering Physics, Institut Teknologi Bandung, Bandung, Indonesia; Engineering Physics, Institut Teknologi Bandung, Bandung, Indonesia; School of Business and Management, Institut Teknologi Bandung, Bandung, Indonesia; Engineering Physics, Institut Teknologi Bandung, Bandung, Indonesia; School of Business and Management, Institut Teknologi Bandung, Bandung, Indonesia; School of Business and Management, Institut Teknologi Bandung, Bandung, Indonesia	IEEE Access	29 Mar 2022		2022	10		32255	32270
Fujian Key Laboratory of Network Computing and Intelligent Information Processing, College of Computer and Data Science, Fuzhou University, Fuzhou, China; College of Computer and Data Science, Fuzhou University, Fuzhou, China; College of Computer and Data Science, Fuzhou University, Fuzhou, China; Fujian Key Laboratory of Network Computing and Intelligent Information Processing, College of Computer and Data Science, Fuzhou University, Fuzhou, China	IEEE Transactions on Circuits and Systems for Video Technology	7 Mar 2023		2023	33	3	1487	1492
Tianjin Key Laboratory of Cognitive Computing and Application, College of Intelligence and Computing, Tianjin University, Tianjin, China; Tianjin Key Laboratory of Cognitive Computing and Application, College of Intelligence and Computing, Tianjin University, Tianjin, China; Institute for Infocomm Research, A*STAR, Singapore; Tianjin Key Laboratory of Cognitive Computing and Application, College of Intelligence and Computing, Tianjin University, Tianjin, China; Tianjin Key Laboratory of Cognitive Computing and Application, College of Intelligence and Computing, Tianjin University, Tianjin, China; Human-Computer Communications Laboratory (HCC), Department of Systems Engineering and Engineering Management, Chinese University of Hong Kong, Hong Kong, China	IEEE/ACM Transactions on Audio, Speech, and Language Processing	24 Feb 2023		2023	31		1024	1036
Fujian Provincial Key Laboratory of Networking Computing and Intelligent Information Processing, College of Computer and Data Science, Fuzhou University, Fuzhou, China; Fujian Provincial Key Laboratory of Networking Computing and Intelligent Information Processing, College of Computer and Data Science, Fuzhou University, Fuzhou, China; Fujian Provincial Key Laboratory of Networking Computing and Intelligent Information Processing, College of Computer and Data Science, Fuzhou University, Fuzhou, China	IEEE Geoscience and Remote Sensing Letters	14 Feb 2022		2022	19		1	5
Department of Technological Machines and Equipment of Oil and Gas Complex, School of Petroleum and Natural Gas Engineering, Siberian Federal University, Krasnoyarsk, Russia; Information-Control Systems Department, Institute of Computer Science and Telecommunications, Reshetnev Siberian State University of Science and Technology, Krasnoyarsk, Russia; Department of Computer Science, Institute of Space and Information Technologies, Siberian Federal University, Krasnoyarsk, Russia; Department of Technological Machines and Equipment of Oil and Gas Complex, School of Petroleum and Natural Gas Engineering, Siberian Federal University, Krasnoyarsk, Russia	IEEE Access	1 Jul 2021		2021	9		92483	92499
Electrical and Computer Engineering Department, Concordia University, Montreal, QC, Canada; Computer Science and Software Engineering Department, Concordia University, Montreal, QC, Canada; Faculty of Electrical Engineering and Computer Science, Ningbo University, Ningbo, China; Information System Engineering Department, Concordia University, Montreal, QC, Canada	IEEE Transactions on Network and Service Management	10 Mar 2021		2021	18	1	286	300
Advanced Institute of Information Technology, Peking University, Hangzhou, China; Advanced Institute of Information Technology, Peking University, Hangzhou, China; Advanced Institute of Information Technology, Peking University, Hangzhou, China	IEEE Access	27 Jan 2023		2023	11		8275	8282

Department of Computer Engineering, College of Information and Electrical Engineering, China Agricultural University, Beijing, China; Department of Computer Engineering, College of Information and Electrical Engineering, China Agricultural University, Beijing, China; Department of Computer Engineering, College of Information and Electrical Engineering, China Agricultural University, Beijing, China; Department of Data Science and Engineering, College of Information and Electrical Engineering, China Agriculture University, Beijing, China; School of Information and Electrical Engineering, Ludong University, Yantai, China	IEEE Transactions on Image Processing	1 Aug 2022	2022	31		4994	5008
Inner Mongolia Autonomous Region Engineering and Technology Research Center of Big Data Based Software Service, College of Data Science and Application, Inner Mongolia University of Technology, Inner Mongolia, Hohhot, China; Inner Mongolia Autonomous Region Engineering and Technology Research Center of Big Data Based Software Service, College of Data Science and Application, Inner Mongolia University of Technology, Inner Mongolia, Hohhot, China	IEEE Access	1 Oct 2021	2021	9		132631	132640
Department of Computer and Information Sciences, Temple University, Philadelphia, PA, USA; Department of Computer and Information Sciences, Temple University, Philadelphia, PA, USA	IEEE Transactions on Big Data	28 May 2021	2021	7	2	407	420
MLALP Research Group, University of Sharjah, Sharjah, United Arab Emirates; Department of Computer Science, University of Sharjah, Sharjah, United Arab Emirates; Department of Computer Science, University of Sharjah, Sharjah, United Arab Emirates; Department of Electrical Engineering, University of Sharjah, Sharjah, United Arab Emirates; Department of Computer Engineering, University of Sharjah, Sharjah, United Arab Emirates; Department of Computer Science, University of Sharjah, Sharjah, United Arab Emirates; College of Technological Innovation, Zayed University, Abu Dhabi, United Arab Emirates	IEEE Access	24 Nov 2022	2022	10		121816	121830
College of Computer Science and Electronic Engineering, Hunan University, Hunan, China; College of Computer Science and Electronic Engineering, Hunan University, Hunan, China; College of Computer Science and Electronic Engineering, Hunan University, Hunan, China; College of Computer Science and Electronic Engineering, Hunan University, Hunan, China; College of Computer Science and Electronic Engineering, Hunan University, Hunan, China	IEEE Transactions on Parallel and Distributed Systems	5 Jul 2021	2022	33	1	129	143
Department of Telematics and Electronics, Universidad Politécnica de Madrid at Campus Sur, Madrid, Spain; Department of Telematics and Electronics, Universidad Politécnica de Madrid at Campus Sur, Madrid, Spain; Department of Telematics and Electronics, Universidad Politécnica de Madrid at Campus Sur, Madrid, Spain; Department of Organizational Engineering, Business Administration, and Statistics, E.T.S. de Ingenieros Informáticos, Universidad Politécnica de Madrid, Boadilla del Monte, Spain; Department of Computer Science, Universidad Carlos III de Madrid at Leganés, Leganés, Spain	IEEE Access	25 May 2021	2021	9		75313	75323
Institute of Networked and Embedded Systems, University of Klagenfurt, Klagenfurt am Wörthersee, Austria; Department of Information and Communication Engineering, Yeungnam University, Gyeongsang, South Korea; Department of Information and Communication Engineering, Yeungnam University, Gyeongsang, South Korea; Institute of Networked and Embedded Systems, University of Klagenfurt, Klagenfurt am Wörthersee, Austria; Department of Information and Communication Engineering, Yeungnam University, Gyeongsang, South Korea	IEEE Access	17 May 2021	2021	9		70797	70805
School of Computer Science and Technology, Shandong Technology and Business University, Yantai, China; School of Computer Science and Technology, Shandong Technology and Business University, Yantai, China; School of Computer Science and Technology, Shandong Technology and Business University, Yantai, China; School of Information and Electronic Engineering, Shandong Technology and Business University, Yantai, China	IEEE Transactions on Geoscience and Remote Sensing	2 Feb 2023	2023	61		1	16
College of Electronic Science and Technology, National University of Defense Technology, Changsha, China; College of Electronic Science and Technology, National University of Defense Technology, Changsha, China; College of Electronic Science and Technology, National University of Defense Technology, Changsha, China; College of Electronic Science and Technology, National University of Defense Technology, Changsha, China	IEEE Transactions on Geoscience and Remote Sensing	23 Dec 2021	2022	60		1	17
Supply Chain Innovation, Infineon Technologies AG, Neubiberg, Germany; School of Management and the Munich Data Science Institute, Technical University of Munich, Munich, Germany; Supply Chain Innovation, Infineon Technologies AG, Neubiberg, Germany	IEEE Transactions on Semiconductor Manufacturing	4 Aug 2022	2022	35	3	470	477
Department of Operations and Maintenance Technologies, Ikerlan Technology Research Centre, Gipuzkoa, Spain; Department of Industrial Management, ETSI University of Seville, Sevilla, Spain; Department of MIK Research Centre, Mondragon University, Gipuzkoa, Spain; Institute for Manufacturing, University of Cambridge, Cambridge, U.K.; Department of Operations and Maintenance Technologies, Ikerlan Technology Research Centre, Gipuzkoa, Spain	IEEE Transactions on Engineering Management	3 Nov 2022	2022	69	6	2693	2706
College of Electrical and Information Engineering, Zhengzhou University of Light Industry, Zhengzhou, China; College of Electrical and Information Engineering, Zhengzhou University of Light Industry, Zhengzhou, China; School of Automation, Northwestern Polytechnical University, Xi'an, China; School of Automation, Northwestern Polytechnical University, Xi'an, China; School of Automation, Northwestern Polytechnical University, Xi'an, China; College of Electrical and Information Engineering, Zhengzhou University of Light Industry, Zhengzhou, China	IEEE Transactions on Geoscience and Remote Sensing	26 Apr 2023	2023	61		1	15
School of Automation Engineering, Northwestern Polytechnical University, Xi'an, China; School of Automation Engineering, Northwestern Polytechnical University, Xi'an, China; School of Automation Engineering, Northwestern Polytechnical University, Xi'an, China	IEEE Transactions on Circuits and Systems for Video Technology	4 Apr 2022	2022	32	4	2186	2198
School of Information and Electronic Engineering, Institute of Network Technology, Shandong Technology and Business University, Yantai, China; School of Computer Science and Technology, Shandong Technology and Business University, Yantai, China; School of Information and Electronic Engineering, Institute of Network Technology, Shandong Technology and Business University, Yantai, China	IEEE Transactions on Geoscience and Remote Sensing	12 Oct 2022	2022	60		1	16
Computer Engineering Department, Jeju National University, Jeju City, Republic of Korea; Computer Engineering Department, Jeju National University, Jeju City, Republic of Korea; Software Engineering Department, University of Engineering & Technology Mardan, Mardan, Pakistan; Computer Engineering Department, Jeju National University, Jeju City, Republic of Korea	IEEE Access	13 Jan 2021	2021	9		8069	8098
Department of Computer Science and Engineering, Kebri Dehar University, Kebri Dehar, Somali, Ethiopia; Department of Electronics and Telecommunication, Symbiosis Institute of Technology, Maharashtra, Pune, India; Department of Computer Science and Engineering, Kebri Dehar University, Kebri Dehar, Somali, Ethiopia; Department of Artificial Intelligence, G. H. Raisoni College of Engineering, Nagpur, India; Department of Electrical and Electronics Engineering, Chaitanya Bharathi Institute of Technology, Hyderabad, India; Department of Electrical Power Engineering, Faculty of Mechanical and Electrical Engineering, Tishreen University, Latakia, Syria	IEEE Access	30 Nov 2021	2021	9		156297	156312
School of Computer Science, Northwestern Polytechnical University, Xi'an, China; Department of Computer and Information Science, State Key Laboratory of Internet of Things for Smart City, University of Macau, Macau, China; School of Computer Science, Northwestern Polytechnical University, Xi'an, China; Colorado School of Mines, Golden, CO, USA; College of Computer Science and Technology, Jilin University, Changchun, China; School of Mathematics and Statistics, Northwestern Polytechnical University, Xi'an, China; School of Computer Science, Northwestern Polytechnical University, Xi'an, China	IEEE Transactions on Mobile Computing	6 Jan 2023	2023	22	2	634	646
Department of Computer Science and Technology, National Engineering Laboratory for Big Data Analysis Technology and Application, Peking University, Beijing, China; Department of Computer Science and Technology, National Engineering Laboratory for Big Data Analysis Technology and Application, Peking University, Beijing, China; Department of Computer Science and Technology, National Engineering Laboratory for Big Data Analysis Technology and Application, Peking University, Beijing, China; Department of Computer Science and Technology, National Engineering Laboratory for Big Data Analysis Technology and Application, Peking University, Beijing, China	IEEE Transactions on Knowledge and Data Engineering	5 Aug 2022	2022	34	9	4342	4366
National Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences, Beijing, China; National Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences, Beijing, China	IEEE Transactions on Circuits and Systems for Video Technology	8 Mar 2022	2022	32	3	1646	1657
Department of International Business, Tamkang University, New Taipei City, Taiwan	IEEE Access	27 Sep 2021	2021	9		130141	130153
Department of Computer Engineering, Sharif University of Technology, Tehran, Iran; Department of Computer Engineering, Sharif University of Technology, Tehran, Iran; School of Computer Engineering, Iran University of Science and Technology, Tehran, Iran; Dipartimento di Elettronica, Informazione e Bioingegneria, Milan, Italy; Department of Computer Science and Engineering, Seoul National University, Seoul, Korea; Department of Computer Engineering, Sharif University of Technology, Tehran, Iran	IEEE Transactions on Cloud Computing	7 Mar 2023	2023	11	1	897	910
Department of Computer Science and Engineering, University of Minnesota Twin Cities, Minneapolis, MN, USA; Department of Computer Science and Engineering, University of Minnesota Twin Cities, Minneapolis, MN, USA; Department of Computer Science and Engineering, University of Minnesota Twin Cities, Minneapolis, MN, USA; Department of Radiation Oncology, University of Minnesota Twin Cities, Minneapolis, MN, USA; Department of Computer Science and Engineering, University of Minnesota Twin Cities, Minneapolis, MN, USA; Department of Computer Science and Engineering, University of Minnesota Twin Cities, Minneapolis, MN, USA	IEEE Transactions on Knowledge and Data Engineering	7 Nov 2022	2022	34	12	5964	5978
School of Software, Dalian University of Technology, Dalian, China; School of Software, Dalian University of Technology, Dalian, China; School of Software, Dalian University of Technology, Dalian, China; School of Engineering, IT and Physical Sciences, Federation University Australia, Ballarat, VIC, Australia; School of Engineering, IT and Physical Sciences, Federation University Australia, Churchill, VIC, Australia; School of IT, Deakin University, Melbourne, VIC, Australia	IEEE Transactions on Intelligent Transportation Systems	14 Sep 2022	2022	23	9	16148	16160
CNRS, IETR, UMR 6164, University of Rennes 1, Lannion, France; Department of Computer Science, Norwegian University of Science and Technology, Gjøvik, Norway; CNRS, IETR, UMR 6164, University of Rennes 1, Lannion, France	IEEE Access	9 Feb 2022	2022	10		14575	14585
Portland State University, Portland, OR, USA; Portland State University, Portland, OR, USA; Izmir Institute of Technology, Izmir, Turkey	IEEE Transactions on Engineering Management	17 Mar 2023	2023	70	5	1738	1753
Department of Telematic Engineering, University Carlos III of Madrid, Madrid, Spain; Department of Telematic Engineering, University Carlos III of Madrid, Madrid, Spain; NEC Laboratories Europe GmbH, 5G Network Group, Heidelberg, Germany; Department of Telematic Engineering, University Carlos III of Madrid, Madrid, Spain; Department of Telematic Engineering, University Carlos III of Madrid, Madrid, Spain	IEEE Transactions on Network and Service Management	9 Dec 2021	2021	18	4	3987	4001
School of Information and Control Engineering, China University of Mining and Technology, Xuzhou, China; School of Information and Control Engineering, China University of Mining and Technology, Xuzhou, China; School of Information and Control Engineering, China University of Mining and Technology, Xuzhou, China; School of Computer Science and Engineering, South China University of Technology, Guangzhou, China	IEEE Geoscience and Remote Sensing Letters	10 Jan 2022	2022	19		1	5
Yunnan Key Laboratory of Computer Technologies Application, Kunming University of Science and Technology, Kunming, China; Yunnan Key Laboratory of Computer Technologies Application, Kunming University of Science and Technology, Kunming, China; Yunnan Key Laboratory of Computer Technologies Application, Kunming University of Science and Technology, Kunming, China; Yunnan Key Laboratory of Computer Technologies Application, Kunming University of Science and Technology, Kunming, China; Yunnan Key Laboratory of Computer Technologies Application, Kunming University of Science and Technology, Kunming, China	IEEE Access	4 Jan 2021	2021	9		551	564
School of Information and Communication Engineering, Beijing University of Posts and Telecommunications, Beijing, China; School of Information and Communication Engineering, Beijing University of Posts and Telecommunications, Beijing, China	IEEE Access	21 Feb 2022	2022	10		18146	18155

College of Computer Science and Software Engineering, Shenzhen University, Shenzhen, China; College of Computer Science and Software Engineering, Shenzhen University, Shenzhen, China; College of Computer Science and Software Engineering, Shenzhen University, Shenzhen, China; College of Computer Science and Software Engineering, Shenzhen University, Shenzhen, China	IEEE Transactions on Geoscience and Remote Sensing	11 Feb 2022		2022	60		1	15
School of Information and Electronic Engineering, Zhejiang University of Science and Technology, Hangzhou, China; College of Computer Science and Technology, Zhejiang University, Hangzhou, China; College of Computer Science and Technology, Zhejiang University, Hangzhou, China; School of Management, Huzhou University, Huzhou, China; Hangzhou Vocational and Technical College, Hangzhou, China; College of Computer Science and Technology, Zhejiang University, Hangzhou, China; College of Computer Science and Technology, Zhejiang University, Hangzhou, China; School of Information and Electronic Engineering, Zhejiang University of Science and Technology, Hangzhou, China	IEEE Access	13 Apr 2021		2021	9		54518	54529
School of Electrical Engineering, Guangxi University, Nanning, China; School of Electrical Engineering, Institute of Artificial Intelligence, Guangxi University, Nanning, China; School of Electrical Engineering, Guangxi University, Nanning, China; School of Electrical Engineering, Guangxi University, Nanning, China; School of Software Engineering, South China University of Technology, Guangzhou, China; Department of Computing, Hong Kong Polytechnic University, Hong Kong, China	IEEE/ACM Transactions on Audio, Speech, and Language Processing	8 Feb 2022		2022	30		696	694
Department of Electrical and Information Engineering, Polytechnic University of Bari, Bari, Italy; Department of Electrical and Information Engineering, Polytechnic University of Bari, Bari, Italy; Department of Electrical and Information Engineering, Polytechnic University of Bari, Bari, Italy	IEEE Access	1 Aug 2022		2022	10		79141	79151
School of Computer Science and Engineering, Southeast University, Nanjing, China; School of Computer Science and Engineering, Southeast University, Nanjing, China; School of Computer Science and Engineering, Southeast University, Nanjing, China; School of Computer Science and Engineering, Southeast University, Nanjing, China	IEEE Transactions on Cybernetics	16 Jun 2022		2022	52	6	4459	4471
School of Automation Science and Electrical Engineering, Beihang University, Beijing, China; School of Automation Science and Electrical Engineering, Beihang University, Beijing, China; School of Automation Science and Electrical Engineering, Beihang University, Beijing, China	IEEE Transactions on Industrial Informatics	15 Dec 2022		2023	19	2	1912	1922
Business Intelligence Lab, Baidu Research, National Engineering Laboratory of Deep Learning Technology and Application, Beijing, China; SKLSDE Lab, Beihang University, Beijing, China; Beijing University of Posts and Telecommunications, Beijing, China; Business Intelligence Lab, Baidu Research, National Engineering Laboratory of Deep Learning Technology and Application, Beijing, China; Business Intelligence Lab, Baidu Research, National Engineering Laboratory of Deep Learning Technology and Application, Beijing, China; Management Science and Information Systems Department, Rutgers University, Newark, USA	IEEE Transactions on Knowledge and Data Engineering	11 Jan 2022		2022	34	2	723	735
Nature Inspired Computational Intelligence Lab, Ontario Tech University, Oshawa, ON, Canada; Nature Inspired Computational Intelligence Lab, Ontario Tech University, Oshawa, ON, Canada; Department of Pathology and Molecular Medicine, McMaster University, Hamilton, ON, Canada; Laboratory for Knowledge Inference in Medical Image Analysis, University of Waterloo, Waterloo, ON, Canada; Laboratory for Knowledge Inference in Medical Image Analysis, University of Waterloo, Waterloo, ON, Canada	IEEE Transactions on Evolutionary Computation	30 Jan 2023		2023	27	1	52	66
School of Electrical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, South Korea; Department of Network Business, Samsung Electronics, Suwon, South Korea; School of Computing, Gachon University, Seongnam, South Korea; School of Computer Science and Engineering, Nanyang Technological University, Singapore; School of Electrical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	IEEE Internet of Things Journal	7 May 2021		2021	8	10	8259	8278
Hyundai Motor Group, AIRS Company, Seoul, South Korea; LG Electronics, Artificial Intelligence Laboratory, Seoul, South Korea; School of Computing, Gachon University, Seongnam, South Korea; Department of Computer Engineering, Sogang University, Seoul, South Korea	IEEE Access	7 Jun 2021		2021	9		80405	80414
School of Mathematics and Statistics, Huazhong University of Science and Technology, Wuhan, China; School of Mathematics and Statistics, Huazhong University of Science and Technology, Wuhan, China; School of Mathematics and Statistics, Huazhong University of Science and Technology, Wuhan, China; School of Mathematics and Statistics, Huazhong University of Science and Technology, Wuhan, China; Discipline of Business Analytics, The University of Sydney Business School, The University of Sydney, Sydney, NSW, Australia	IEEE Transactions on Geoscience and Remote Sensing	4 Jan 2022		2022	60		1	13
Ningbo Institute of Technology, Zhejiang University, Ningbo, China; State Key Laboratory for Management and Control of Complex Systems, Institute of Automation, Chinese Academy of Sciences, Beijing, China; Networked Value Systems Research Group, School of Technology and Innovations, University of Vaasa, Vaasa, Finland; State Key Laboratory for Management and Control of Complex Systems, Institute of Automation, Chinese Academy of Sciences, Beijing, China; State Key Laboratory for Management and Control of Complex Systems, Institute of Automation, Chinese Academy of Sciences, Beijing, China; State Key Laboratory for Management and Control of Complex Systems, Institute of Automation, Chinese Academy of Sciences, Beijing, China	IEEE Transactions on Computational Social Systems	1 Aug 2022		2022	9	4	1060	1074
Department of Electrical Engineering and Computer Science, Advanced Imaging and Collaborative Information Processing Group, The University of Tennessee, Knoxville, TN, USA; Department of Electrical Engineering and Computer Science, Advanced Imaging and Collaborative Information Processing Group, The University of Tennessee, Knoxville, TN, USA; Applied Research LLC, Rockville, MD, USA; Department of Complexity of Science and Engineering, The University of Tokyo, Tokyo, Japan; Univ. Grenoble Alpes, Inria, CNRS, Grenoble INP, LJK, Grenoble, France	IEEE Transactions on Geoscience and Remote Sensing	4 Jan 2022		2022	60		1	18
Department of Electrical and Computer Engineering, Automation and Systems Research Institute, Seoul National University, Seoul, South Korea; Department of Electrical and Computer Engineering, Automation and Systems Research Institute, Seoul National University, Seoul, South Korea; Department of Electrical and Computer Engineering, Automation and Systems Research Institute, Seoul National University, Seoul, South Korea; Department of Electrical and Computer Engineering, Automation and Systems Research Institute, Seoul National University, Seoul, South Korea	IEEE Access	21 Dec 2022		2022	10		130507	130517
Department of Computer Science and Engineering, Texas A&M University, College Station, TX, USA; NEC Laboratories America, Princeton, NJ, USA; Department of Computer Science and Engineering, Texas A&M University, College Station, TX, USA; Department of Computer Science and Engineering, Texas A&M University, College Station, TX, USA; Department of Computer Science and Engineering, Texas A&M University, College Station, TX, USA; NEC Laboratories America, Princeton, NJ, USA; Department of Computer Science, Rice University, Houston, TX, USA	IEEE Transactions on Neural Networks and Learning Systems	1 Jun 2022		2022	33	6	2365	2377
Department of Technology, Operation and Statistics, Stern School of Business, New York University, New York, NY, USA; Department of Technology, Operation and Statistics, Stern School of Business, New York University, New York, NY, USA	IEEE Transactions on Knowledge and Data Engineering	7 Dec 2022		2023	35	1	321	334
Guangdong Provincial Key Laboratory for Urbanization and Geo-Simulation, School of Geography and Planning, Sun Yat-sen University, Guangzhou, China; Guangdong Provincial Key Laboratory for Urbanization and Geo-Simulation, School of Geography and Planning, Sun Yat-sen University, Guangzhou, China; Surveying and Mapping Institute Lands and Resource Department of Guangdong Province, Guangzhou, China; Surveying and Mapping Institute Lands and Resource Department of Guangdong Province, Guangzhou, China	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	4 Apr 2023		2023	16		3060	3069
School of Electrical and Information Engineering, Tianjin University, Tianjin, China; School of Electrical and Information Engineering, Tianjin University, Tianjin, China; Center for Future Media, University of Electronic Science and Technology of China, Chengdu, China; School of Electrical and Information Engineering, Tianjin University, Tianjin, China; School of Electrical and Information Engineering, Tianjin University, Tianjin, China	IEEE Journal of Biomedical and Health Informatics	17 Jan 2022		2022	26	1	27	35
National Center for Public Credit Information, Beijing, China	IEEE Access	25 May 2023		2023	11		49367	49377
Faculty of Innovation Engineering, School of Computer Science and Engineering, Macau University of Science and Technology, Macau, China; Faculty of Innovation Engineering, School of Computer Science and Engineering, Macau University of Science and Technology, Macau, China; Faculty of Innovation Engineering, School of Computer Science and Engineering, Macau University of Science and Technology, Macau, China; National Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences, Beijing, China; Guangdong Key Laboratory of AI and Multi-Modal Data Processing, BNU-HKBU United International College, and the BNU-UIC Institute of Artificial Intelligence and Future Networks, Beijing Normal University (BNU Zhuhai), Zhuhai, Guangdong, China; Lingnan University, Hong Kong, China	IEEE Transactions on Intelligent Transportation Systems	11 Jul 2022		2022	23	7	9654	9664
School of Business, Hohai University, Nanjing, China; School of Business, Hohai University, Nanjing, China; China Tobacco Jiangsu Industrial Company Ltd., Nanjing, China; Guangdong Provincial Key Laboratory of Brain-Inspired Intelligent Computation, Southern University of Science and Technology, Shenzhen, China	IEEE Access	8 Aug 2022		2022	10		80249	80263
School of Geography and Planning, Sun Yat-Sen University, Guangzhou, China; School of Geography and Planning, Sun Yat-Sen University, Guangzhou, China; School of Computer Science, Wuhan University, Wuhan, China; State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, Wuhan, China; Resource Department of Guangdong Province, Department of Natural Resources of Guangdong Province, Surveying and Mapping Institute Lands, Guangzhou, China	IEEE Transactions on Geoscience and Remote Sensing	21 Apr 2021		2021	59	5	4287	4306
Shanxi Key Laboratory of Fully Mechanized Coal Mining Equipment, College of Mechanical and Vehicle Engineering, Taiyuan University of Technology, Taiyuan, China; Shanxi Key Laboratory of Fully Mechanized Coal Mining Equipment, College of Mechanical and Vehicle Engineering, Taiyuan University of Technology, Taiyuan, China; Shanxi Key Laboratory of Fully Mechanized Coal Mining Equipment, College of Mechanical and Vehicle Engineering, Taiyuan University of Technology, Taiyuan, China	IEEE Access	29 Nov 2022		2022	10		123007	123019
Graduate School of Information Science Technology, Osaka University, Suita, Japan	IEEE Internet of Things Journal	6 Jan 2022		2022	9	2	1024	1036
School of Geography, Geomatics and Planning, Jiangsu Normal University, Xuzhou, China; State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, Wuhan, China; Jiangsu Key Laboratory of Resources and Environmental Information Engineering, School Environment and Spatial Information and China University of Mining and Technology, Xuzhou, China; School of Geography, Geomatics and Planning, Jiangsu Normal University, Xuzhou, China	IEEE Transactions on Geoscience and Remote Sensing	25 Feb 2022		2022	60		1	14
Faculty of Electronic Information and Electrical Engineering, Dalian University of Technology, Dalian, Liaoning, China; Faculty of Electronic Information and Electrical Engineering, Dalian University of Technology, Dalian, Liaoning, China; College of Intelligent Systems Science and Engineering, Harbin Engineering University, Harbin, Heilongjiang, China; Key Laboratory of Intelligent Control and Optimization for Industrial Equipment of Ministry of Education, and the Professional Technology Innovation Center of Distributed Control for Industrial Equipment of Liaoning Province, Dalian University of Technology, Dalian, Liaoning, China	IEEE Transactions on Cognitive and Developmental Systems	8 Jun 2023		2023	15	2	700	711

School of Computer Science and Technology, Huazhong University of Science and Technology, Wuhan, China; Key Laboratory of Water Resources Big Data Technology of Ministry of Water Resources and the School of Computer and Information, Hohai University, Nanjing, China; Department of Computing, The Hong Kong Polytechnic University, Hong Kong; School of Physics, University of Electronic Science and Technology of China, Chengdu, China; Department of Computing, The Hong Kong Polytechnic University, Hong Kong; Department of Computing, The Hong Kong Polytechnic University, Hong Kong; School of Computer Science and Technology, Huazhong University of Science and Technology, Wuhan, China	IEEE Internet of Things Journal	6 Jan 2022	2022	9	2	939	963
Department of Electronic Convergence Engineering, Kwangwoon University, Seoul, South Korea; Department of Electronic Convergence Engineering, Kwangwoon University, Seoul, South Korea; Department of Electronic Convergence Engineering, Kwangwoon University, Seoul, South Korea; Department of Electronic Convergence Engineering, Kwangwoon University, Seoul, South Korea; Department of Electrical and Computer Engineering, Sungkyunkwan University, Suwon, South Korea; Department of Electronic Convergence Engineering, Kwangwoon University, Seoul, South Korea	IEEE Access	15 Mar 2022	2022	10		27084	27095
Department of Software and Information Technology Engineering, Ecole de technologie superieure (ETS), University of Quebec, Montreal, QC, Canada; Department of Computer Science and Mathematics, Lebanese American University, Beirut, Lebanon; Department of Software and Information Technology Engineering, Ecole de technologie superieure (ETS), University of Quebec, Montreal, QC, Canada; Department of Software and Information Technology Engineering, Ecole de technologie superieure (ETS), University of Quebec, Montreal, QC, Canada	IEEE/ACM Transactions on Networking	15 Jun 2021	2021	29	3	1408	1421
Institute of Cyber-Systems and Control, Zhejiang University, Hangzhou, China; Institute of Cyber-Systems and Control, Zhejiang University, Hangzhou, China; State Key Laboratory of Industrial Control Technology, Zhejiang University, Hangzhou, China; Department of Software, Chongqing University of Arts and Sciences, Chongqing, China; College of Control Science and Engineering, Zhejiang University, Hangzhou, China; Fuxi Tech, NetEase Corporation, Hangzhou, China	IEEE Transactions on Systems, Man, and Cybernetics: Systems	17 May 2022	2022	52	6	3419	3430
School of Software Engineering, South China University of Technology, Guangzhou, China; School of Software Engineering, South China University of Technology, Guangzhou, China; Department of Biostatistics and Health Informatics, King's College London, London, U.K.; School of Software Engineering, South China University of Technology, Guangzhou, China; Department of Computing, The Hong Kong Polytechnic University, Hong Kong	IEEE Transactions on Multimedia	30 Jul 2021	2021	23		2520	2532
Department of Computer Science, Key Laboratory of the Ministry of Education for Embedded System and Service Computing, Tongji University, Shanghai, China; Department of Computer Science, Key Laboratory of the Ministry of Education for Embedded System and Service Computing, Tongji University, Shanghai, China; Department of Computer Science, Key Laboratory of the Ministry of Education for Embedded System and Service Computing, Tongji University, Shanghai, China; Department of Computer Science, Key Laboratory of the Ministry of Education for Embedded System and Service Computing, Tongji University, Shanghai, China; Department of Computer Science, Key Laboratory of the Ministry of Education for Embedded System and Service Computing, Tongji University, Shanghai, China	IEEE Transactions on Computational Social Systems	1 Apr 2021	2021	8	2	398	409
Department of Computer Science and Engineering, Chung-Ang University, Seoul, South Korea; Department of Computer Science and Engineering, Chung-Ang University, Seoul, South Korea	IEEE Access	23 Dec 2022	2022	10		131456	131468
Department of Computer Science and Technology, MOEKLINNS, Xi'an Jiaotong University, Xi'an, China; National Engineering Laboratory of Big Data Analytics, School of Continuing Education, Xi'an Jiaotong University, Xi'an, China; Department of Computer Science and Technology, National Engineering Laboratory of Big Data Analytics, Xi'an Jiaotong University, Xi'an, China; Department of Computer Science and Technology, MOEKLINNS, Xi'an Jiaotong University, Xi'an, China; School of Computer Science and Engineering, Southeast University, Nanjing, China	IEEE Transactions on Neural Networks and Learning Systems	31 Aug 2021	2021	32	9	3846	3857
School of Computer and Electronic Information, Nanjing Normal University, Nanjing, China; School of Computer and Electronic Information, Nanjing Normal University, Nanjing, China; School of Computer Science and Engineering, Nanjing University of Science and Technology, Nanjing, China	IEEE Transactions on Circuits and Systems for Video Technology	5 Jan 2023	2023	33	1	1	15
Guangdong Provincial Key Laboratory for Urbanization and Geo-Simulation, School of Geography and Planning, Sun Yat-sen University, Guangzhou, China; Guangdong Provincial Key Laboratory for Urbanization and Geo-Simulation, School of Geography and Planning, Sun Yat-sen University, Guangzhou, China; Lands and Resource Department of Guangdong Province, Surveying and Mapping Institute, Guangzhou, China; Lands and Resource Department of Guangdong Province, Surveying and Mapping Institute, Guangzhou, China; Guangdong Provincial Key Laboratory for Urbanization and Geo-Simulation, School of Geography and Planning, Sun Yat-sen University, Guangzhou, China	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	16 Mar 2023	2023	16		2654	2667
School of Automation Engineering and the School of Artificial Intelligence, Optics, and Electronics (IOPE), Northwestern Polytechnical University, Xi'an, China; School of Automation Engineering, Northwestern Polytechnical University, Xi'an, China; School of Artificial Intelligence, Optics, and Electronics (IOPE), Northwestern Polytechnical University, Xi'an, China	IEEE Transactions on Geoscience and Remote Sensing	15 Feb 2022	2022	60		1	12
School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an, China; School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an, China; School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an, China; School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an, China; School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an, China; School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an, China	IEEE Transactions on Instrumentation and Measurement	23 Dec 2020	2021	70		1	14
College of Cyber Security/College of Information Science and Technology, Jinan University, Guangzhou, China; School of Cyber Science and Technology, Beihang University, Beijing, China; Beijing Key Laboratory of Network Technology, Beihang University, Beijing, China; Information Center, National Computer Emergency Technical Team/Coordination Center of China, Beijing, China; Beijing Key Laboratory of Network Technology, Beihang University, Beijing, China	IEEE Transactions on Cybernetics	17 Feb 2021	2021	51	3	1506	1518
School of Innovation, Design and Engineering, Mälardalen University, Västerås, Sweden; School of Innovation, Design and Engineering, Mälardalen University, Västerås, Sweden; Department of Economics and Business Analysis, Aracata University of Applied Sciences, Helsinki, Finland; Department of Computer Science and Engineering, Alternative Computing Technologies Lab, University of California at San Diego, La Jolla, CA, USA; School of Innovation, Design and Engineering, Mälardalen University, Västerås, Sweden; School of Innovation, Design and Engineering, Mälardalen University, Västerås, Sweden; Department of Computer Science and Engineering, Alternative Computing Technologies Lab, University of California at San Diego, La Jolla, CA, USA	IEEE Transactions on Systems, Man, and Cybernetics: Systems	18 Jul 2022	2022	52	8	5222	5234
Applied College, Taibah University, Medina, Saudi Arabia; Applied College, Taibah University, Medina, Saudi Arabia; Applied College, Taibah University, Medina, Saudi Arabia	IEEE Access	2 May 2022	2022	10		44869	44880
National-Regional Key Technology Engineering Laboratory for Medical Ultrasound, Guangdong Key Laboratory for Biomedical Measurements and Ultrasound Imaging, School of Biomedical Engineering, Health Science Center, Shenzhen University, Shenzhen, China; National-Regional Key Technology Engineering Laboratory for Medical Ultrasound, Guangdong Key Laboratory for Biomedical Measurements and Ultrasound Imaging, School of Biomedical Engineering, Health Science Center, Shenzhen University, Shenzhen, China; College of Computer Science and Software Engineering, Shenzhen University, Shenzhen, China; College of Management, Shenzhen University, Shenzhen, China; Institute of Information Science, Beijing Jiaotong University, Beijing, China; National-Regional Key Technology Engineering Laboratory for Medical Ultrasound, Guangdong Key Laboratory for Biomedical Measurements and Ultrasound Imaging, School of Biomedical Engineering, Health Science Center, Shenzhen University, Shenzhen, China	IEEE Journal of Biomedical and Health Informatics	11 Aug 2022	2022	26	8	4090	4099
School of Electronics and Information, Northwestern Polytechnical University, Xi'an, China; School of Electronics and Information, Northwestern Polytechnical University, Xi'an, China; Department of Computer Science and Software Engineering, Swinburne University of Technology, Hawthorn, VIC, Australia; School of Electronics and Information, Northwestern Polytechnical University, Xi'an, China; Department of Embedded Systems Engineering, Incheon National University, Incheon, South Korea	IEEE Transactions on Geoscience and Remote Sensing	12 Apr 2022	2022	60		1	20
School of Software Engineering, South China University of Technology, Guangzhou, China; School of Software Engineering, South China University of Technology, Guangzhou, China; Department of Information Systems, The City University of Hong Kong, Hong Kong; Department of Computer Science and Engineering, The Chinese University of Hong Kong, Hong Kong; Department of Computing, The Hong Kong Polytechnic University, Hong Kong	IEEE Transactions on Knowledge and Data Engineering	3 Apr 2023	2023	35	5	4852	4866
Department of Computer Science and Technology, State Key Laboratory for Novel Software Technology, Nanjing University, Nanjing, China; Department of Computer Science and Technology, State Key Laboratory for Novel Software Technology, Nanjing University, Nanjing, China; Department of Computer Science and Technology, State Key Laboratory for Novel Software Technology, Nanjing University, Nanjing, China; Department of Computer Science and Technology, State Key Laboratory for Novel Software Technology, Nanjing University, Nanjing, China; Department of Computer Science and Technology, State Key Laboratory for Novel Software Technology, Nanjing University, Nanjing, China	IEEE Transactions on Parallel and Distributed Systems	3 Jun 2021	2021	32	12	2953	2969
Huawei Turkey Research and Development Center, Istanbul, Turkey; Huawei Turkey Research and Development Center, Istanbul, Turkey; Huawei Turkey Research and Development Center, Istanbul, Turkey; Huawei Turkey Research and Development Center, Istanbul, Turkey; Wireless Advanced System and Competency Centre, Huawei Technologies Company Ltd., Ottawa, ON, Canada; Hangzhou Research Center, Huawei Technologies, Brijling, Hangzhou, China; Huawei Technologies Company Ltd., Ottawa, ON, Canada; Department of Electrical and Electronics Engineering, Bilkent University, Ankara, Turkey	IEEE Journal on Selected Areas in Communications	16 Dec 2022	2023	41	1	119	140
College of Big Data Information Engineering, Guizhou University, Guiyang, China; College of Big Data Information Engineering, Guizhou University, Guiyang, China; College of Big Data Information Engineering, Guizhou University, Guiyang, China	IEEE Access	12 Jul 2021	2021	9		94748	94755
Institute of Artificial Intelligence and Robotics, Xi'an Jiaotong University, Xi'an, China; Institute of Artificial Intelligence and Robotics, Xi'an Jiaotong University, Xi'an, China; Institute of Artificial Intelligence and Robotics, Xi'an Jiaotong University, Xi'an, China; Institute of Artificial Intelligence and Robotics, Xi'an Jiaotong University, Xi'an, China	IEEE Robotics and Automation Letters	31 Jan 2022	2022	7	2	2684	2691
Information Management Unit (IMU), Institute of Communication and Computer Systems (ICCS), National Technical University of Athens (NTUA), Zografou, Greece; Information Management Unit (IMU), Institute of Communication and Computer Systems (ICCS), National Technical University of Athens (NTUA), Zografou, Greece; Information Management Unit (IMU), Institute of Communication and Computer Systems (ICCS), National Technical University of Athens (NTUA), Zografou, Greece; Information Management Unit (IMU), Institute of Communication and Computer Systems (ICCS), National Technical University of Athens (NTUA), Zografou, Greece	IEEE Access	21 Jul 2021	2021	9		100677	100693
National Engineering Research Center of Power Generation Control and Safety, School of Energy and Environment, Southeast University, Nanjing, China; National Engineering Research Center of Power Generation Control and Safety, School of Energy and Environment, Southeast University, Nanjing, China; National Engineering Research Center of Power Generation Control and Safety, School of Energy and Environment, Southeast University, Nanjing, China; National Engineering Research Center of Power Generation Control and Safety, School of Energy and Environment, Southeast University, Nanjing, China; National Engineering Research Center of Power Generation Control and Safety, School of Energy and Environment, Southeast University, Nanjing, China	IEEE Transactions on Industrial Informatics	24 May 2023	2023	19	6	7355	7366
School of Computer Science and Technology, Shandong University of Finance and Economics, Jinan, China; College of Computer Science and Software Engineering, Shenzhen University, Shenzhen, China; College of Computer Science and Software Engineering, Shenzhen University, Shenzhen, China; WeBank AI, Shenzhen, China; School of Computer Science and Technology, Shandong University of Finance and Economics, Jinan, China; College of Computer Science and Software Engineering, Shenzhen University, Shenzhen, China; Department of Computer Science and Engineering, Hong Kong University of Science and Technology, Hong Kong, SAR, China	IEEE Transactions on Knowledge and Data Engineering	7 Jul 2022	2022	34	8	3629	3642
School of Information and Electronic Engineering, Shandong Technology and Business University, Yantai, China; Qingdao Vocational and Technical College of Hotel Management, Shandong Technology and Business University, Yantai, China; Co-Innovation Center of Shandong Colleges and Universities: Future Intelligent Computing, Shandong Technology and Business University, Yantai, China	IEEE Transactions on Geoscience and Remote Sensing	10 May 2023	2023	61		1	19
Key Laboratory of Intelligent Perception and Image Understanding of the Ministry of Education of China, International Research Center of Intelligent Perception and Computation, School of Artificial Intelligence, Xidian University, Xi'an, China; Key Laboratory of Intelligent Perception and Image Understanding of the Ministry of Education of China, International Research Center of Intelligent Perception and Computation, School of Artificial Intelligence, Xidian University, Xi'an, China; Key Laboratory of Intelligent Perception and Image Understanding of the Ministry of Education of China, International Research Center of Intelligent Perception and Computation, School of Artificial Intelligence, Xidian University, Xi'an, China; Key Laboratory of Intelligent Perception and Image Understanding of the Ministry of Education of China, International Research Center of Intelligent Perception and Computation, School of Artificial Intelligence, Xidian University, Xi'an, China; Key Laboratory of Intelligent Perception and Image Understanding of the Ministry of Education of China, International Research Center of Intelligent Perception and Computation, School of Artificial Intelligence, Xidian University, Xi'an, China	IEEE Transactions on Cybernetics	19 Sep 2022	2022	52	10	10556	10569
School of Information and Electronic Engineering, Shandong Technology and Business University, Yantai, China; School of Computer Science and Technology, Shandong Technology and Business University, Yantai, China; School of Computer Science and Technology, Shandong Technology and Business University, Yantai, China; School of Computer Science and Technology, Shandong Technology and Business University, Yantai, China; School of Information and Electronic Engineering, Shandong Technology and Business University, Yantai, China	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	13 Jun 2023	2023	16		5061	5076
School of Public Administration, Huazhong Agricultural University, Wuhan, China; School of Information and Safety Engineering, Zhongnan University of Economics and Law, Wuhan, China; School of Information and Safety Engineering, Zhongnan University of Economics and Law, Wuhan, China; School of Information and Safety Engineering, Zhongnan University of Economics and Law, Wuhan, China; Institute of Educational Sciences, Wuhan University, Wuhan, China	IEEE Access	7 May 2021	2021	9		67129	67142

Systems and Computing Engineering Department (COPPE-PESC), Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil; Systems and Computing Engineering Department (COPPE-PESC), Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil	IEEE Transactions on Learning Technologies	23 Mar 2021		2021	14	1	42	54
Department of Bioengineering, Lehigh University, Bethlehem, PA, USA; School of Computer Science and Technology, Nanjing University of Science and Technology, Nanjing, China; Department of Psychiatry and Behavioral Sciences, Stanford University, Stanford, CA, USA; Department of Psychiatry and Behavioral Sciences, Stanford University, Stanford, CA, USA; Mental Health Center and Psychiatric Laboratory, West China Hospital of Sichuan University, Chengdu, China; School of Automation, Guangdong University of Technology, Guangzhou, China; Skolkovo Institute of Science and Technology (SKOLTECH), Moscow, Russia	IEEE Transactions on Neural Networks and Learning Systems	3 Aug 2022		2022	33	8	3587	3597
State Key Lab of CAD&CG, Zhejiang University, Hangzhou, Zhejiang, China; Department of Sport Science, Zhejiang University, Hangzhou, Zhejiang, China; State Key Lab of CAD&CG, Zhejiang University, Hangzhou, Zhejiang, China; Department of Sport Science, Zhejiang University, Hangzhou, Zhejiang, China; Department of Sport Science, Zhejiang University, Hangzhou, Zhejiang, China; State Key Lab of CAD&CG, Zhejiang University, Hangzhou, Zhejiang, China	IEEE Transactions on Visualization and Computer Graphics	30 Jan 2023		2023	29	3	1719	1732
College of Mechanical and Electrical Engineering, North China Institute of Science and Technology, Langfang, China; College of Mechanical and Electrical Engineering, North China Institute of Science and Technology, Langfang, China; School of Mechanical Engineering, Hefei University of Technology, Hefei, China; School of Mechanical Engineering, Hefei University of Technology, Hefei, China	IEEE Access	6 Jan 2021		2021	9		2188	2200
Distributed Systems Group, Vienna University of Technology, Vienna, Austria; Business Application Group, Microsoft Development Center Copenhagen, Kongens Lyngby, Denmark; Distributed Systems Group, Vienna University of Technology, Vienna, Austria	IEEE Internet of Things Journal	21 Feb 2022		2022	9	5	3877	3888
Department of Electrical and Computer Engineering, National University of Singapore, Singapore; School of Computing, National University of Singapore, Singapore; School of Data Science, Shenzhen Research Institute of Big Data, The Chinese University of Hong Kong, Shenzhen, China	IEEE/ACM Transactions on Audio, Speech, and Language Processing	23 May 2023		2023	31		1968	1981
LIAS/ISAE-ENSMA, University of Poitiers, Poitiers, France; LIRIS, University of Lyon 1, Villeurbanne, France; LIRIS, University of Lyon 1, Villeurbanne, France; Lizeo IT, Lyon, France; Lizeo IT, Lyon, France	IEEE Transactions on Neural Networks and Learning Systems	27 Oct 2022		2022	33	11	6701	6711
Shandong Computer Science Center, Qilu University of Technology (Shandong Academy of Sciences), Jinan, China; Shandong Computer Science Center, Qilu University of Technology (Shandong Academy of Sciences), Jinan, China; Shandong Computer Science Center, Qilu University of Technology (Shandong Academy of Sciences), Jinan, China; Information Management and Artificial Intelligence, Zhejiang University of Finance and Economics, Hangzhou, China	IEEE Access	22 Mar 2022		2022	10		30080	30090
School of Automation Science and Engineering, Xi'an Jiaotong University, Xi'an, China; School of Automation Science and Engineering, Xi'an Jiaotong University, Xi'an, China; Department of Engineering, University of Massachusetts, Boston, MA, USA; School of Computer Science and Technology, Xi'an Jiaotong University, Xi'an, China	IEEE Transactions on Computational Social Systems	31 Jan 2023		2023	10	1	403	412
Department of Industrial and Manufacturing Engineering, The Pennsylvania State University, University Park, PA, USA; Department of Industrial and Manufacturing Engineering, The Pennsylvania State University, University Park, PA, USA; Steele Institute for Health Innovation, Gettysburg, Danville, PA, USA	IEEE Journal of Biomedical and Health Informatics	3 Jun 2021		2021	25	6	2215	2226
College of Digital Science, Prince of Songkla University, Hat Yai, Songkhla, Thailand; Division of Computational Science, Faculty of Science, Prince of Songkla University, Hat Yai, Songkhla, Thailand	IEEE Access	3 Oct 2022		2022	10		101889	101897
Department of Information Science and Technology, Qingdao University of Science and Technology, Qingdao, China; Department of Information Science and Technology, Qingdao University of Science and Technology, Qingdao, China; Faculty of Information Science and Engineering, Ocean University of China, Qingdao, China; Department of Information Science and Technology, Qingdao University of Science and Technology, Qingdao, China; Department of Industrial Engineering and Innovation Sciences, Eindhoven University of Technology, Eindhoven, The Netherlands; Department of Electrical and Computer Engineering, University of Victoria, Victoria, Canada	IEEE Internet of Things Journal	1 Jun 2023		2023	10	12	10532	10546
School of Information and Control Engineering, China University of Mining and Technology, Xuzhou, China; School of Information and Control Engineering, China University of Mining and Technology, Xuzhou, China; School of Computer and Information Engineering, Chuzhou University, Chuzhou, Anhui, China; Center of Wireless Communications, University of Oulu, Oulu, Finland	IEEE Internet of Things Journal	22 Sep 2022		2022	9	19	19501	19514
School of Software Engineering, Shenzhen Institute of Information Technology, Shenzhen, China; Business School, Southern University of Science and Technology, Shenzhen, China; College of Systems Engineering, National University of Defense Technology, Changsha, China; School of Public Management, Xiangtan University, Xiangtan, China	IEEE Access	28 Jan 2021		2021	9		15860	15871
Department of Accounting & Information Systems, College of Business & Economics, Qatar University, Doha, Qatar; Department of Accounting & Information Systems, College of Business & Economics, Qatar University, Doha, Qatar; Department of Computer Science, University of Swabi, Swabi, Pakistan	IEEE Access	19 Oct 2022		2022	10		109326	109339
Graduate School of Information Security, Korea Advanced Institute of Science and Technology (KAIST), Daehak-ro, Yuseong-gu, Daejeon, Republic of Korea; Department of Intelligent System Engineering, Cheju Halla University, Halladaehak-ro, Jeju-si, Republic of Korea; Graduate School of Information Security, Korea Advanced Institute of Science and Technology (KAIST), Daehak-ro, Yuseong-gu, Daejeon, Republic of Korea	IEEE Access	26 Oct 2021		2021	9		142449	142460
School of Information Engineering, Southwest University of Science and Technology, Mianyang, China; School of Information Engineering, Southwest University of Science and Technology, Mianyang, China; School of Computer Science and Engineering, Nanjing University of Science and Technology, Nanjing, China; State Key Laboratory of NBC Protection for Civilian, Beijing, China; School of Information Engineering, Southwest University of Science and Technology, Mianyang, China	IEEE Transactions on Multimedia	9 Aug 2022		2022	24		3882	3895
Faculty of Information Technology, Beijing Key Laboratory of Multimedia and Intelligent Software Technology, Beijing Artificial Intelligence Institute, Beijing University of Technology, Beijing, China; Faculty of Information Technology, Beijing Key Laboratory of Multimedia and Intelligent Software Technology, Beijing Artificial Intelligence Institute, Beijing University of Technology, Beijing, China; The University of Sydney Business School, Discipline of Business Analytics, The University of Sydney, Camperdown, NSW, Australia; Faculty of Information Technology, Beijing Key Laboratory of Multimedia and Intelligent Software Technology, Beijing Artificial Intelligence Institute, Beijing University of Technology, Beijing, China; Faculty of Information Technology, Beijing Key Laboratory of Multimedia and Intelligent Software Technology, Beijing Artificial Intelligence Institute, Beijing University of Technology, Beijing, China; College of Computer Science and Technology, Faculty of Electronic Information and Electrical Engineering, Dalian University of Technology, Dalian, China	IEEE Transactions on Multimedia	17 Dec 2020		2021	23		216	227
Key Laboratory of Computer Network and Information Integration (Ministry of Education), School of Computer Science and Engineering, Southeast University, Nanjing, China; Key Laboratory of Computer Network and Information Integration (Ministry of Education), School of Computer Science and Engineering, Southeast University, Nanjing, China; Key Laboratory of Computer Network and Information Integration (Ministry of Education), School of Computer Science and Engineering, Southeast University, Nanjing, China; State Key Laboratory for Novel Software Technology, Nanjing University, Nanjing, China; Key Laboratory of Computer Network and Information Integration (Ministry of Education), School of Computer Science and Engineering, Southeast University, Nanjing, China	IEEE Transactions on Information Forensics and Security	13 Sep 2022		2022	17		3139	3150
Department of Computer Science and Engineering, The Ohio State University, Columbus, OH, USA; Department of Computer Science and Engineering, Center for Cognitive and Brain Sciences, The Ohio State University, Columbus, OH, USA	IEEE/ACM Transactions on Audio, Speech, and Language Processing	10 Apr 2023		2023	31		1360	1370
Aerospace Information Research Institute, Chinese Academy of Sciences, Beijing, China; Aerospace Information Research Institute, Chinese Academy of Sciences, Beijing, China; Aerospace Information Research Institute, Chinese Academy of Sciences, Beijing, China; Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences, Jilin, China; Aerospace Information Research Institute, Chinese Academy of Sciences, Beijing, China	IEEE Transactions on Geoscience and Remote Sensing	31 Mar 2022		2022	60		1	13
School of Artificial Intelligence, Optics and Electronics (IOPE), Northwestern Polytechnical University, Xi’an, China; Chinese Academy of Sciences, Xi’an Institute of Optics and Precision Mechanics, Xi’an, China; School of Artificial Intelligence, Optics and Electronics (IOPE), Northwestern Polytechnical University, Xi’an, China	IEEE Transactions on Geoscience and Remote Sensing	17 Jan 2022		2022	60		1	14
State Key Laboratory of Integrated Services Networks, School of Telecommunications Engineering, Xidian University, Shaanxi, Xi'an, China; State Key Laboratory of Integrated Services Networks, School of Telecommunications Engineering, Xidian University, Shaanxi, Xi'an, China; State Key Laboratory of Integrated Services Networks, School of Telecommunications Engineering, Xidian University, Shaanxi, Xi'an, China; Chongqing Key Laboratory of Image Cognition, Chongqing University of Posts and Telecommunications, Chongqing, China	IEEE Transactions on Image Processing	12 Jul 2022		2022	31		4637	4650
ISM University of Management and Economics, Vilnius, Lithuania; BI Norwegian Business School, Oslo, Norway; ISM University of Management and Economics, Vilnius, Lithuania; ISM University of Management and Economics, Vilnius, Lithuania; ISM University of Management and Economics, Vilnius, Lithuania	IEEE Transactions on Engineering Management	3 Nov 2022		2022	69	6	3339	3351
National Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences, Beijing, China; National Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences, Beijing, China; National Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences, Beijing, China; School of Information and Electronic Engineering, Shandong Technology and Business University, Yantai, China; Beijing Institute of Tracking and Telecommunications Technology (BITTT), Beijing, China; Department of Electrical Engineering and Computer Science, Northwestern University, Evanston, IL, USA; National Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences, Beijing, China	IEEE Transactions on Image Processing	5 Jul 2021		2021	30		6050	6065
LIRIS, CNRS UMR5205, University of Lyon1, Lyon, France; Ibn Khaldoun University, Tienet, Algeria; State Railway of Thailand (SRT), Bangkok, Thailand	IEEE Transactions on Knowledge and Data Engineering	29 Apr 2022		2022	34	6	2899	2911
School of Computer Science and Technology, University of Chinese Academy of Sciences, Beijing, China; Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China; School of Computer Science and Technology, University of Chinese Academy of Sciences, Beijing, China; School of Computer Science and Technology, Beijing University of Posts and Telecommunications, Beijing, China; School of Engineering Science, University of Chinese Academy of Sciences, Beijing, China; School of Computer Science and Technology, University of Chinese Academy of Sciences, Beijing, China	IEEE Transactions on Image Processing	5 May 2023		2023	32		2620	2635
The 54th Research Institute of China Electronics Technology Group Corporation, Shijiazhuang, China; Key Laboratory of Intelligent Perception and Image Understanding of Ministry of Education, International Research Center for Intelligent Perception and Computation, Joint International Research Laboratory of Intelligent Perception and Computation, School of Artificial Intelligence, Xidian University, Xi'an, China; Key Laboratory of Intelligent Perception and Image Understanding of Ministry of Education, International Research Center for Intelligent Perception and Computation, Joint International Research Laboratory of Intelligent Perception and Computation, School of Artificial Intelligence, Xidian University, Xi'an, China; Key Laboratory of Intelligent Perception and Image Understanding of Ministry of Education, International Research Center for Intelligent Perception and Computation, Joint International Research Laboratory of Intelligent Perception and Computation, School of Artificial Intelligence, Xidian University, Xi'an, China; The 54th Research Institute of China Electronics Technology Group Corporation, Shijiazhuang, China	IEEE Access	17 May 2021		2021	9		70650	70661
Department of Electronics and Communication Engineering, Aliah University, Kolkata, India; Department of Mining Machinery Engineering, Indian Institute of Technology (ISM), Dhanbad, Dhanbad, India; Department of Electrical Engineering, RCC Institute of Information Technology, Kolkata, India	IEEE Access	13 Apr 2022		2022	10		37811	37828
Department of Computer Science and Engineering, Louisiana State University, Baton Rouge, LA, USA; Department of Computer Science and Engineering, Louisiana State University, Baton Rouge, LA, USA; Department of Computer Science and Engineering, Louisiana State University, Baton Rouge, LA, USA	IEEE Transactions on Software Engineering	9 Dec 2022		2022	48	12	5148	5157

School of Electronics and Information Engineering, Harbin Institute of Technology, Harbin, China; School of Electronics and Information Engineering, Harbin Institute of Technology, Harbin, China; School of Electronics and Information Engineering, Harbin Institute of Technology, Harbin, China	IEEE Transactions on Geoscience and Remote Sensing	26 Oct 2021		2021	59	11	9633	9645
Department of Technology of Computers and Communications, Hyperspectral Computing Laboratory, University of Extremadura, Cáceres, Spain; Department of Technology of Computers and Communications, Hyperspectral Computing Laboratory, University of Extremadura, Cáceres, Spain; Department of Technology of Computers and Communications, Hyperspectral Computing Laboratory, University of Extremadura, Cáceres, Spain; Department of Technology of Computers and Communications, Hyperspectral Computing Laboratory, University of Extremadura, Cáceres, Spain; Department of Technology of Petroleum (East China), Qingdao, China; Department of Technology of Computers and Communications, Hyperspectral Computing Laboratory, University of Extremadura, Cáceres, Spain; Department of Technology of Computers and Communications, Hyperspectral Computing Laboratory, University of Extremadura, Cáceres, Spain	IEEE Transactions on Geoscience and Remote Sensing	22 Mar 2022		2022	60		1	13
School of Automation, Central South University, Changsha, China; School of Automation, Central South University, Changsha, China; School of Automation, Central South University, Changsha, China; School of Automation, Central South University, Changsha, China	IEEE Geoscience and Remote Sensing Letters	21 Mar 2023		2023	20		1	5
CAS Key Laboratory of Molecular Imaging, Institute of Automation, Chinese Academy of Sciences, Beijing, China; Ultrasound Medical Center, Lanzhou University Second Hospital, Lanzhou, China; Ultrasound Medical Center, Lanzhou University Second Hospital, Lanzhou, China; CAS Key Laboratory of Molecular Imaging, Institute of Automation, Chinese Academy of Sciences, Beijing, China; Ultrasound Medical Center, Lanzhou University Second Hospital, Lanzhou, China; CAS Key Laboratory of Molecular Imaging, Institute of Automation, Chinese Academy of Sciences, Beijing, China	IEEE Transactions on Medical Imaging	3 Apr 2023		2023	42	4	996	1008
College of Intelligent Technology and Engineering, Chongqing University of Science and Technology, Chongqing, China; College of Intelligent Technology and Engineering, Chongqing University of Science and Technology, Chongqing, China; College of Intelligent Technology and Engineering, Chongqing University of Science and Technology, Chongqing, China; College of Intelligent Technology and Engineering, Chongqing University of Science and Technology, Chongqing, China; Institute of Big Data and Optimization, Chongqing College of Electronic Engineering, Chongqing, China; College of Intelligent Technology and Engineering, Chongqing University of Science and Technology, Chongqing, China	IEEE Transactions on Geoscience and Remote Sensing	31 Jan 2023		2023	61		1	13
National Key Laboratory of Remote Sensing Information and Image Analysis Technology, Beijing Research Institute of Uranium Geology, Beijing, China; National Key Laboratory of Remote Sensing Information and Image Analysis Technology, Beijing Research Institute of Uranium Geology, Beijing, China; Zachry Department of Civil and Environmental Engineering, Texas A&M University, College Station, TX, USA; Iflytek Intelligent Information Technology Company, Ltd., Hefei, China; National Key Laboratory of Remote Sensing Information and Image Analysis Technology, Beijing Research Institute of Uranium Geology, Beijing, China; National Key Laboratory of Remote Sensing Information and Image Analysis Technology, Beijing Research Institute of Uranium Geology, Beijing, China	IEEE Geoscience and Remote Sensing Letters	30 Dec 2021		2022	19		1	5
School of Automation, China University of Geosciences, Wuhan, China; School of Automation, China University of Geosciences, Wuhan, China; School of Mechanical Engineering and Electronic Information, China University of Geosciences, Wuhan, China; Faculty of Engineering, China University of Geosciences, Wuhan, China	IEEE Transactions on Geoscience and Remote Sensing	21 Apr 2022		2022	60		1	13
State Key Laboratory of Integrated Service Network, Xidian University, Xi'an, China; State Key Laboratory of Integrated Service Network, Xidian University, Xi'an, China; Beijing Electronic Science and Technology Institute, Beijing, China; State Key Laboratory of Integrated Service Network, Xidian University, Xi'an, China; State Key Laboratory of Integrated Service Network, Xidian University, Xi'an, China; Department of Electronic and Computer Engineering, Mississippi State University, Starkville, MS, USA	IEEE Transactions on Geoscience and Remote Sensing	12 Apr 2022		2022	60		1	13
College of Oceanographer and Space Informatics, China University of Petroleum (East China), Qingdao, China; College of Control Science and Engineering, China University of Petroleum (East China), Qingdao, China; College of Business School, Chung-Ang University, Seoul, South Korea; College of Control Science and Engineering, China University of Petroleum (East China), Qingdao, China	IEEE Transactions on Circuits and Systems for Video Technology	5 Jun 2023		2023	33	6	2713	2723
National Engineering Laboratory for Big Data Analytics, School of Computer Science and Technology, Xi'an Jiaotong University, Xi'an, China; National Engineering Laboratory for Big Data Analytics, School of Computer Science and Technology, Xi'an Jiaotong University, Xi'an, China; Shaanxi Province Key Laboratory of Satellite and Terrestrial Network Technology Research and Development, School of Computer Science and Technology, Xi'an Jiaotong University, Xi'an, China; Shaanxi Province Key Laboratory of Satellite and Terrestrial Network Technology Research and Development, School of Computer Science and Technology, Xi'an Jiaotong University, Xi'an, China; Trustworthy Machine Learning Laboratory, Faculty of Engineering, School of Computer Science, The University of Sydney, Darlingtown, NSW, Australia	IEEE Transactions on Neural Networks and Learning Systems	5 Jan 2023		2023	34	1	15	27
Remote Sensing Technology Institute, German Aerospace Center, Wessling, Germany; Remote Sensing Technology Institute, German Aerospace Center, Wessling, Germany; Remote Sensing Technology Institute, German Aerospace Center, Wessling, Germany; Remote Sensing Technology Institute, German Aerospace Center, Wessling, Germany	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	20 Jun 2023		2023	16		5355	5373
SPKLSTN Lab, School of Computer Science and Technology, Xi'an Jiaotong University, Xi'an, Shaanxi, China; SPKLSTN Lab, School of Computer Science and Technology, Xi'an Jiaotong University, Xi'an, Shaanxi, China; National Engineering Lab of Big Data Analytics, School of Distance Education, Xi'an Jiaotong University, Xi'an, Shaanxi, China; SPKLSTN Lab, School of Computer Science and Technology, Xi'an Jiaotong University, Xi'an, Shaanxi, China; SPKLSTN Lab, School of Computer Science and Technology, Xi'an Jiaotong University, Xi'an, Shaanxi, China; SPKLSTN Lab, School of Computer Science and Technology, Xi'an Jiaotong University, Xi'an, Shaanxi, China	IEEE Transactions on Knowledge and Data Engineering	7 Dec 2022		2023	35	1	931	944
Department of Biomedical Engineering, Hefei University of Technology, Hefei, Anhui, China; Department of Biomedical Engineering, Hefei University of Technology, Hefei, Anhui, China; Department of Biomedical Engineering, Hefei University of Technology, Hefei, Anhui, China; Department of Biomedical Engineering, Hefei University of Technology, Hefei, Anhui, China; Department of Electrical and Computer Engineering, University of Macau, Macau, China; Department of Neurosurgery, Division of Life Sciences and Medicine, University of Science and Technology of China, Hefei, Anhui, China	IEEE Transactions on Affective Computing	28 Feb 2023		2023	14	1	382	393
School of Economics and Management, Harbin Engineering University, Harbin, China; School of Business and Management, Shanghai International Studies University, Shanghai, China; Business School, University of International Business and Economics, Beijing, China	IEEE Access	5 Jan 2021		2021	9		2516	2534
College of Communications Engineering, PLA Army Engineering University, Nanjing, China; College of Communications Engineering, PLA Army Engineering University, Nanjing, China; College of Communications Engineering, PLA Army Engineering University, Nanjing, China; College of Communications Engineering, PLA Army Engineering University, Nanjing, China	IEEE Internet of Things Journal	18 Nov 2022		2022	9	23	23705	23715
School of Computer Science and Technology, Guizhou University, Guiyang, China; School of Computer Science and Technology, Guizhou University, Guiyang, China; School of Computer Science and Technology, Guizhou University, Guiyang, China; School of Computer Science and Technology, Guizhou University, Guiyang, China; School of Computer Science and Technology, Guizhou University, Guiyang, China	IEEE Access	29 Mar 2021		2021	9		47230	47242
Graduate School of Science and Technology, Nara Institute Science and Technology, Ikoma, Japan; Graduate School of Science and Technology, Nara Institute Science and Technology, Ikoma, Japan; Graduate School of Science and Technology, Nara Institute Science and Technology, Ikoma, Japan	IEEE Access	7 Mar 2023		2023	11		21374	21386
ROSE Laboratory, School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore; School of Computer Science Engineering, Nanyang Technological University, Singapore; Department of Computer Science, Hong Kong Baptist University, Hong Kong; Department of Electrical Engineering, City University of Hong Kong, Hong Kong; School of Electronic and Information Engineering, South China University of Technology, Wuzhan Campus, Guangzhou, China; ROSE Laboratory, School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore	IEEE Transactions on Information Forensics and Security	24 Mar 2022		2022	17		1201	1213
School of Computer Science and Technology, Hainan University, Haikou, China; School of Computer Science and Technology, Hainan University, Haikou, China	IEEE Access	13 Mar 2023		2023	11		23268	23281
College of Computer Science and Software Engineering, Shenzhen University, Shenzhen, China; Department of Computer Information Science, State Key Laboratory of Internet of Things for Smart City, University of Macau, Macau, China; School of Intelligent Systems Engineering, Sun Yat-sen University, Guangzhou, China; Department of Computing, The Hong Kong Polytechnic University, Hong Kong; State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; School of Computer Science and Engineering, South China University of Technology, Guangzhou, China; College of Computer Science and Software Engineering, Shenzhen University, Shenzhen, China; College of Computer Science and Software Engineering, Shenzhen University, Shenzhen, China; Department of Computer Science and Engineering, The Chinese University of Hong Kong, Hong Kong	IEEE Transactions on Neural Networks and Learning Systems	30 Nov 2022		2022	33	12	7079	7090
School of Software Engineering, South China University of Technology, Guangzhou, China; School of Software Engineering, South China University of Technology, Guangzhou, China; School of Software Engineering, South China University of Technology, Guangzhou, China; School of Software Engineering, South China University of Technology, Guangzhou, China	IEEE Transactions on Affective Computing	28 Feb 2023		2023	14	1	196	210
School of Information Science and Learning Technologies, University of Missouri, Columbia, MO, USA	IEEE Access	5 Sep 2022		2022	10		90669	90689
Key Laboratory of Opto-Electronic Information Processing and the Shenyang Institute of Automation, Chinese Academy of Sciences, Shenyang, China; Shenyang Institute of Automation, Chinese Academy of Sciences, Shenyang, China; Shenyang Institute of Automation, Chinese Academy of Sciences, Shenyang, China; Shenyang Institute of Automation, Chinese Academy of Sciences, Shenyang, China; Shenyang Institute of Automation, Chinese Academy of Sciences, Shenyang, China; Shenyang Institute of Automation, Chinese Academy of Sciences, Shenyang, China	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	28 Jun 2022		2022	15		4861	4872
State Key Laboratory of Integrated Service Network, Xidian University, Xi'an, China; State Key Laboratory of Integrated Service Network, Xidian University, Xi'an, China; State Key Laboratory of Integrated Service Network, Xidian University, Xi'an, China; Beijing Electronic Science and Technology Institute, Beijing, China; State Key Laboratory of Integrated Service Network, Xidian University, Xi'an, China; State Key Laboratory of Integrated Service Network, Xidian University, Xi'an, China	IEEE Transactions on Geoscience and Remote Sensing	14 Jun 2022		2022	60		1	12
School of Information Science and Technology, Northwest University, Xi'an, China; College of Information Engineering, Northwest A&F University, Xi'an, China; School of Information Science and Technology, Northwest University, Xi'an, China; School of Mathematics, Northwest University, Xi'an, China; School of Information Science and Technology, Northwest University, Xi'an, China	IEEE Geoscience and Remote Sensing Letters	30 Mar 2022		2022	19		1	5
Jiangsu Key Laboratory of Spectral Imaging and Intelligent Sense, Nanjing University of Science and Technology, Nanjing, China; Jiangsu Key Laboratory of Spectral Imaging and Intelligent Sense, Nanjing University of Science and Technology, Nanjing, China; Jiangsu Key Laboratory of Spectral Imaging and Intelligent Sense, Nanjing University of Science and Technology, Nanjing, China; Jiangsu Key Laboratory of Spectral Imaging and Intelligent Sense, Nanjing University of Science and Technology, Nanjing, China	IEEE Transactions on Geoscience and Remote Sensing	20 Dec 2022		2022	60		1	18
Department of Biomedical Engineering, Washington University in St Louis, McKelvey School of Engineering, St Louis, MO, USA; SentiAR, Inc., St. Louis, MO, USA; SentiAR, Inc., St. Louis, MO, USA; SentiAR, Inc., St. Louis, MO, USA; Department of Biomedical Engineering, Washington University in St Louis, McKelvey School of Engineering, St Louis, MO, USA	IEEE Journal of Translational Engineering in Health and Medicine	21 Jan 2021		2021	9		1	14

School of Computer Science and Engineering, Nanjing University of Science and Technology, Nanjing, China; School of Computer Science and Engineering, Nanjing University of Science and Technology, Nanjing, China; School of Computer Science and Engineering, Nanjing University of Science and Technology, Nanjing, China; School of Computer Science and Engineering, Shandong University of Science and Technology, Shandong, China	IEEE Transactions on Circuits and Systems for Video Technology	4 Oct 2022		2022	32	10	6821	6834
Guangdong Provincial Key Laboratory of Computational Intelligence and Cyberspace Information, School of Computer Science and Engineering, South China University of Technology, Guangzhou, China; Guangdong Provincial Key Laboratory of Computational Intelligence and Cyberspace Information, School of Computer Science and Engineering, South China University of Technology, Guangzhou, China; School of Computer Science and Engineering, South China University of Technology, Guangzhou, China; College of Mathematic and Informatics, Fujian Normal University, Fuzhou, China; School of Computer Science and Engineering, South China University of Technology, Guangzhou, China; School of Computer Science and Engineering, South China University of Technology, Guangzhou, China	IEEE Internet of Things Journal	6 Sep 2021		2021	8	18	14127	14140
School of Electronic Information and Electrical Engineering Shanghai, Jiao Tong University, Shanghai, China; School of Electronic Information and Electrical Engineering Shanghai, Jiao Tong University, Shanghai, China; School of Electronic Information and Electrical Engineering Shanghai, Jiao Tong University, Shanghai, China	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	20 Apr 2023		2023	16		3805	3818
School of Computing, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea; School of Computing, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea; Department of Computer Science and Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan, Republic of Korea; School of Computing, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea	IEEE Access	14 Dec 2022		2022	10		128218	128231
Department of Information Engineering, Xijing University, Xi'an, China; Department of Information Engineering, Xijing University, Xi'an, China; Department of Information Engineering, Xijing University, Xi'an, China; CNPC Petroleum Pipeline Engineering Technology Research Institute, Xi'an, China	IEEE Transactions on Geoscience and Remote Sensing	29 Jul 2022		2022	60		1	10
Electrical and Computer Engineering Department, University of Tabriz, Tabriz, Iran; Electrical and Computer Engineering Department, University of Tabriz, Tabriz, Iran; Faculty of Business and Information Technology, University of Ontario Institute of Technology, Oshawa, ON, Canada	IEEE Access	22 Jan 2021		2021	9		12027	12043
School of Knowledge Science, Japan Advanced Institute of Science and Technology (JAIST), Nomi, Japan; Institute of Research and Development, Duy Tan University, Da Nang, Vietnam; Faculty of Economics and Management, Thai Binh Duong University, Nha Trang, Khanh Hoa, Vietnam; School of Knowledge Science, Japan Advanced Institute of Science and Technology (JAIST), Nomi, Japan; School of Knowledge Science, Japan Advanced Institute of Science and Technology (JAIST), Nomi, Japan	IEEE Access	22 Jun 2023		2023	11		61161	61172
OLD Laboratory, IGSIS, University of Sfax, Sfax, Tunisia; CS and AI Department, University of Jeddah, Jeddah, Saudi Arabia; College of Business, Al Ain University, Abu Dhabi, United Arab Emirates	IEEE Access	12 May 2023		2023	11		45255	45269
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, Guangzhou, China; Department of Computer and Information Science, University of Pennsylvania, Philadelphia, PA, USA; Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, Guangzhou, China; Department of Computer Science, Shanghai University of Finance and Economics, Shanghai, China; School of Electronic and Computer Engineering, Peking University, Shenzhen, Guangdong Sheng, China; College of Computer Science and Software, Shenzhen University, Shenzhen, Guangdong Sheng, China	IEEE Transactions on Affective Computing	2 Sep 2021		2021	12	3	761	775
College of Information Engineering, Hebei University of Architecture, Hebei, Zhangjiakou, China; College of Information Engineering, Hebei University of Architecture, Hebei, Zhangjiakou, China; College of Information Engineering, Hebei University of Architecture, Hebei, Zhangjiakou, China	IEEE Access	8 Jun 2023		2023	11		55204	55211
School of Geo-Science and Technology, Zhengzhou University, Zhengzhou, China; School of Geo-Science and Technology, Zhengzhou University, Zhengzhou, China; School of Geo-Science and Technology, Zhengzhou University, Zhengzhou, China; School of Geo-Science and Technology, Zhengzhou University, Zhengzhou, China; School of Geo-Science and Technology, Zhengzhou University, Zhengzhou, China	IEEE Access	26 Dec 2022		2022	10		132384	132395
Department of Information Sciences, University of Education at Multan, Lahore, Pakistan; Department of Computer Science, COMSATS University Islamabad at Wah, Islamabad, Pakistan; Department of Electrical Engineering, University of Brasilia, Brasilia, Brazil; Department of Information Sciences, University of Education at Multan, Lahore, Pakistan; Department of Computer Science, Federal Urdu University of Arts, Science and Technology at Islamabad, Islamabad, Pakistan; Department of Accounting and Information Systems, College of Business and Economics, Qatar University, Doha, Qatar	IEEE Access	13 Apr 2021		2021	9		54923	54937
School of Information Science and Electrical Engineering, Shandong Jiaotong University, Jinan, China; School of Information Science and Electrical Engineering, Shandong Jiaotong University, Jinan, China; School of Information Science and Electrical Engineering, Shandong Jiaotong University, Jinan, China; School of Information Science and Electrical Engineering, Shandong Jiaotong University, Jinan, China	IEEE Access	18 Feb 2022		2022	10		17674	17682
School of Electronics and Information, Northwestern Polytechnical University, Xi'an, China; School of Electronics and Information, Northwestern Polytechnical University, Xi'an, China; School of Electronics and Information, Northwestern Polytechnical University, Xi'an, China; Department of Computing Sciences, Tampere University, Tampere, Finland; School of Information Science and Technology, Northwest University, Xi'an, China; School of Electronics and Information, Northwestern Polytechnical University, Xi'an, China	IEEE Transactions on Circuits and Systems for Video Technology	5 Jan 2023		2023	33	1	132	145
School of Science, Chang'an University, Xi'an, China; Aerospace Information Research Institute, State Key Laboratory of Remote Sensing Science, Chinese Academy of Sciences, Beijing, China; Aerospace Information Research Institute, State Key Laboratory of Remote Sensing Science, Chinese Academy of Sciences, Beijing, China; Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences, Beijing, China; School of Geography and Remote Sensing, Guangzhou University, Guangzhou, China; College of Hydrology and Water Resources, Hohai University, Nanjing, China; Aerospace Information Research Institute, State Key Laboratory of Remote Sensing Science, Chinese Academy of Sciences, Beijing, China; Aerospace Information Research Institute, State Key Laboratory of Remote Sensing Science, Chinese Academy of Sciences, Beijing, China	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	23 Sep 2021		2021	14		9241	9253
Department of Platform Software, Sungkyunkwan University, Suwon, South Korea; Department of Artificial Intelligence, Sungkyunkwan University, Suwon, South Korea; Department of Artificial Intelligence, Sungkyunkwan University, Suwon, South Korea; Department of Artificial Intelligence, Sungkyunkwan University, Suwon, South Korea	IEEE Access	2 Jun 2023		2023	11		51155	51165
Department of Electrical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea; Department of Electrical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea; Amazon Alexa AI, Seattle, WA, USA; Advanced Solution Team, Memory Business, Samsung Electronics, Gyeonggi-do, Korea; Department of Electrical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea	IEEE Transactions on Computers	13 Dec 2022		2023	72	1	278	290
College of Computer Science and Technology, Qingdao University, Qingdao, Shandong, China; College of Information Science and Engineering, Ocean University of China, Qingdao, China; College of Computer Science and Technology, Qingdao University, Qingdao, Shandong, China; College of Information Science and Engineering, Ocean University of China, Qingdao, China; School of Informatics, University of Leicester, Leicester, Leicestershire, U.K.	IEEE Transactions on Multimedia	8 Feb 2022		2022	24		846	860
School of Computer Science, Imam Mohammad Ibn Saud Islamic University (IMSIU), Riyadh, Saudi Arabia; School of Computer Science and Information Technology, RMIT University, Melbourne, VIC, Australia; School of Computer Science and Information Technology, RMIT University, Melbourne, VIC, Australia; School of Computer Science and Information Technology (CS&IT), Albaha University, Al Bahah, Saudi Arabia; Computer Science Department, Qassim University, Burydah, Saudi Arabia; Department of Computer Networks and Communications, College of Computer Science and Information Technology, King Faisal University, Al Ahsa, Saudi Arabia	IEEE Access	31 May 2021		2021	9		77149	77163
Department of Brain and Cognitive Engineering, Korea University, Seoul, Korea; Department of Computer Science, Chonnam National University, Gwangju, South Korea; Faculty of Information Technology, The University of DaNang – University of Science and Education, DaNang, Viet Nam; Department of Artificial Intelligence, Korea University, Seoul, Korea	IEEE Journal of Biomedical and Health Informatics	11 May 2021		2021	25	5	1508	1518
School of Computer Science and the Engineering Research Center of Cyber Security Auditing and Monitoring, Ministry of Education, Fudan University, Shanghai, China; School of Computer Science and the Engineering Research Center of Cyber Security Auditing and Monitoring, Ministry of Education, Fudan University, Shanghai, China; School of Computer Science and the Shanghai Blockchain Engineering Research Center, Fudan University, Shanghai, China; School of Computer Science, Fudan University, Shanghai, China; School of Cybersecurity, Beijing Institute of Technology, Beijing, China; Faculty of Business and Information Technology, Ontario Tech University, Oshawa, Canada; Department of Computer Science, Texas A&M University–Commerce, Commerce, TX, USA	IEEE Internet of Things Journal	5 Aug 2021		2021	8	16	12610	12622
School of Remote Sensing and Information Engineering, Wuhan University, Wuhan, China; School of Remote Sensing and Information Engineering, Wuhan University, Wuhan, China; Faculty of Geo-Information Science and Earth Observation, University of Twente, Enschede, AE, The Netherlands	IEEE Transactions on Geoscience and Remote Sensing	25 Mar 2022		2022	60		1	13
School of Computer Science and Technology, Ocean University of China, Qingdao, China; School of Computer Science and Technology, Ocean University of China, Qingdao, China; School of Computer Science and Technology, Ocean University of China, Qingdao, China; Department of Electrical and Computer Engineering, Mississippi State University, Starkville, MS, USA; School of Information Science and Technology, Southwest Jiaotong University, Chengdu, China	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	11 Apr 2022		2022	15		2667	2680
School of Mechanical and Electrical Engineering, Kunming University of Science and Technology, Kunming, China; School of Information Engineering and Automation, Kunming University of Science and Technology, Kunming, China; School of Information Engineering and Automation, Kunming University of Science and Technology, Kunming, China; Alliance Manchester Business School, University of Manchester, Manchester, U.K.; Department of Automation, Tsinghua University, Beijing, China	Journal of Systems Engineering and Electronics	9 Sep 2022		2022	33	4	997	1009
Guangdong Laboratory of Artificial Intelligence and Digital Economy (SZ), Shenzhen University, Shenzhen, China; Guangdong Laboratory of Artificial Intelligence and Digital Economy (SZ), Shenzhen University, Shenzhen, China; Guangdong Laboratory of Artificial Intelligence and Digital Economy (SZ), Shenzhen University, Shenzhen, China; Guangdong Laboratory of Artificial Intelligence and Digital Economy (SZ), Shenzhen University, Shenzhen, China; School of Information and Communication Technology, Griffith University, Nathan, QLD, Australia; School of Engineering and Information Technology, The University of New South Wales, Canberra, ACT, Australia	IEEE Transactions on Geoscience and Remote Sensing	20 Jan 2021		2021	59	2	1437	1452
State Key Laboratory of Software Development and Environment, School of Computer Science and Engineering, Beihang University, Beijing, China; School of Computer Science and Engineering, Beihang University, Beijing, China; School of Computer Science and Engineering, Beihang University, Beijing, China; State Key Laboratory of Software Development and Environment, School of Computer Science and Engineering, Beihang University, Beijing, China; School of Computer Science and Engineering, Beihang University, Beijing, China	IEEE Transactions on Circuits and Systems for Video Technology	2 Sep 2022		2022	32	9	6086	6099
Center for Biomedical Engineering, School of Information Science and Technology, Fudan University, Shanghai, China; Center for Biomedical Engineering, School of Information Science and Technology, Fudan University, Shanghai, China; Academy for Engineering and Technology, Fudan University, Shanghai, China; Academy for Engineering and Technology, Fudan University, Shanghai, China; Center for Biomedical Engineering, School of Information Science and Technology, Fudan University, Shanghai, China	IEEE Transactions on Computational Imaging	15 Dec 2022		2022	8		1063	1073
School of Computer Science and Engineering, University of Electronic Science and Technology of China, Chengdu, Sichuan, China; School of Computer Science and Engineering, University of Electronic Science and Technology of China, Chengdu, Sichuan, China; School of Computer Science and Engineering, University of Electronic Science and Technology of China, Chengdu, Sichuan, China; School of Computer Science and Engineering, University of Electronic Science and Technology of China, Chengdu, Sichuan, China; School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, Sichuan, China; School of Computer Science and Engineering, University of Electronic Science and Technology of China, Chengdu, Sichuan, China; School of Computer Science and Engineering, University of Electronic Science and Technology of China, Chengdu, Sichuan, China; Department of Computer Science, University of Illinois at Chicago, Chicago, IL, USA; Department of Computer Science and Engineering, Lehigh University, Bethlehem, PA, USA	IEEE Transactions on Knowledge and Data Engineering	5 Jun 2023		2023	35	7	7470	7482

School of Computer Science and Engineering, Nanjing University of Science and Technology, Nanjing, China; Research Institute of Forest Resource Information Techniques, Chinese Academy of Forestry, Beijing, China; School of Computer Science and Technology, Henan Polytechnic University, Jiaozuo, Henan, China; School of Computer Science and Engineering, Nanjing University of Science and Technology, Nanjing, China; School of Computer Science and Engineering, Nanjing University of Science and Technology, Nanjing, China	IEEE Transactions on Circuits and Systems for Video Technology	2 Sep 2022		2022	32	9	6425	6436
College of Computer Science and Technology, Zhejiang University, Hangzhou, China; College of Computer Science and Technology, Zhejiang University, Hangzhou, China; College of Computer Science and Technology, Zhejiang University, Hangzhou, China; College of Computer Science and Technology, Zhejiang University, Hangzhou, China; Department of Radiology, Sir Run Run Shaw Hospital, Zhejiang University School of Medicine, Hangzhou, China; Department of Radiology, Sir Run Run Shaw Hospital, Zhejiang University School of Medicine, Hangzhou, China; College of Information Science and Engineering, Ritsumeikan University, Kusatsu, Japan; Artificial Intelligence Research Center, Yamaguchi University, Yamaguchi, Japan; College of Computer Science and Technology, Zhejiang University, Hangzhou, China	IEEE Transactions on Circuits and Systems for Video Technology	4 May 2022		2022	32	5	2512	2526
Department of Data Science, Worcester Polytechnic Institute, Worcester, MA, USA; Department of Data Science, Worcester Polytechnic Institute, Worcester, MA, USA; Department of Business Analytics, University of Iowa, Iowa City, IA, USA; Department of Computer Science, Worcester Polytechnic Institute, Worcester, MA, USA; Machine Intelligence Center, Lenovo Group Limited, Hong Kong	IEEE Transactions on Big Data	8 Jul 2022		2022	8	4	1084	1095
Department of Industrial Engineering and Management Systems, University of Central Florida, Orlando, FL, USA; Department of Industrial Engineering and Management Systems, University of Central Florida, Orlando, FL, USA; Center for Transportation and Logistics, Massachusetts Institute of Technology, Cambridge, MA, USA; Department of Industrial Engineering and Management Systems, University of Central Florida, Orlando, FL, USA; Faculty of Economic Sciences, University of Warsaw, Warsaw, Poland; Department of Industrial Engineering and Management Systems, University of Central Florida, Orlando, FL, USA; Department of Industrial Engineering, College of Engineering, Taif University, Ta'if, Saudi Arabia; Business School, University of Louisville, Louisville, KY, USA	IEEE Access	2 Aug 2021		2021	9		105439	105450
School of Computer Science, and Engineering, Nanjing University of Science, and Technology, Nanjing, China; Computer Vision Group, Inception Institute of Artificial Intelligence, Abu Dhabi, UAE; School of Computer Science, and Engineering, Nanjing University of Science, and Technology, Nanjing, China; School of Computer Science and Engineering, University of Electronic Science and Technology of China, Chengdu, Sichuan, China; School of Computer Science, and Engineering, Nanjing University of Science, and Technology, Nanjing, China; School of Electrical and Data Engineering, University of Technology Sydney, ROSEBERY, NSW, Australia	IEEE Transactions on Multimedia	8 Feb 2022		2022	24		968	980
Department of Computer Science, City University of Hong Kong, Hong Kong SAR; School of Information and Control Engineering, China University of Mining and Technology, Xuzhou, China; Information Materials and Intelligent Sensing Laboratory of Anhui Province, Institutes of Physical Science and Information Technology, Anhui University, Hefei, China; Department of Computer Science, City University of Hong Kong, Hong Kong SAR; Department of Computing, The Hong Kong Polytechnic University, Hong Kong SAR	IEEE Transactions on Emerging Topics in Computational Intelligence	24 May 2023		2023	7	3	753	767
Department of Computer System and Technology, Faculty of Computer Science and Information Technology, Universiti Malaysia, Kuala Lumpur, Malaysia; Department of Computer System and Technology, Faculty of Computer Science and Information Technology, Universiti Malaysia, Kuala Lumpur, Malaysia; Business School, The University of Queensland, Brisbane, QLD, Australia; Department of Computer System and Technology, Faculty of Computer Science and Information Technology, Universiti Malaysia, Kuala Lumpur, Malaysia; Faculty of Computing and Informatics, University Malaysia Sabah, Labuan, Malaysia	IEEE Access	3 Feb 2022		2022	10		12678	12701
School of Biomedical Engineering, Sun Yat-sen University (Shenzhen Campus), Guangzhou, China; School of Biomedical Engineering, Sun Yat-sen University (Shenzhen Campus), Guangzhou, China; School of Biomedical Engineering, Sun Yat-sen University (Shenzhen Campus), Guangzhou, China; School of Biomedical Engineering, Sun Yat-sen University (Shenzhen Campus), Guangzhou, China; School of Biomedical Engineering, Sun Yat-sen University (Shenzhen Campus), Guangzhou, China	IEEE Internet of Things Journal	7 Dec 2022		2022	9	24	25207	25222
School of Computer Science and Artificial Intelligence, Changzhou University, Changzhou, China; School of Computer Science and Artificial Intelligence, Changzhou University, Changzhou, China; College of Information Technology, Zhejiang Shuren University, Hangzhou, China; School of Computer Science and Technology, Zhejiang University of Technology, Hangzhou, China	IEEE Access	3 Feb 2023		2023	11		9995	10003
College of Electronic Science and Engineering, Jilin University, Changchun, China; College of Electronic Science and Engineering, Jilin University, Changchun, China; Chang Guang Satellite Technology Company Ltd., Changchun, China; Northeast Institute of Geography and Agroecology, Chinese Academy of Sciences, Changchun, China	IEEE Geoscience and Remote Sensing Letters	21 Feb 2023		2023	20		1	5
Department of Electrical and Computer Engineering, Viterbi School of Engineering, University of Southern California, Los Angeles, CA, USA; Department of Electrical and Computer Engineering, Viterbi School of Engineering, University of Southern California, Los Angeles, CA, USA; Department of Electrical and Computer Engineering, Viterbi School of Engineering, University of Southern California, Los Angeles, CA, USA	IEEE Transactions on Computers	20 May 2021		2021	70	6	950	962
Department of Computer Science, COMSATS University Islamabad, Attock Campus, Attock, Pakistan; Department of Computer Engineering, Jeju National University, Jeju-si, Republic of Korea; Department of Computer Science, COMSATS University Islamabad, Attock Campus, Attock, Pakistan; Department of Information Systems and Technology, College of Computer Science and Engineering, University of Jeddah, Jeddah, Saudi Arabia; Department of Information Systems and Technology, College of Computer Science and Engineering, University of Jeddah, Jeddah, Saudi Arabia; Abu Dhabi School of Management, Abu Dhabi, United Arab Emirates	IEEE Access	9 Aug 2022		2022	10		81581	81596
College of IoT Engineering, Hohai University, Changzhou, China; College of IoT Engineering, Hohai University, Changzhou, China; College of IoT Engineering, Hohai University, Changzhou, China; College of IoT Engineering, Hohai University, Changzhou, China; College of IoT Engineering, Hohai University, Changzhou, China	IEEE Transactions on Circuits and Systems for Video Technology	4 Apr 2023		2023	33	4	1577	1592
Key Laboratory of Intelligent Perception and Image Understanding of Ministry of Education, International Research Center for Intelligent Perception and Computation, Joint International Research Laboratory of Intelligent Perception and Computation, School of Artificial Intelligence, Xidian University, Xi'an, China; Key Laboratory of Intelligent Perception and Image Understanding of Ministry of Education, International Research Center for Intelligent Perception and Computation, Joint International Research Laboratory of Intelligent Perception and Computation, School of Artificial Intelligence, Xidian University, Xi'an, China; Key Laboratory of Intelligent Perception and Image Understanding of Ministry of Education, International Research Center for Intelligent Perception and Computation, Joint International Research Laboratory of Intelligent Perception and Computation, School of Artificial Intelligence, Xidian University, Xi'an, China; Key Laboratory of Intelligent Perception and Image Understanding of Ministry of Education, International Research Center for Intelligent Perception and Computation, Joint International Research Laboratory of Intelligent Perception and Computation, School of Artificial Intelligence, Xidian University, Xi'an, China	IEEE Transactions on Geoscience and Remote Sensing	23 Dec 2021		2022	60		1	16
College of Electrical and Information Engineering, Hunan University, Changsha, China; College of Electrical and Information Engineering, Hunan University, Changsha, China; College of Electrical and Information Engineering, Hunan University, Changsha, China	IEEE Transactions on Neural Networks and Learning Systems	28 Feb 2023		2023	34	3	1613	1626
VRVis Research Center, Austria; Virginia Tech, Blacksburg, VA, USA; AVL-AST d.o.o., Zagreb, Croatia; AVL-AST d.o.o., Zagreb, Croatia; AVL-AST d.o.o., Zagreb, Croatia; University of Bergen, Norway; VRVis Research Center, Austria	IEEE Transactions on Visualization and Computer Graphics	16 Dec 2022		2023	29	1	778	787
Pro2Future GmbH, Linz, Austria; Johannes Kepler University Linz, Linz, Austria; Johannes Kepler University Linz, Linz, Austria; TU Wien, Vienna, Austria; Johannes Kepler University Linz, Linz, Austria	IEEE Transactions on Visualization and Computer Graphics	29 Dec 2022		2023	29	2	1463	1477
Systems and Computer Engineering, Carleton University, Ottawa, ON, Canada; Systems and Computer Engineering, Carleton University, Ottawa, ON, Canada; Systems and Computer Engineering, Carleton University, Ottawa, ON, Canada	IEEE Access	21 Mar 2022		2022	10		28487	28498
Institute of Computing and Information Technology, Gomal University, Dera Ismail Khan, Pakistan; Institute of Computing and Information Technology, Gomal University, Dera Ismail Khan, Pakistan; Institute of Computing and Information Technology, Gomal University, Dera Ismail Khan, Pakistan; Department of Computer Science, University of Science & Technology, Bannu, Pakistan; Faculty of Civil Engineering, Technische Universität Dresden, Dresden, Germany	IEEE Access	4 Nov 2021		2021	9		148214	148232
Department of Computer Science and Engineering, Korea University, Seoul, South Korea; Department of Computer Science and Engineering, Korea University, Seoul, South Korea; Department of Computer Science and Engineering, Korea University, Seoul, South Korea; Department of Computer Science and Engineering, Korea University, Seoul, South Korea; Department of Computer Science and Engineering, Korea University, Seoul, South Korea	IEEE Access	17 Aug 2022		2022	10		85050	85063
Faculty of Transport Engineering, University of Pardubice, Pardubice, Czech Republic; Faculty of Transport Engineering, University of Pardubice, Pardubice, Czech Republic; Faculty of Transport Engineering, University of Pardubice, Pardubice, Czech Republic; Faculty of Transport and Traffic Engineering, University of Belgrade, Belgrade, Serbia; Faculty of Transport and Traffic Engineering, University of Belgrade, Belgrade, Serbia; Faculty of Informatics and Computing, Singidunum University, Belgrade, Serbia	IEEE Access	25 Apr 2023		2023	11		39496	39507
Department of Electrical and Computer Engineering, McGill University, Montreal, Quebec, Canada; YourBase Inc., Redmond, WA, USA; YourBase Inc., Redmond, WA, USA; Cheriton School of Computer Science, University of Waterloo, Waterloo, ON, Canada	IEEE Transactions on Software Engineering	14 Jun 2022		2022	48	6	2040	2052
Department of Computer Science, Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru, Johor, Malaysia; Department of Information Technology, Faculty of Science and Technology, Shaheed Benazir Bhutto University, Sanghar Campus, Sanghar, Pakistan; Department of Computer Science, Faculty of Computing, Universiti Teknologi Malaysia, Johor Bahru, Johor, Malaysia; Research Management Centre, Universiti Teknologi Malaysia, Johor Bahru, Johor, Malaysia	IEEE Access	7 Mar 2023		2023	11		21020	21048

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Industry 4.0 production systems must support flexibility in various dimensions, such as for the products to be produced, for the production processes to be applied, and for the available machinery. In this article, we present a novel approach to design and control smart manufacturing systems. The approach is reactive, that is responds to unplanned situations and implements an iterative refinement technique. That is, optimizes itself during runtime to better achieve goals. For realizing such a system, we present a model-driven methodology and we provide a prototypical implementation of such a production system. In particular, we employ Planning Domain Definition Language (PDDL) as our artificial intelligence environment for automated planning of production processes and combine it with one of the most prominent Industry 4.0 standards for the fundamental production system model: IEC 62264. We show how to plan the assembly of small trucks from available components and how to assign specific production operations to available production resources, including robotic manipulators and transportation systems. Results of the evaluation indicate that the presented approach is feasible and indicates that it is able to significantly strengthen the flexibility of production systems during runtime. Note to Practitioners—Smart production is an umbrella for a number of shifts and initiatives that deal with digitalization of manufacturing/production systems and related issues and potentials. In this work, we present an approach for utilizing automated planning for creating production plans. This is in contrast to the traditional approach, where recipes are programmed into the production system ahead-of-time. However, automated planning relies on specific languages and tools that are hard to master by nonexperts, which is a factor that strongly limited the utilization of plan-driven approaches for industrial automation in practice. Thus, we propose to generate planning tasks automatically with model-driven engineering techniques. We are utilizing the industrial standard IEC 62264 for the description of the production system, and the academic standard Planning Domain Definition Language (PDDL) for planning. PDDL is handled completely transparent to the user, that is the user is shielded from its complexity by employing the IEC 62264 model as the sole frontend.	1558-3783	10.1109/TASE.2020.3018402
In the actual production of coal mines, the transmission needs of existing underground applications cannot be met due to a lack of strategies and customized equipment for underground 5G application scenarios, which causes increased underground processing delay and low transmission efficiency. To solve the problem above, this paper proposes a novel transmission scheme based on the 5G network slicing technology. The scheme divides the underground 5G communication capability is improved by edge caching and dynamic resource allocation according to the actual situation of coal mines. The experimental result shows that under the premise of maintaining the rated power and transmit power of the existing base station, the average delay of executing tasks is 15 ms, which is 50% lower than the average delay of all local execution methods. The average delay is 37.5% lower than all MEC execution methods. At the same time, the uplink rate of a single base station can reach 1 Gbps and the downlink rate can reach 1.5 Gbps. Our method can significantly improve the reliability of mining 5G communication systems and the rational allocation of resources.	2169-3536	10.1109/ACCESS.2023.3244242
The maturity of heterogeneous and hybrid public Cloud environments enables service providers to deploy their complex IT services trusting these large and complex infrastructures. At the same time, evaluating the impact of changes at service configuration before and at the runtime is still a very challenging and difficult task. Moreover, a comprehensive performance evaluation of IT service configurations should not be limited just to costs for IT resource acquisition, but also include risk related elements such as Service Level Agreement (SLA) violation penalties and other intangibles. To support IT service providers in this difficult task, we developed Business-Driven Management as a Service Plus (BDMaaS+), a novel decision support tool that can evaluate IT service configuration through simulation with realistic service and network models. By allowing service providers to define expanded operational parameters, BDMaaS+ also enables what-if scenario analysis, thereby opening interesting possibilities at the planning level. Experimental results, collected from our thorough evaluations, demonstrate how a service provider can leverage BDMaaS+ to explore the potential of high-level business SLA changes and data center additions.	1932-4537	10.1109/TNSM.2021.3110139
Crowdsourcing is a practical component in Internet-of-Things, in which task requesters outsource sensing tasks to workers by a crowdsourcing server (CS). Task assignment and incentive design are two essential parts of crowdsourcing. However, due to the semi-honest CS and malicious workers, there exist several security and fairness issues. First, during task assigning and reward distributing, CS can get the private information of both task requester and workers such as identity, attributes. Second, malicious workers who are unable to execute tasks can get the task content, which leaks task privacy. Third, most auction-based incentive mechanism only considers the biddings of workers and ignores the real capabilities of workers. To this end, we propose a privacy-preserving fine-grained task assignment scheme for the crowdsourcing system. In this article, we also design a novel incentive mechanism based on the capabilities of workers. To be specific, a ciphertext-policy attribute-based encryption (CP-ABE) scheme with the characteristics of hidden policy is adopted to select workers and protect the privacy that of both requirements and workers' attributes. We quantify the capabilities of workers based on the workers' attributes and further determine the workers' reward according to their capabilities. Detailed security analysis demonstrates that our proposed scheme can protect workers' identity privacy, attribute privacy, and data confidentiality. Besides, the extensive experiments show that our incentive mechanism can effectively motivate workers.	2169-3536	10.1109/ACCESS.2021.3074142
According to previous studies, the workforce competencies of engineers in manufacturing industries generally comprise technical, generic, and knowledge competencies. However, these categories of workforce competencies are insufficient for firms whose manufacturing processes are very easily interrupted by anomalies and whose core competency is highly related to production yield. In addition to drawing attention to the importance of identifying engineers' problem-solving competencies, this article proposes a procedure to identify and rate workforce competencies for firms in the manufacturing industry. An IC packaging process engineer was used as an example to illustrate the proposed procedure. In contrast to traditional competency identification, this article suggests that problem-solving competencies can be identified from engineers' responses to the anomalies commonly encountered in each step of the manufacturing process and that operational competency can be identified from the knowledge, techniques, or capabilities required to fulfil a task in each step of the manufacturing process. For the IC packaging and testing industry, this article can help human resources not only evaluate the competency of job candidates but also design training courses according to the job tenure of engineers. Furthermore, this article results can be used to design teaching material for apprenticeship to help engineers develop competencies in a structured manner and enhance their sensitivities to production-line problems.	1558-0040	10.1109/TEM.2021.3050343
Intelligent video surveillance is important to ensure production safety in coal mines, while cloud-edge cooperation is an effective means to improve the performance of intelligent video monitoring. However, in edge layers, incorrect resource allocation of computing and network resources will result in the waste of resources and low real-time performance. In this paper, a DDPG-Based (Deep deterministic policy gradient-based) edge resource allocation method for cloud-edge cooperation is proposed. Firstly, the cloud-edge cooperation problem is decomposed into two subproblems: the joint minimization problem of latency and bandwidth usage caused by edge computing is modeled. To quickly solve the joint optimization problem, we convert it to MDP (Markov Decision Process). In addition, ESPN (Edge status perception network) is proposed, which enhances the ability of feature perception and action output of DDPG. Finally, DDPG-ESPN is proposed to solve the joint optimization problem. Simulation results show that compared with other methods, DDPG-ESPN improves the real-time performance and bandwidth usage by up to 18.88% and 42.81% respectively.	2169-3536	10.1109/ACCESS.2021.3129466
A new application of network reliability is proposed to help analyze a business process performance in usual business activities. This research is to construct an easy, formal and mathematical tool to probe the health of daily-run business activities. A business activity consists of a series of value-added tasks, which are carried out by their related officers, to meet business objectives. Traditional management behavior includes critical tasks and skills to sustain the plan, sanction, management, and analysis of business activities. However, the assessment of activity performance remains a weak gap in analytic requirements. The approach proposed in this paper is one of the expected tools to fill the gaps in traditional management practices. The paper is to provide managers several new visions of modeling and analysis, which are not easily derived by traditional management practices. A distributor process with several scenarios to explain the approach are explored, and discussed.	2169-3536	10.1109/ACCESS.2021.3072776
Product-technology roadmapping is one of the major planning tools for integrating the company's strategic objectives and current plans. The roadmapping process itself helps to create collaborative knowledge and transforming knowledge from tacit to explicit, which creates a common understanding among different departments. However, there are a number of challenges in establishing the process as a part of the management system in an organization. One of the difficulties stated was the resistance of organizational units to the changes in the business process, organizational structure, and work culture. In this article, the roadmapping implementation phases in a company, such as S, a dual-channel product, utilizing roadmapping as a part of the business planning process will be discussed. One of the unique contributions of the research is that the roadmapping methodology introduced to other processes, such as strategic planning, portfolio management, and human resources planning, was done seamlessly. The needs and roadmapping implementation challenges in a company, which is expanding itself from local to global, solutions generated for a more suitable application, and lessons learned for roadmapping continuity will be discussed in detail. These learnings could help organizations in adopting similar approaches. The case study could also be a source of academic research on the roadmapping methodology.	1558-0040	10.1109/TEM.2020.3024747
Cloud workflow scheduling often encounters two conflicting optimization objectives of makespan and monetary cost, and is a representative multi-objective optimization problem (MOP). Its challenges mainly come from three aspects: 1) a large number of tasks in a workflow cause large-scale decision variables; 2) the two optimization objectives are of quite different scales; 3) and cloud resources are heterogeneous and elastic. So far, many studies focus on adopting multi-objective evolutionary algorithms (MOEAs) to solve the cloud workflow scheduling problem without mining the domain knowledge. To make a good trade-off between the makespan and monetary cost, this paper presents a knowledge-driven evolutionary workflow scheduling algorithm (KDEWSA) to solve the cloud workflow scheduling problem. KDEWSA includes two novel modules, including the novel knowledge-driven Pareto frontier estimation and the novel Pareto frontier-based multi-objective optimization algorithm. KDEWSA can effectively reduce the makespan and monetary cost of workflows. In order to validate the effectiveness of KDEWSA, extensive experiments are performed to compare the KDEWSA with three baseline algorithms. The results demonstrate the effectiveness of the KDEWSA in balancing makespan and monetary cost for deploying workflows into cloud computing.	2169-3536	10.1109/ACCESS.2021.3139137
Smart factory is the deep integration of technology, business, products, and industry. The R&D of products, the construction of factory information, customer orders, and supply chain data are combined to act on the production. This paper proposes a Hybrid Internet of Things (H-IoT) platform framework, which consists of five layers: intelligent device layer, communication protocol layer, edge computing layer, IoT control layer, and application layer. Object Linking and Embedding (OLE) for Process Control (OPC) transmits the received device data to the database of the edge server through the TCP/IP protocol. After the edge server performs preprocessing such as data cleaning, the data are uniformly collected and distributed through the IoT layer. The various subsystems of the smart factory obtain the required resource data through IoT. To run tasks uninterrupted and efficiently, we propose a Container-Managed Task Crash Recovery Mechanism for the Edge Computing (EC) layer. We design a reasonable EC hierarchy, then propose a task migration scheduling strategy. Our method ensures the reliability and stability of manufacturing with mass data transmission even in the case of a random crash of partial edge servers.	2169-3536	10.1109/ACCESS.2021.3068471
Rapidly changing market has accentuated the need for developing robust and responsive schedules. Intelligent heuristics techniques have been widely used to provide scheduling alternatives for resource constrained scheduling and identify critical activities and controlling these processes. We argue that traditional heuristic-based scheduling is insufficient to handle complex tasks such as critical and instead define a fuzzy parameter-based approach, which relies on process and task-specific information. Proposed parameter is used to rank activities on a scale based on their criticality to develop a heuristic. It was observed that the proposed intelligent heuristic performed better on well-known benchmark datasets in terms of both lead times and computation time. An improvement of 1.5-2.5 percent was observed in traditional performance measure of order lead times while for non-traditional criterion measuring robustness, improvement of 30-35 percent was observed. Furthermore, current research provides meaningful insight on critical tasks at the shop-floor.	2169-3536	10.1109/ACCESS.2021.3123138
Peer-to-Peer (P2P) resource sharing promotes local resource-hungry task offloading to other mobile devices and balances the resource consumption between mobile devices. Most of existing P2P task offloading systems aims to solve the resource sharing between one pair exclusively without considering the cost of resource supply and the strategic behaviors of mobile users. In this paper, we present two user models for the P2P task offloading system: the honest user model and the selfish user model. For the honest user model, we formulate the resource allocation problem with latency and energy consumption for each user as an Integer Linear Programming. We show that the solution for honest user model can attract 189% resource transactions of that for the strategic users. For the strategy user model, we propose a double auction-based P2P task offloading system, and design a truthful multi-resource transaction mechanism to maximize the number of resource transactions. We first group the mobile users based on the connected components to improve the efficiency of double auction. Then we use the Modified Double Auction to solve the double auction problem. Finally, we split each winning mobile user into multiple smaller users, and use the matrix market approach to calculate the resource allocation. Through both rigorous theoretical analysis and extensive simulations, we demonstrate that the designed multi-resource transaction mechanism satisfies the desirable properties of computational efficiency, individual rationality, budget balance, truthfulness for resource request/supply, and general truthfulness for bid/ask price.	1939-9359	10.1109/TVT.2021.3079258
Workflow scheduling in Heterogeneous Distributed Computing Environments (HDCEs) is a NP-hard problem. Although a number of scheduling approaches have been proposed for workflow scheduling in HDCEs, there is still a room and need for improvement. To fill the gaps, this study formulates workflow scheduling problem in HDCEs as a mixed integer nonlinear programming (MINLP) model, and extends the previous model with more constraints that provides a theoretical foundation for developing workflow scheduling strategy. Then, this study develops a novel two-stage multi-population genetic algorithm with heuristic for workflow scheduling. In particular, two-stage multi-population coevolution strategy is employed with designed novel methods for population initialization, genetic operation, individual decoding and improvement. To estimate the validity, extensive experiments are designed and conducted on various scenarios based on real and random workflow applications. The results have shown the practical viability of the proposed algorithm outperforming conventional approaches.	2168-7161	10.1109/TOC.2021.3137881
The space-air-ground integrated vehicular networks (SAGVN) has significant advantages in satisfying the requirements of the Internet of Vehicles (IoV) business for wide area coverage and long-distance communications. However, the multi-dimensional nature of the SAGVN leads to diverse network resources, it is necessary to provide different services for various scenarios, which makes the problem of network resource allocation becomes extremely challenging. In this paper, we focus on the resource allocation of small cells in SAGVN. Specifically, the user association is considered to optimize connection between base stations and vehicles. On this basis, a subchannel and power allocation method is designed. The proposed scheme ensures that users can obtain the maximum gain on its subchannel, and the Lagrangian duality theory is introduced to solve the power allocation problem. Meanwhile, the edge computing is applied to the SAGVN, and the vehicles can offload the local tasks to the edge server. In order to reduce the delay in the offloading process, taking the time delay as a constraint condition can further optimize the communication performance. The simulation results show that the proposed scheme can effectively improve the sum rate of small cells in SAGVN, and the performance is better than existing algorithms.	2327-4697	10.1109/TNSE.2022.3169635
Encouraging the agent to explore has always been an important and challenging topic in the field of reinforcement learning (RL). Distributional representation for network parameters or value functions is usually an effective way to improve the exploration ability of the RL agent. However, directly changing the representation form of network parameters from fixed values to function distributions may cause algorithm instability and low learning efficiency. Therefore, to accelerate and stabilize parameter distribution learning, a novel inference-based posterior parameter distribution optimization (IPDO) algorithm is proposed. From the perspective of solving the evidence lower bound and maximizing the expected return, we respectively design the objective function for continuous tasks for parameter distribution optimization based on inference and the objective function for discrete tasks for parameter distribution optimization based on reinforcement learning. In order to avoid the overestimation of the value function, we use multiple neural networks to estimate value functions with Retrace, and the smaller estimate participates in the network parameter update; thus, the network parameter distribution can be learned. After that, we design a method used for sampling weight from network parameter distribution by adding an activation function to the standard deviation of parameter distribution, which achieves the adaptive adjustment between fixed values and distribution. Furthermore, this IPDO algorithm is compared with the existing RL (DRL) algorithm based on off-policy, which means that it can effectively improve the exploration efficiency by using off-policy techniques such as experience replay. We compare IPDO with other prevailing DRL algorithms on the OpenAI Gym and MuJoCo platforms. Experiments on both continuous-action and discrete-action tasks indicate that IPDO can explore more in the action space, get higher rewards faster, and ensure algorithm stability.	2168-2275	10.1109/TCVB.2020.3023127
The selection of features from data, as one of the most important tasks in data mining, strongly affects the accuracy of classification. The removal of irrelevant and redundant features from data while simultaneously avoiding information loss is the main task of feature selection. Feature selection is possible using the naive set theory and heuristic algorithms. In this paper, a novel multi-objective feature selection algorithm (MOFSA) is proposed to contribute to generating an efficient algorithm with a good trade-off between exploration and exploitation. This new algorithm simulates the auction sale process, where bidders offer higher/lower values to outbid each other. Auctions are categorized into ascending auctions and descending auctions and thus respectively represent maximization and minimization problems in ABOA. In the first step of the ABOA after initialization, a predefined number of bidders is selected and an auction is performed between them. The winner is selected and another auction is performed between a predefined number of bidders and the winner's neighbors. The winner of this round of auction is added to the winner list. This process is iterated until a predefined number of winners is found. Finally, one more auction is performed between all the winners on the winner list and the winner of that auction becomes the final winner. The algorithm with different parameter setting scenarios is tested on 25 benchmark test functions. The algorithm with the best results is then used to perform feature selection on 18 UCI datasets. The feature selection and classification accuracy results are compared with state-of-the-art results. The statistical analysis of the results proves the ability of the algorithm to solve optimization problems.	2169-3536	10.1109/ACCESS.2021.3098608
When using blockchain in mobile systems, computation intensive mining tasks pose great challenges to the processing capabilities of mobile miner equipment. Mobile edge computing (MEC) is an effective solution to alleviating the problem via task offloading. In the mining process, miners compete for rewards through puzzle solving, where only the miner that first completes the process will be rewarded. Thus, miners may wish to pay higher price and use more communication resources in task offloading and more computation resources in task processing for latency reduction. However, there are risks for the miners not profiting from consuming more resources or paying a higher price, so miners are rational in blockchain systems. In order to maximize the rational total profit of all miners, we use an asynchronous auction-based (AC) deep reinforcement learning algorithm to obtain the resource pricing and allocation, considering the stochastic properties of wireless channels, and the prospect theory is employed to strike a good balance between risks and rewards. Numerical results show that our proposed AC-based joint optimization algorithm converges fast and outperforms the baseline algorithms in terms of the total reward.	2327-4697	10.1109/TNSE.2021.3068340
In practical systems, a computing task generated by an Internet of Things device (IoT) is usually given a valid period (vap). The tasks that cannot be executed within the vap will be dropped. The main goal of this letter is to minimize the task loss rate (TLR) of unattended-air-vehicle (UAV) assisted mobile edge computing (MEC) due to the limited vap. Furthermore, to ensure an equal service opportunity for the IoTs and an equal energy consumption (EC) level for the UAVs, the issues of the TLR-fairness between IoTs and the EC-fairness between UAVs are also considered. This is formulated as the mixed integer nonlinear programming (MINLP), which is difficult to be addressed by traditional methods, especially when the fast decision-making process is required. To address this problem, we present a new solution based on the multi-agent deep deterministic policy gradient (MA-DDPG) to optimize the flight trajectory, the association between the UAVs and IoTs and the task scheduling of the IoTs. Simulation results verify the effectiveness of the proposed MA-DDPG based algorithm.	2162-2345	10.1109/LWC.2022.3218035
Online gathering large-scale heterogeneous tasks and multi-skilled participant can make the tasks and participants to be shared in real time. However, their online gathering will bring many intractable objective requirements, which makes task-participant matching become extremely complex. To cope well with the gathering, we design a hierarchy tree and time-series queue to organize tasks and participants. The data structures we designed can effectively reduce the time complexity of gathering tasks and participants. In this paper, we study online large-scale heterogeneous task allocation problem from three aspects: the computing pattern, the tree creation method, and the extension of matching strategy. Our best method (TSPP) is based on parallel computing in the computing pattern, adopts time first and then space in the tree creation method, and increases the short-distance first strategy in the matching strategy. Finally, we conducted detailed experiments under the conditions of different participant geographical distribution, different task distribution, different task deadline, different task deadline, different task deadline, different task deadline, and different recommendation methods (i.e., point recommendation and trajectory recommendation). The experimental results show that TSPP has a good performance in multiple indicators such as algorithm running time, task-participant matching rate, participant travel distance, and redundant tasks removed. Compared with serial computing, parallel computing can reduce the algorithm running time by more than 66% on average in our experimental environment. Compared with space first then time, time first then time, creating a tree based on time first and then space can increase task-participant matching rate by more than 13% on average. Increasing the short-distance first strategy can reduce the participant travel distance by more than 4% on average.	1558-0660	10.1109/TMC.2021.3132616
The development of artificial intelligence and the digital transformation it has brought with it has encouraged the challenge of harnessing the potential to transform the human resources (HR) processes, systems and organisations through new digital platforms, applications and ways of delivering HR services. In view of this challenge, we present a method, implemented into a decision support (DS) platform, for employee transfer developed to solve three problems: (i) transfer of employees from one business unit (OU) to another, (ii) transfer of employees from one business unit (OU) to another, (iii) transfer of employees from one business unit (OU) to another. The DS platform includes centralized training relying on the global information and distributed decision making by each agent deployed in each MEC server. Specifically, we first introduce a novel employees between OUs, constrained with the employees' skills and OUs requirements. Thirdly, avoiding overlapping of employees in OUs for a previously defined timeframe. Finally, the travelling time and distance have to be within the given limits. We demonstrate that the proposed platform is designed to process all available information and human-defined rules to (i) support the HR managers in planning and organising their strategic activities in a timely manner, (ii) speed up candidate selection within the given process with the organisation for more than 82%, (iii) provide several best alternatives for staff deployment from the employees, (iv) reduce operational costs for more than 87%, and (v) reduce the administrative burden of HR management (HRM).	2169-3536	10.1109/ACCESS.2021.3059895
Mobile edge computing (MEC) has recently risen as a promising paradigm to meet the increasing resource requirements of the terminal devices. Meanwhile, small cell network (SCN) with MEC has been emerging to handle the exponentially increasing data traffic and improve the network coverage, and is recognized as one key component of the next generation wireless networks. However, with the growing number of terminal devices requiring computation offloading to the edge servers, the network would be heavily congested and thus the performance would be degraded and unbalanced among multiple devices. In this paper, we propose the joint admission control and computation resource allocation in the MEC enabled SCNs and formulate it as a stochastic optimization problem. The goal is to maximize the system utility combining the throughput and fairness while bounding the queue. We decouple the original problem into three independent subproblems, which can be solved in a distributed manner without requiring the system statistical information. An admission control and computation resource allocation (ACORA) algorithm is designed to obtain the optimal solutions of the subproblems. Theoretical analysis proves that the ACORA algorithm can achieve the close-to-optimal system utility and reach the arbitrary tradeoff between the utility and the queue length. Experiments are conducted to validate the derived analytical results and evaluate the performance of the ACORA algorithm.	1939-9359	10.1109/TVT.2021.3136996
Cloud computing provides solutions to a large number of organizations in terms of hosting systems and services. The services provided by cloud computing are broadly used for business and scientific applications. Business applications are task oriented applications and structured into business workflows. Whereas, scientific applications are data oriented and compute intensive applications and structured into scientific workflows. Scientific workflows are managed through scientific workflows management and scheduling systems. Recently, a significant amount of research is carried out on management and scheduling of scientific workflow applications. This study presents a comprehensive review on scientific workflows management and scheduling in cloud computing. It provides an overview of existing surveys on scientific workflows management systems. It presents a taxonomy of scientific workflow applications and characteristics. It shows the working of existing scientific workflows management and scheduling techniques including resource scheduling, fault-tolerant scheduling and energy efficient scheduling. It provides discussion on various performance evaluation parameters along with definition and explanation. It also provides discussion on various performance evaluation platforms used for evaluation of scientific workflows management and scheduling strategies. It finds evaluation platforms for the evaluation of scientific workflows techniques based on various performance evaluation parameters. It also finds various design goals for presenting new scientific workflow management techniques. Finally, it explores the open research issues that require attention and high importance.	2169-3536	10.1109/ACCESS.2021.3070785
The growth of information technology along with the revolution of the industry and business has led to the generation of an enormous amount of data. This big data needs a platform beyond the traditional data possessing context that relies on some computational servers communicating through a network in its lower layer. One of the most important challenges in data processing is how to transfer the big batches of data between the servers to achieve fast response time. Currently, the data transfer is a manual process. Ideally, this work needs a platform beyond the traditional data possessing context that relies on some computational servers communicating through a network in its lower layer. One of the most important challenges in data processing is how to transfer the big batches of data between the servers to achieve fast response time. Currently, the data transfer is a manual process. 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Regularization by denoising (RED) framework has shown impressive performance for many imaging inverse problems, by leveraging the denoising method in defining an explicit regularization. In this letter, we propose a novel SLN-RED scheme for image restoration by exploiting the local and nonlocal denoisers simultaneously. Theoretically, we prove that for bounded denoisers, the SLN-RED under ADMM scheme with a continuation strategy converges to a fixed-point. Numerical experiments on deblurring and super-resolution tasks demonstrate promising performance of the proposed algorithm.

1558-2361

10.1109/ISP2023.3265174

With the maturity of 5G cellular communication systems and mobile-edge computing (MEC), a large number of base stations (BSs) with edge-computing servers are densely deployed. There are extensive overlapping coverage areas among the BSs in which some heavy computational tasks from Internet of Things (IoT) devices can be divided and offloaded to multiple BSs via the coordinated multipoint (CoMP) technique for parallel processing. However, it is challenging to make proper task offloading decisions among multiple BSs while satisfying multiple quality of service (QoS) requirements of multiple devices. To address this challenge, this article presents an efficient multistepwise and multi-BSs task offloading scheme with the goal of minimizing the delay for completing the tasks of the devices. By conducting quantitative analysis of local delay and offloading delay, a nonlinear and nonconvex delay optimization offloading problem, which is based on the theory of noncooperative game, is formulated. We prove the existence of Nash equilibrium by analyzing the feature of the proposed offloading problem and further propose a distributed task offloading algorithm called DOLA. Finally, numerical results on real-world data set from the Melbourne CBD area of Australia are conducted to validate the efficacy of our DOLA algorithm. Comparison experiments are also carried out to demonstrate the superiority of DOLA in comparison with some existing schemes.

2327-4662

10.1109/JIOT.2022.3143539

The proof-of-work (PoW) mining process requires a large amount of intensive computing, which leads to some plights such as heavy equipment and fixed access nodes in traditional blockchain networks. A novel mobile blockchain network with the help of a mobile edge computing (MEC) server is presented, where all mobile users participate in the PoW mining process. The traditional Bitcoin network adjusts the target difficulty value to ensure a stable block time. However, for MEC-assisted mobile blockchain networks, the adjusted difficulty value needs to be broadcast to all mobile users, which results in expensive communication costs. To maintain a stable block time of mobile blockchain networks, we formulate the delay-limited computation offloading strategy of the PoW-based mining task as a non-cooperative game that maximizes an individual revenue in the MEC-assisted mobile blockchain network. Specifically, the non-cooperative game problem can be divided into multiple sub-game optimization problems to obtain final solutions for all users. We analyze the sub-game optimization problem and prove the existence of Nash equilibrium (NE) of the non-cooperative game. Moreover, we design an alternating iterative algorithm based on the continuous relaxation and greedy rounding (CRGR) to achieve the NE of this game. Given the sub-optimal delay-limited computation offloading results, we also derive the optimal energy-saving power for an individual user within the maximum mining delay range. From the analytical results, we can see that the proposed CRGR-based alternating iterative algorithm can efficiently attain the sub-optimal delay-limited computation offloading strategies of all mobile users in the polynomial time. The individual transmit power increases accordingly with the delay-limited computation offloading strategies of all users. Numerical results demonstrate that the proposed CRGR-based alternating iterative algorithm has fast convergence and good stability.

1558-0857

10.1109/TCOMM.2021.3113390

As organizations increasingly view information as one of their most valuable assets, which supports the creation and distribution of their products and services, information security will be an integral part of the design and operation of organizational business processes. Yet, risks associated with cyber-attacks are on the rise. Organizations that are subjected to attacks can suffer significant reputational damage as well as loss of information and knowledge. As a consequence, effective leadership is cited as a critical factor for ensuring corporate level attention for information security. However, there is a lack of empirical understanding as to the roles strategic leaders play in shaping and supporting the cyber-security strategy. This article seeks to address this gap in the literature by focusing on how senior leaders support the cyber-security strategy. The authors conducted a series of exploratory interviews with leaders in the positions of Chief Information Officer, Chief Security Information Officer, and Chief Technology Officer. The findings revealed that leaders are engaged in both transitional, where the focus is on improving governance and integration and transformational support, which involves fostering a new cultural mindset for cyber-resiliency and the development of an ecosystem approach to security thinking.

1558-0040

10.1109/TEM.2020.2996175

Existing research has been concentrated on improving the reliability of a distributed computing system through optimizing tasks allocation, providing software redundancy and providing hardware redundancy. None of these works considered the performance sharing mechanism in a distributed computing system. Different from other performance sharing systems whose reliability can be calculated directly, the reliability evaluation of a distributed computing system with performance sharing is more challenging since the reliability depends on the task execution time of each processor after performance sharing. This research considers a distributed computing system with performance sharing and the distributed power can be redistributed among the processors in the system. A reliability model is proposed to evaluate the distributed computing system with performance sharing. An optimization model is formulated to derive the optimal performance sharing policy such that the system reliability can be maximized. Both analytic examples and numerical examples are carried out to illustrate the proposed model and algorithm.

1558-1721

10.1109/TR.2021.3111031

The performance of decomposition-based algorithms is sensitive to the Pareto front shapes since their reference vectors preset in advance are not always adaptable to various problem characteristics with no a priori knowledge. For this issue, this article proposes an adaptive reference vector reinforcement learning (RVRL) approach to decomposition-based algorithms for industrial copper burdening optimization. The proposed approach involves two main operations, that is, 1) a reinforcement learning (RL) operation and 2) a reference point sampling operation. Given the fact that the states of reference vectors interact with the landscape environment (quite often), the RL operation treats the reference vector adaptation process as an RL task, where each reference vector learns from the environmental feedback and selects optimal actions for gradually fitting the problem characteristics. Accordingly, the reference point sampling operation uses assimilation-of-distribution learning models to sample new reference points. Finally, the resultant algorithm is applied to handle the proposed industrial copper burdening problem. For this problem, an adaptive penalty function and a soft constraint-based relaxing approach are used to handle complex constraints. Experimental results on both benchmark problems and real-world instances verify the competitiveness and effectiveness of the proposed algorithm.

2168-2275

10.1109/TCYB.2021.3086501

In today's data-driven world, decision makers are facing many conflicting objectives. Since there is usually no solution that optimizes all objectives simultaneously, the aim is to identify a solution with acceptable trade-offs. Interactive multiobjective optimization methods are iterative processes in which a human decision maker repeatedly provides one's preferences to request computing new solutions and compares them. With these methods, the decision makers can learn the problem structure and the output weights of MTSO. Then, a new supervisory mechanism is proposed to ensure the convergence of MTSO. On the other hand, current approaches for multiobjective optimization from the visualization community provide superior visualization tools but lack advanced optimization. In this paper, we introduce a new term, interactive, for integrating interactive multiobjective optimization and interactive visualization and present an interactive approach supporting decision makers in visually steering interactive multiobjective optimization methods. We integrate state-of-the-art interactive visualization with the process of interactive multiobjective optimization in a visual analytics solution that significantly improves the analysis workflow of decision makers, like comparing selected solutions and specifying new preferences during the iterative solution process. To realize the new interactive approach, we combine a coordinated multiple views system with DESEDO, an open-source software framework for interactive multiobjective optimization. We demonstrate our interactive approach on a river pollution problem.

2169-3536

10.1109/ACCESS.2022.3161465

Proximal policy optimization (PPO) is a deep reinforcement learning algorithm based on the actor-critic (AC) architecture. In the classic AC architecture, the Critic (value) network is used to estimate the value function while the Actor (policy) network value function is used to estimate the policy. The efficiency of the classic AC architecture is limited by the fact that the Actor network is used to estimate the policy. In this paper, we propose a novel AC architecture which will make the value function estimation inaccurate, which will affect the performance of the PPO algorithm. For improvement, we designed a novel AC architecture with policy feedback (AC-PF) by introducing the policy into the update process of the value function and further proposed the PPO with policy feedback (PPO-PF). For the AC-PF architecture, the policy-based expected (PBE) value function and discount reward formulae are designed by drawing the lessons from the classic AC architecture. In order of the Actor network to improve the efficiency of the value function, we change the policy to estimate the PBE value estimate at the early learning stage, we proposed a policy update method based on the clipped discount factor. Moreover, we specifically defined the loss functions of the policy network and value network to ensure that the policy update of PPO-PF satisfies the unbiased estimation of the trust region. Experiments on Atari games and control tasks show that compared to PPO, PPO-PF has faster convergence speed, higher reward, and smaller variance of reward.

2168-2232

10.1109/TSMC.2021.3098451

Existing stochastic configuration network (SCN)-based models are underperformed in handling multitarget regression problems. An important reason is that they ignore the intertarget correlations, which have an important effect on improving the modeling accuracy. To enhance the performance of these SCN-based models, in this article, a novel multitarget SCN (MTSCN) modeling approach is presented. The L2,1 norm of a structure matrix can be utilized to explicitly reveal the correlations between multiple targets and an L2 term are attached to the cost function of SCN. Considering the nonsmoothness of the constructed cost function, an alternating optimization is proposed to compute the structure matrix and the output weights of MTSCN. Then, a new supervisory mechanism is proposed to ensure the convergence of MTSCN. Finally, experimental results using the synthetic data and several real-world datasets show that the developed MTSCN is more superior to other modeling methods in resolving multitarget modeling problems.

2691-4581

10.1109/TAI.2022.3162570

It is fundamental for pharmaceutical enterprises to make statistics and analyses on the massive sales data that are submitted by distributors at different levels when making market plans and other decisions. However, buyer names in sales data may have various forms due to aliases, abbreviations, typos, and other reasons, which severely affect the subsequent mining performance. To tackle this problem, in this paper, we propose a novel approach called BuyerForm which can identify different expression forms for a given buyer name. The proposed model takes pairs of variable length buyer names as input and combines Bidirectional Encoder Representations from Transformers (BERT) and Bi-directional Long Short-Term Memory (BiLSTM) to obtain similar representations and calculate the similarity between the two names, which indicates whether they represent the same buyer. For this task, we first build a data set including more than 80,000 pairs of buyer names. Then, extensive experiments on the data set show that BuyerForm performs better than the state-of-the-art baseline and can obtain an average AUC of 99.64%.

2169-3536

10.1109/ACCESS.2021.3093028

Visible-thermal person re-identification (VTReID) is a rising and challenging cross-modality retrieval task in intelligent video surveillance systems. Most attention architectures cannot explore the discriminative person representations for VTReID, especially in the low-resolution frames. However, the fine-grained middle-level semantic information has received much less attention in the part-based systems for the cross-modality pedestrian retrieval task, resulting in limited generalization capability and poor representation robustness. This paper proposes a simple yet powerful discriminative local representation learning (DLRL) model to capture the robust local fine-grained feature representations and explore the rich semantic relationship between the learned part features. Specifically, an efficient contextual attention aggregation module (CAAM) is designed to strengthen the discriminative capability of the feature representations and explore the correlation between the learned part features and the global features for visible and thermal images. The integrated middle-level semantic information learning (IML) method is proposed to capture the part-level salient representations, which handles the ambiguous modality discrepancy in both discriminative middle-level and robust high-level information. Moreover, a part-guided graph convolution module (PGCM) is constructed to mine the structural relationship among the part representations within each modality. The quantitative and qualitative experiments on the two benchmark datasets demonstrate that the proposed DLRL model significantly outperforms state-of-the-art methods and achieves rank-1/mAP accuracy of 92.77%/62.05% on the ReID dataset and 63.04%/50.58% on the SYSU-MM01 dataset.

2637-6407

10.1109/TBIOM.2022.3184525

The business continuity of services provided by Critical Infrastructure is vital in order to ensure the security, the economy and the public's health of a nation. Delays and bad recovery strategies after disasters or failures can lead to impairing impacts in terms of injury to people, environmental pollution and loss of time, money and resources. In such a context, the adoption of a spatial Decision Support System (DSS) might play a crucial role in order to help operators to adopt the best recovery strategy in the shortest possible time frame. Current approaches do not consider the problem of assigning an intervention location to a maintenance crew and do not account for the effective way to prioritize the intervention requests in a network. The multi-criteria strategy is solved by the adoption of Incomplete Analytic Hierarchy Process (AHP) which computes holistic assignment costs as the result of the combination of multiple and possibly conflicting metrics of cost. Then, we use the holistic costs as the basis for a task assignment phase that is based on the Hungarian algorithm. The proposed strategy has been implemented as a module in the Decision Support System, namely Critical Infrastructure Protection Risk Analysis and Forecast (CIPRAF), whose outputs are represented on a web-based Geographic Information System (GIS) platform. The effectiveness of the proposed multi-criteria strategy has been validated via a real case study on the Rome City electrical distribution network.

2169-3536

10.1109/ACCESS.2023.3264686

Traditional band selection methods only analyze one dataset at a time and start searching band subsets from the zero ground state of knowledge, which cannot effectively mine spectral information to guide band selection. However, for hyperspectral images (HSIs) obtained by the same sensor, the spectral information has a similar physical meaning (radiance or reflectivity). Collaborative analysis technology can analyze multiple hyperspectral datasets to explore the spectral features shared among them. In this letter, a multiple datasets collaborative analysis framework for hyperspectral band selection is proposed to realize spectral information communication, thereby guiding and promoting the band selection of each dataset. Different from traditional methods, the proposed collaborative analysis framework is designed to facilitate the knowledge sharing of different band selection tasks. More importantly, the interaction mechanism among different datasets is adjusted dynamically, thereby improving the cooperation ability of the collaborative analysis framework. Benefiting from the knowledge crossover and a duplication mechanism for better search results, the proposed method achieves a global searching ability to find the optimal band subset. Experiments indicate that the proposed collaborative analysis method works more efficiently than the comparison methods and successfully enhances accuracy and convergence compared to single dataset analysis.

1557-9964

10.1109/TCBB.2022.3170301

Automated recognition of Human Phenotype Ontology (HPO) terms from clinical texts is of significant interest to the field of clinical data mining. In this study, we develop a combined deep learning method named PhenobERT for this purpose. PhenobERT uses BERT, currently the state-of-the-art NLP model, as its core model for evaluating whether a clinically relevant text segment (CTS) could be represented by an HPO term. However, to avoid unnecessary comparison of a CTS with each of ~14,000 HPO terms using BERT, we introduce a two-levels CNN module consisting of a series of CNN models organized at two levels in PhenobERT. For a given CTS, the CNN module produces only a short list of candidate HPO terms for BERT to evaluate, significantly improving the computational efficiency. In addition, BERT is able to assign an anchor HPO term to a CTS when recognition of the direct HPO term is not successful, mimicking the process of HPO term assignment by human. In two benchmarks, PhenobERT outperforms four traditional dictionary-based methods and two recently developed deep learning-based methods in two benchmark tests, and its advantage is more obvious when the recognition task is more challenging. As such, PhenobERT is of great use for assisting in the mining of clinical text data.

1558-2558

10.1109/LCOMM.2022.3210604

Federated learning (FL) can protect data privacy but has difficulties in motivating user equipment (UE) to engage in task learning. This letter proposes a Bertrand-game based framework to address the incentive problem, where a model owner (MO) issues an FL task and the employed UEs help train the model by using their local data. Specially, we consider the impact of time-varying task load and channel quality on UEs' motivation to engage in the FL task. We adopt the finite-state discrete-time Markov chain (FSOTMC) to predict these parameters during the FL task. Depending on the performance metrics set by the MO and the estimated energy cost of the FL task, each UE seeks to maximize its profit. We obtain the Nash equilibrium (NE) of the game in closed form, and develop a distributed iterative algorithm to find it. Finally, the simulation result verifies the effectiveness of the proposed approach.

1558-2205

10.1109/TCSVT.2022.3165934

Video captioning is a joint task of computer vision and natural language processing, which aims to describe the video content using several natural language sentences. Nowadays, most methods cast this task as a mapping problem, which learns a mapping from visual features to natural language and generates captions directly from videos. However, the underlying challenge of video captioning, i.e., sequence to sequence mapping across the different domains, is still not well understood. To address these the existing methods in an attempt to mimic human polishing process and propose a generate-and-polish framework for video captioning. In this paper, we propose a two-step transformer-based polishing network (TSPN) consisting of two sub-modules: the generation module is to generate the caption candidate and the polishing module is to gradually refine the generated candidate. Specifically, the candidate provides a global information of the visual contents in a semantically meaningful order, where it is firstly considered as a semantic inter-subject to bridge the semantic gap between the text and video, and then a mechanism for better and more accurate modeling and a duplication mechanism for better search results. The proposed method achieves the comparable and even better performance than the state-of-the-art methods on the benchmark datasets.

2169-3536

10.1109/ACCESS.2021.3129885

Applications supporting businesses, smart systems, social networks, and advanced video applications such as extended Reality (XR) require large amounts of data processing to be provided in real-time. Therefore, the processing speed of big data systems is more important than ever. On the other hand, protecting a big data system is not easy, as various types of nodes and clusters are supported by various wired and wireless networks. Currently security protocols slow down the response time of big data networks, and therefore, enhanced security and performance speed techniques need to be co-designed into the system. In this paper, a trusted streaming adaptive failure-compensation (TSAF) scheme is proposed that uses a trust management scheme to identify malicious nodes in Spark big data systems, exclude them from job/task processing, and calculate the number of nodes that can satisfy the process's object completion time. The TSAF scheme shows an improved processing performance when there are attacks on the big data system compared to other existing real-time big data processing schemes. For the case of no security attack, the processing time of TSAF is less than that of TSPN. When there are attacks, the processing time of TSAF is faster than that of TSPN. The proposed TSAF completes the object time is at least 0.5 s. Even when the ratio of malicious nodes performing security attacks on worker nodes reaches 0.5, the results show that TSAF can satisfy over 75% of the tasks within the object time, which is significantly higher compared to the existing big data processing schemes.

1558-0644

10.1109/TGRS.2022.3216831

The gap between self-supervised visual representation learning and supervised learning is gradually closing. Self-supervised learning does not rely on a large amount of labeled data and reduces the loss of human labeled information. Compared with self-supervised learning, supervised learning requires rich samples and human annotation by experts. Nonetheless, many applications are still in the early stages of development. Therefore, this article proposes a self-supervised method based on prototype assignment by designing a pretext task so that the network maps features to prototypes in the process of learning, swaps the code corresponding to the obtained features, combines them with another data-enhancing feature, and then optimizes the network. The prototype is introduced to explain the clustering idea embodied in the whole process. Considering the existence of the scene information in the feature representations, we introduce multiple views to different remote sensing images with more detailed information. Finally, if the data enhancement method is not powerful enough, the network can easily fall into an overfitting state, which prevents the network from learning subtle differences and detailed information. To address this shortcoming, we propose a fusion strategy to flatten the decision boundary of the framework so that the model can also learn the soft similarity between sample pairs. We name the whole framework multiview fusion feature sample mining based on prototype clustering (MFPC). In extensive experiments conducted on three common remote sensing image datasets (i.e., UCMerced, AID, and NWPUV4S), MFPC achieves a maximum improvement of 4.3% over some existing self-supervised algorithms, indicating that it can achieve good results.

1558-0040

10.1109/TEM.2021.3098665

This article focused on two main topics currently on among many agendas: smart cities and Artificial Intelligence (AI). The growing interest in the former is due to these cities' multidimensionality and adaptability in terms of residents' needs and the requirements of each municipality's reality. AI, in turn, currently plays a transformative, disruptive role in various areas by performing "smart" tasks, thereby facilitating the automation of processes and differentiation initiatives, especially in the long term, will most likely belong to AI. Thus, our research is aimed at contributing to a more holistic view of these topics and support decision-making processes in these areas. Based on the epistemological principles of the multiple-criteria decision analysis approach (MCDA), this article developed and tested a dynamic analysis system that allows smart city initiatives to address the challenges of adapting to AI. The proposed system highlights the cause-and-effect relationships in this context. The article included an application of the decision-making trial and evaluation laboratory (DEMATEL) technique. The procedural steps methodology were then enhanced by close collaboration with an experienced decision maker, who has coordinated various projects in this research context. The proposed system's contributions and limitations were also analyzed in this article.

2169-3536

10.1109/ACCESS.2021.3074559

In the era of data science and big data analytics, people analytics help organizations and their human resources (HR) managers to reduce attrition by changing the way of attracting and retaining talent. In this context, employee attrition presents a critical problem and a big risk for organizations as it affects not only their productivity but also their planning continuity. In this context, the salient contributions of this research are as follows. Firstly, we propose a people analytics approach to predict employee attrition that shifts from a big data to a deep data context by focusing on data quality instead of its quantity. In fact, this deep data-driven approach is based on a mixed method to construct a relevant employee attrition model in order to identify key employee features influencing his/her attrition. In this method, we start thinking "big" by collecting most of the common features from the literature (an exploratory research) then we tried thinking "deep" by filtering and selecting the most important features using survey and feature selection algorithms (a quantitative method). Secondly, this attrition prediction approach is based on machine, deep and ensemble learning models and is experimented on a large-sized and a medium-sized simulated human resources datasets and then a real small-sized dataset from a total of 450 responses. Our approach achieves higher accuracy (0.96, 0.98 and 0.99 respectively) for the three datasets when compared previous solutions. Finally, while rewards are generally considered as the most important keys to retention, our findings indicate that "business travel", which is less common in the literature, is the leading motivator for employees and must be considered within HR policies to retention.

1558-2205

10.1109/TCSVT.2022.3185252

The existing state-of-the-art (SOTA) video salient object detection (VSOD) models have widely followed short-term methodology, which dynamically determines the balance between spatial and temporal saliency fusion by solely considering the current consecutive limited frames. However, the short-term methodology has one critical limitation, which conflicts with the real mechanism of visual system – a typical long-term methodology. As a result, failure cases keep showing up in the results of the current SOTA models, and the short-term methodology becomes the major technical bottleneck. To solve this problem, this paper proposes a novel VSOD approach, which performs VSOD in a complete long-term way. Our approach converts the sequential VSOD, a sequential task, to a data mining problem, i.e., decomposing the input video sequence to object proposals in advance and then mining salient object proposals as much as possible in an easy-to-hard way. Since salient object proposals are simultaneously available, the proposed approach is a complete long-term approach, which can alleviate some difficulties rooted in conventional short-term approaches. In addition, we devised an online updating scheme that can grasp the most representative and trustworthy pattern profile of the salient objects, outputting frames saliency maps with rich details and smoothing both spatially and temporally. The proposed approach outperforms almost all SOTA models on five widely used benchmark datasets.

1939-1374

10.1109/TSC.2021.3121394

Workflow is used to support and connect business processes (BP) in organizations. Historically, it is used to define the control of how tasks are coordinated and executed. Its importance has been continually increasing with the incorporation of social, cloud, and mobile devices (SCMD). Blockchain and Internet of Things (IoT), new internet technologies have been widely used in various fields. Workflows often interact with services, where SoA is a key driver to smart service discovery and provide standards for interoperation. In decentralized collaborative environments, a workflow often deals with disparate services dynamically and interacts with services on demand. This not only unlocks the potentials of workflow applications in business process management (BPM), but also precipitates significant challenges and has brought considerable attention to the state-of-the-art of service workflow modeling and enabling technologies. It begins with the identification and examination of the workflow and IoT characteristics; it proposes a workflow architecture to classify existing works on service workflows, and it summarizes the methods for workflow modeling, service interoperation to identify the limitations of existing works and clarify future research directions in using service workflows.

1558-0644

10.1109/TGRS.2023.3242364

Recently, evolutionary algorithms (EAs) have shown their promising performance in solving the hyperspectral endmember extraction (EE) task. Despite that, most of the existing EA-based EE algorithms mainly take advantage of the global search strategy. To be specific, a few of them focus on the hyperspectral EE task itself, which is a sparse search problem. However, the global search strategy is not suitable for the global-to-local EA (EA-LE) is proposed, where the global and local search is performed sequentially to extract the endmembers effectively. Specifically, in the first global search stage, two complementary solution generation strategies, including asymmetric flip-based solution generation and spectral angle distance (SAD)-based solution repair, are designed, with which the sparse large-scale search space of hyperspectral EE is fully explored and the endmembers are then mined. In the second stage, the partition-based local search is suggested, which further improves the local quality of the obtained endmembers. Finally, the proposed EA-LE approach, which can alleviate some difficulties rooted in conventional short-term approaches. In addition, we devised an online updating scheme that can grasp the most representative and trustworthy pattern profile of the salient objects, outputting frames saliency maps with rich details and smoothing both spatially and temporally. The proposed approach outperforms almost all SOTA models on five widely used benchmark datasets.

1941-0476

10.1109/TSP.2022.31177845

Nonnegative matrix factorization (NMF) often relies on the separability condition for tractable algorithm design. Separability-based NMF is mainly handled by two types of approaches, namely, greedy pursuit and convex programming. A notable convex NMF formulation is the so-called self-dictionary multi-measurement vectors (SD-MMV), which can work without knowing the matrix rank a priori, and is arguably more resilient to error propagation relative to greedy pursuit. However, convex SD-MMV renders a large memory cost that scales quadratically with the problem size. This memory challenge has been around for a decade, and a major obstacle for applying convex SD-MMV to big data analytics. This work proposes a memory-efficient algorithm for convex SD-MMV. Our algorithm capitalizes on the special update rules of a classic algorithm from the 1950s, namely, the Frank-Wolfe (FW) algorithm. It is shown that, under reasonable conditions, the FW algorithm solves the noisy SD-MMV problem with a memory cost that grows linearly with the amount of data. To handle noisier scenarios, a smoothed group sparsity regularizer is proposed to improve robustness while maintaining the low memory footprint with guarantee. The proposed approach presents the first linear-memory complexity algorithmic framework for convex SD-MMV based NMF. The method is tested over a couple of unsupervised learning tasks, i.e., text mining and community detection, to showcase its effectiveness and memory efficiency.

1558-1748

10.1109/JSEN.2022.3157663

Fog computing has recently emerged to in-situ processing and energy-aware data offloading of Internet of Things (IoT) applications in the industrial sensor networks. Besides that, increasing the performance of large-scale IoT applications by improving the emergency response time has become a critical issue in sensor networks. To address the above-mentioned challenges, in this paper, we design a novel Energy-aware Data Offloading (EaDO) technique to minimize the energy consumption and latency in the industrial environment. The proposed EaDO strategy first outlines the emergency information of the incoming tasks with the attribute values. Next, the EaDO strategy schedules the emergency tasks using a multilevel feedback queueing policy to improve the schedulability. Moreover, a graph-theoretic approach, called as Hall's theorem is also adopted for finding maximum matching between scheduled tasks and active computing devices, including distributed fog devices and centralized cloud servers. Extensive simulation results exhibit that the EaDO strategy significantly improves the energy consumption rate of the industry generated tasks up to 23%-30% over the existing algorithms.

1558-0644

10.1109/TGRS.2021.3123423

Convolution neural networks (CNN) and graph representation learning are two common methods for hyperspectral image (HSI) classification. Recently, graph convolutional neural networks, a combination of CNN and graph representation learning, have shown great potential in the HSI classification problem. However, the existing graph convolution network (GCN)-based methods have many problems, such as overdependence on the adjacency matrix, usage of a single model feature, and lower accuracy than the mature CNN method. In this article, we propose a feature fusion hypergraph neural network (F2HNN) for HSI classification. F2HNN first generates hyperedges (features of different modality) to construct a hypergraph representing the HSI. Then, the HSI and the extracted hypergraph are input into the hypergraph and convolutional neural network for learning. In addition, we propose three feature fusion strategies. The first strategy is the most basic spatial and spectral feature fusion. The second strategy fuses the spectral features extracted by a pretrained multilayer perceptron (MLP) with the spatial features to reduce the redundant information of the original spectral features. The third strategy uses the fusion of CNN features, spectral features, and spatial features to explore the capabilities of F2HNN. Sufficient experiments on four datasets have proved the effectiveness of F2HNN.

2169-3536

10.1109/ACCESS.2021.3077499

Video monitoring is an important means to ensure production safety in coal mine. However, the currently intelligent video surveillance is difficult to respond in real-time due to the latency of cloud computing. In this paper, a cloud-edge cooperation framework is proposed, which integrates cloud computing and edge computing in a coordinated manner. The cloud computing is used to process non-real-time and global tasks, while the edge computing is responsible for handling local monitoring video in real-time. In order to realize cloud-edge data interaction and online optimization for edge models, the heterogeneous connected network is built. In addition, an object detector model FL-YOLO composed of deepwise separable convolution and down-sampling inverted residual block is proposed, which realizes real-time video analysis at the edge. Finally, this paper discusses the complexity of FL-YOLO in its computational cost and model size. The experiment results show that the model size of FL-YOLO is 16.1MB, which is very light, and it achieves 36.7 FPS on NVIDIA Jetson TX1 and an AP of 78.7% on Multi-scale pedestrian dataset. Comparing with mainstream object detection models, FL-YOLO completes faster detection speed and higher accuracy, and it has lower calculation complexity and smaller model scale. Furthermore, the AP on Single-scale pedestrian dataset of FL-YOLO is improved by 80.7% by the end-to-end cooperation. K-Fold method is used to further compare the performance of FL-YOLO and other models. Moreover, system test is implemented on coal mine, which validates the actual engineering effect of the proposed cloud-edge cooperation framework.

1939-1374

10.1109/TSC.2021.3062383

Cloud services request lower cost compared to traditional software of self-purchased infrastructure due to the characteristics of on-demand resource provisioning and pay-as-you-go mode. Current enterprises compact their business software as services into cloud platform to users. In the cloud services market, service providers attempt to make more profits from their services, while users hope to choose low-cost services with high-quality. The conflict of interests between users and service providers is an important challenge for the booming cloud service market. This article characterizes this application problem formally based on a utility game model of service providers and users. In the model, QoS is determined as the basis for determining the utilities of both parties from an economic point of view. By analyzing the behaviors of users and service providers, we introduce the concept of reputation cost for the first time in the model and find a QoS solution that balances the utilities of users and service providers in service transactions. In such a balance, any change in either party's strategy will result in a loss of utility. And then a QoS optimization method is designed to obtain a near-optimal QoS solution for a tradeoff between user satisfaction and provider profit. Extensive simulation experiments are conducted to substantiate the effectiveness of our method. The results are applicable to win-win service applications between service providers and users.

2327-4662

10.1109/JIOT.2021.3078330

With the development of information and communication technologies, industrial cyber-physical systems (ICPS) have accumulated a large amount of data, which enables us to convert data into industrial insight. However, since the industrial process of ICPS is always complicated and large scale, the raw data only contain a few operation condition information, which brings challenges to process monitoring and control. Thus, an efficient operation condition division method for ICPS is necessary. Although many operation condition division methods have been proposed, they were mainly relying on the static characteristics and ignored how the industrial process varies dynamically. Meanwhile, with the industrial process running, there may exist some new operation conditions that make the operation condition division task even more difficult. In order to grasp the static and dynamic features simultaneously of the industrial process and divide operation conditions accurately, we proposed an operation condition division method based on joint static and dynamic analysis with incremental learning. In detail, the slow feature analysis (SFA) and self-organizing map (SOM) network were proposed to extract the static and dynamic features jointly. Then, a division strategy was proposed to distinguish the operation condition changing points. For the new operating condition, we designed an incremental learning method based on the SOM network, which can update the operation condition model in real time. Extensive experiments, including a numerical simulation, two benchmark processes, and an industrial roasting process demonstrate that the proposed method can identify the operation conditions of the raw data in ICPS accurately and efficiently.

Blockchain technologies allow the Internet of Things (IoT) to build trust among various interest parties. For the resource-limited IoT devices, offloading computation-intensive tasks [blockchain verification and mining tasks, and data access tasks] to edge servers for execution is considered a promising solution in mobile-edge computing. However, conventional methods (such as linear programming or game theory) for the computation offloading problem cannot achieve long-term performance while the existing deep reinforcement learning (DRL)-based algorithms suffer from slow convergence, lack of robustness, and unstable performance. In this article, we present a novel algorithm for improving the stability and sample learning is introduced by introducing a new actor-critic framework. The proposed actor-critic framework consists of two parts: a policy network and a value network. The policy network explores the environment collaboratively for fast convergence and robustness. First, it finds the nonorthogonal multi-access-enabled cooperative computation offloading problem and formulates the joint problem as a Markov decision process by considering both the blockchain mining task and data processing tasks. Second, to avoid useless exploration and unstable performance, we initially train an intelligent agent represented by a convolutional neural network (CNN) to explore the environment. When the intelligent agent successfully explores the environment, we subsequently collaborate with others to explore the environment. Finally, our experimental results demonstrate that our algorithm could perform better in terms of reducing energy cost and delay cost, and shortening almost 60% of the training time compared with the state-of-the-art approaches.	2327-4662	10.1109/JOT.2020.3016644
Dictionary learning has been widely used in image representation under the framework of sparse theory. However, most of the current dictionary learning strategies can only be used for single-frame image separately, which are insufficient from the perspective of incremental information acquisition and global optimization for the sequential or multiframe satellite imaging. To this end, this article proposes an incremental dictionary learning method for multiframe satellite images representation in the spectral domain. The incremental dictionary learning is formulated analytically in the framework of sparse representation with low-rank constraint, as a frame-by-frame incremental regularization-based approach. The proposed method iteratively updates the global coefficient matrix representing the common spectral information of the sequence. Specifically, the global coefficient matrix of the sequential frames is optimized by two adjacent frames gradually. Meanwhile, the local dictionary representing the specific spectral information of each frame is optimized by the newly added frame itself. In addition, an activity ratio for separating the global dictionary from the local dictionaries, an outlier detection method for initializing the local dictionary are also given, and the alternating direction method of multipliers (ADMM) is employed to solve the optimization problem. Compared with the existing methods, our proposed method achieves the best representation performance in both spatial and spectral domains, and also helps to improve the performance of dictionary-based tasks using sequential satellite images, such as sea surface anomaly detection.	1558-0644	10.1109/GRS.2021.3173936
Predicting grain losses and waste rate (LWR) is critical for agricultural planning and grain policy development. Capturing the state interaction and generating robust features are the main challenges in grain LWR prediction. In this article, we propose MITGA (Multitask Gated recurrent unit (GRU) Autoencoder; group delay) to obtain the robust feature representation for the prediction task and 2) explore the time-order interactions among different features and capture the temporal dependencies between the input and output variables. We use the GRU encoder-decoder pairs. Furthermore, we introduce the multitask for reconstructed loss and grain LWR prediction. We introduce the reconstructed loss as an auxiliary task to help us to represent the robust features. Besides, we introduce the LWR prediction as main task to learn the parameters for prediction task. We collected the data with questionnaires, interviews, or data from grain management departments for experiments. The evaluation results show that grain loss prediction model using our approach achieved the best result compared to several state-of-the-art prediction models. Moreover, our method gains overall performance decline of 12.5–18.3% on mean absolute error and root mean square error metrics.	1941-0050	10.1109/TAGI.2020.3030709
From a set of existing tuples, a skyline operator retrieves only a subset, superior tuples that are of a person's interest and are non-dominated. Processing of queries using the skyline operator is an expensive and exhaustive task. It gets more complicated when skyline queries are applied on partially complete data and databases are distributed over different data centers. Incompleteness in data raises many issues such as compromise on transaction quality and reduced throughput. This paper presents a novel algorithm called Cloud-based Incomplete Data Skyline algorithm (CIDS). CIDS uses a heuristic approach to generate a skyline query result. Note a processing skyline queries over partially complete databases in cloud environment. The algorithm retrieves superior tuples with the aim of reducing dimensionality test between the tuples, decreasing processing time and reducing the huge amount of data flow from one data center to another. Several experiments have been conducted over different types of datasets, and results have proven that the proposed algorithm outperforms the existing skyline processing time, domain tests as well as the amount of data transfer.	2169-3536	10.1109/ACCESS.2021.3185087
An opportunistic linkage between two mobile devices or nodes can be constructed when they are within each other's communication range. Typically, cyber-physical environments consist of a number of mobile devices that are potentially able to establish opportunistic contacts and serve mobile applications in a cost-effective way. Opportunistic mobile service computing is a promising paradigm capable of utilizing the pervasive mobile computational resources around users. Mobile users are thus allowed to exploit nearby mobile services to boost their computing capabilities without investment in their resource pool. Nevertheless, various challenges, especially those related to the availability of mobile services, need to be addressed before mobile users can fully utilize stable and available. In this work, we first analyze the characteristics of mobile services and propose a novel method for reliability-aware and deadline-constrained service composition over opportunistic networks. We leverage the Knill-Herbst-based approach to yield a deadline-constrained, reliability-aware, and well-executable service composition schedule based on the estimation of completion time and reliability of schedule candidates. We carry out extensive case studies based on some well-known mobile service composition benchmarks and compare them with the existing baseline methods in terms of success rates in terms of successful completion time of requests and the number of failed requests. Our proposed method shows significant improvement in response times to Practitioners—Recently, the rapid development of mobile devices and mobile communication leads to the prosperity of mobile service computing. Services running on mobile devices within a limited range are allowed to be processed to coordinate through wireless communication technologies and perform complex tasks and business processes. Despite its great potential, mobile service compositions remain a challenge since the complexity of the device-to-device communication and the uncertainty of the network conditions make it difficult to design a reliable and efficient service composition method. In this paper, we propose a novel reliability-aware and deadline-constrained service composition method for mobile opportunistic networks. Instead of assuming time-invariant availability of mobile nodes, the proposed method is capable of estimating service availability at run-time and leveraging a Knill-Herbst-based approach to yield the deadline-constrained, reliability-aware, and well-executable service composition schedules. Case studies and real-world scenarios are carried out to evaluate the effectiveness of the proposed method in terms of success rates in terms of successful completion time of requests and the number of failed requests. The proposed method and optimization of composite services as well as their smooth execution in a mobile environment. It can help practitioners better manage the reliability and performance of real-world applications built upon mobile services.	1558-3783	10.1109/TASE.2020.2993218
This paper investigates the stochastic optimization problem focusing on developing scalable parallel algorithms for deep learning tasks. Our solution involves a reformulation of the objective function for stochastic optimization in neural network models, along with a novel parallel computing strategy, coined the weighted aggregating stochastic gradient descent (WASGD). Following a theoretical analysis on the characteristics of the new objective function, WASGD introduces a decentralized weighted aggregating scheme based on the parallel aggregation of stochastic gradients. Without any center variable, the new method automatically gauges the importance of data and weights assigned by the server manager to the aggregated gradients. The proposed method is implemented in two variants: (1) implementing the WASGD algorithm in a distributed manner across multiple servers, and (2) implementing the WASGD algorithm in a centralized manner across multiple servers. To validate the new method, we benchmark our pipeline against several popular algorithms including the mini-batch, WASGD, and the mini-batch neural network classifier training techniques (e.g., elastic averaging SGD). Comprehensive validation studies have been conducted on four classic datasets: CIFAR-100, CIFAR-10, Fashion-MNIST, and MNIST. Subsequent results have firmly validated the superiority of the WASGD scheme in achieving faster convergence and higher accuracy than the existing methods. Better still, the enhanced version of WASGD shows significant improvement over its counterparts.	1558-2191	10.1109/TKDE.2020.2963977
In the current century, organizations face ever increasing dynamic ecosystems and are constantly devising strategies to meet their challenges. These include the implementation of the right organizational structure and avoid project schedule delays to achieve projects' success. Unfortunately, the classification of significant project success dimensions in the R&D environment is still an elusive concept. This study adopts a multi-dimensional qualitative and quantitative approach to explore the critical dimensions of organizational structure and schedule management that enhance or hinder the project success in R&D organizations. In Phase 1, a Delphi Study was conducted to identify relevant factors influencing project success in the R&D environment. In Phase 2, five questionnaire-based surveys were conducted to survey the perceptions of project managers about the R&D environment. The proposed framework is validated by conducting face, content and construct validity. The results indicated that formalization, specialization, differentiation, coordination mechanisms, decentralization and authority of managers have a significant effect on the schedule management and successful execution of R&D projects; whereas, centralization and departmentalization do not correlate strongly. The results also imply that the degree of formalization has the most profound impact on project performance when proposed timelines are not met. Furthermore, the findings suggest that the proposed framework will act as a supporting mechanism for engineering managers to deal with organizational structure and schedule management factors in a highly uncertain R&D environment where projects deviate frequently from their allocated timeline.	2169-3536	10.1109/ACCESS.2021.3112112
It is challenging for stochastic optimization to handle large-scale sensitive data safely. Duchi et al. recently proposed a private sampling strategy to solve privacy leakage in stochastic optimization. However, this strategy used random sampling to select samples from the dataset, which would affect the statistical properties of the original data. In this paper, we propose a novel method called Private Sampling Strategy (PSS) for stochastic optimization under the framework of local privacy, which is called Privacy-Preserving Stochastic Gradient Descent (PPSGD). PSSGD bridges private updates of the primal variable (by private sampling) with gradual curriculum learning (CL). The noise injection leads to similar issue from label noise, but the robust learning process of CL can combat with label noise. Thus, PSSGD yields "private but robust" updates of the primal variable. Our results indicate that, as a so-called label sequence predictor (LS), PSSGD achieves a good tradeoff between privacy preservation and robustness over baselines.	1558-2191	10.1109/TKDE.2020.2963977
Person search, consisting of jointly or separately trained person detection stage and person Re-ID, suffers from significant challenges such as inefficiency and difficulty in acquiring discriminative features. However, certain person has either turned to the end-to-end framework whose performance is limited by task conflicts or has consistently attempted to obtain more accurate bounding boxes (BBoxes). Few works have focused on the person-specificity in person search training a fine-grained person Re-ID module. In this paper, we propose a novel framework called Person-Specificity Enhanced Person Search (PSEPS) for person search. PSEPS is designed to enhance the sample-enhanced instance-sensitive (SES) framework to boost performance. By analyzing the structure of person search framework, our method refines the two stages separately. For the detection stage, we re-design the usage of BBox and a sample enhancement combination is proposed to further enhance the quality and quantity of BBoxes. SES can suppress false positive detection results and randomly generate high-quality BBoxes. Meanwhile, the use of BBox is contributed to the person search task. In the Re-ID stage, we propose a novel framework called Person-Specificity Enhanced Person Search (PSEPS) for person search. PSEPS is designed to enhance the sample-enhanced instance-sensitive (SES) framework to boost performance. By analyzing the structure of person search framework, our method refines the two stages. Extensive experiments demonstrate that our method achieves SOTA performance on the person search task with a high speed, and significantly outperforms other existing methods.	1558-2205	10.1109/CVST.2021.3185551
Visible-thermal person re-identification (VT-ReID) is an image retrieval task that aims at matching the target pedestrian across the visible and thermal modalities. However, intra-class variations and cross-modality discrepancy degrade the performance of VT-ReID. Recent methods focus on extracting discriminative local features of each modality to alleviate the intra-class variations and cross-modality discrepancy, but these methods ignore the relationship between the two modalities. In this paper, we propose a feature aggregation module (FAM) to enhance the correlation between local features including spatial dependencies and channel dependencies. Furthermore, FAM implements cross-modality feature aggregation on the enhanced features to reduce the cross-modality discrepancy. Moreover, we also proposed near neighbor cross-modality loss (NNGLoss) to mine feature consistency between modalities by constructing a cross-modality near neighbor set, which facilitates feature alignment between two modalities. Experimental results on two datasets demonstrate that the proposed method achieves competitive performance compared with the state-of-the-art methods.	1558-2361	10.1109/SPR.2023.3244477
Visualizing the search behavior of a series of points or populations in their native domain is critical in understanding basins and attractors in an optimization process. Distance-based many-objective optimization test problems have been developed to facilitate visualization of search behavior in a 2-D design space with arbitrarily many objective functions. Previous works have proposed a few commonly seen problem characteristics into this problem framework, such as the definition of disconnected Pareto sets and dominance resistant regions of the design space. The authors' previous work has advanced this research further by providing a parameterized family of distance-based many-objective test problems as well as newly introduced features such as varying objectives, varying objectives, varying objectives, and varying objectives. This work makes a number of additional contributions including the proposal of an enhanced, open-source feature-rich problem generator that can create user-defined problem instances exhibiting a range of problem features—some of which are newly introduced here or form extensions of existing features. A comprehensive validation of the problem generator is also provided using popular multiobjective optimization algorithms. Some preliminary problem settings to create test cases exhibiting different characteristics are outlined.	1941-0026	10.1109/TEVC.2021.3084119
In this paper, one-shot person re-identification (person re-ID) task is brought into focus, where there is only one labeled sample of each pedestrian. Existing one-shot person re-ID researches usually utilize data insufficiency or treat both labeled and pseudo-labeled data in the same way. To solve these problems, we propose a Hierarchical Pseudo Labeling strategy based on Density and Distance and an Branchment Learning framework. The pseudo labeling strategy can fully exploit the unlabeled data information and generate accurate pseudo labels by multiple clustering based on pairwise feature distances and distribution densities hierarchically. Our Branchment Learning framework can effectively distinguish between true and false samples by learning the relationship between true and false samples. The proposed method achieves competitive performance on the person re-ID task. Our results indicate that, as a so-called label sequence predictor (LS), PSSGD achieves a good tradeoff between privacy preservation and robustness over baselines.	1558-2361	10.1109/LSP.2021.3139571
This work aims to discover the relevant factors to predict the health condition of COVID-19 patients by employing a fresh and enhanced binary multi-layer perceptron hybrid filter-wrapper chimp optimization (EMBOCHA-FW) based feature selection (FS) approach. FS is a preprocessing approach that has been highly utilized in medical applications, as it not only reduces dimensionality but also allows us to understand the origins of an illness. Feature selection (FS) is a crucial step in machine learning. The goal of FS is to select a subset of features that are most relevant to the task at hand. In this paper, we propose a novel	2169-3536	10.1109/ACCESS.2021.3203400
We propose strongly consistent estimators of the S_{full} [18] norm of the sequence of S_{full} -mixing coefficients of a stationary ergodic process. However, they provide strongly consistent estimators of S_{full} -mixing coefficients of a stationary ergodic process. However, they provide strongly consistent estimators of S_{full} -mixing coefficients of a stationary ergodic process. However, they provide strongly consistent estimators of S_{full} -mixing coefficients of a stationary ergodic process. However, they provide strongly consistent estimators of S_{full} -mixing coefficients of a stationary ergodic process. However, they provide strongly consistent estimators of S_{full} -mixing coefficients of a stationary ergodic process. However, they provide strongly consistent estimators of S_{full} -mixing coefficients of a stationary ergodic process. However, they provide strongly consistent estimators of S_{full} -mixing coefficients of a stationary ergodic process. 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Recently, with the development of deep learning, Automatic License Plate Recognition (ALPR) has made great progress. However, there are still many challenges to accomplish license plate (LP) recognition under various traffic scenarios. One of them is the detection speed and recognition speed, and the other is the difficulty to recognize the low resolution and highly tilted LP images. In this paper, we present a two-stage ALPR framework to achieve efficient LP detection and recognition. The dataset is for multiple LPs in a single image, which makes up for the lack of public datasets in multiple LP scenarios. To improve the inference speed, we abandoned the rectification of LP images, and RNNs that are difficult to compute in parallel. Additionally, we also propose a license plate data augmentation method, which achieves more effective augmentation and improves the generalization ability of the network through secondary random and hyperparametric search. As an additional contribution, we provide a challenging dataset collected from real-world video recorders. The dataset is for multiple LPs in a single image, which makes up for the lack of public datasets in multiple LP scenarios. We evaluate the results on five datasets and showed that we achieved the best performance on almost all test sets, achieving 99.8% accuracy on CPD with more than 180,000 license plate test sets. In terms of speed, the inference speed for detecting license plates reaches 751 FPS, and the fastest inference time for recognizing a single license plate takes only 2.9 ms.

1558-0016

10.1109/TITS.2023.3237581

Predictive Maintenance technologies are particularly appealing for Industrial Equipment producers, as they pave the way to the selling of high added-value services and customized maintenance plans. However, standard Predictive Maintenance approaches assume the availability of sensor measurements, and the costs associated with sensor measurements and the costs associated with the development of such technologies. In this context, Alarm Forecasting can be very useful as it represents a low-cost alternative or helpful support to sensor-based Predictive Maintenance. In this work, we propose a new formulation for the Alarm Forecasting problem, framed as a multi-label classification task. We present a novel deep learning-based approach called FORMULA (alarm FORecasting in MULTI-label settings). FORMULA leverages Transformer, a popular Neural Network architecture in the field of Natural Language Processing. To cope with alarm imbalance, we draw inspiration from Segmentation and Object Detection. Thus, FORMULA is trained by minimizing the Weighted Focal Loss, which turns out to be very effective in predicting rare alarms. These alarms, even if they are difficult to predict by nature, often are business-critical. We assess the proposed approach on a representative real-world problem from the packaging industry. In particular, we show that it outperforms not only classic multilabel techniques but also models based on recurrent neural networks. As regards the latter, the proposed approach also exhibits a lower computational burden, both in terms of training time and model size. To foster research in the field and report on it, we also publicly share the alarm logs dataset and the code used to perform the experiments. Note to Practitioners—This paper was motivated by the problem of monitoring equipment in the scenario of dairy products packaging, under the mild assumption that logs of the alarm generated by the packaging machines are available. This paper proposes an alarm forecasting algorithm. Its goal is to predict if any alarm will occur in the future, based only on past alarm logs. The limits of the considered future window can be defined arbitrarily, as long as enough time to perform corrective actions. Thus, the proposed approach is able to prevent unexpected downtime that would not hinder productivity but also imply significant material waste. The proposed approach leverages methodologies from Natural Language Processing and Object Detection to deal with rare alarms that are often very informative in the industrial scenario. Besides, both the code and the real-world industrial datasets used to evaluate the methodology are available publicly. Currently, the proposed approach only uses alarm logs. Especially in the context of Industry 4.0, where many sensory data may be available, this is a limited approach. Thus, the described approach might be extended by integrating alarm logs with sensory data. This integration is expected to improve the estimation of equipment health state. The results described in this paper may find application not only in the manufacturing sector but also in different areas such as Cyber Security, where log files keep activity records of each process performed.

1558-3783

10.1109/TASE.2021.3127995

Preference-based Evolutionary Multiobjective Optimization (EMO) algorithms approximate the region of interest (ROI) of the Pareto optimal front defined by the preferences of a decision maker (DM). Here, we propose a preference-based EMO algorithm, in which the preferences are given by means of aspiration and reservation points. The aspiration point is formed by objective values which the DM wants to achieve, while the reservation point is constituted by values for the objectives not to be worsened. Internally, the first generations are performed in order to generate an initial approximation set according to the reservation point. Next, in the remaining generations, the algorithm adapts the search for new non-dominated solutions depending on the dominance relation between the solutions obtained so far and both the reservation and aspiration points. This allows knowing if the given points are achievable or not; this type of information cannot be known before the solution process starts. On this basis, the algorithm proceeds according to three different scenarios with the aim of re-orienting the search directions towards the ROI formed by the Pareto optimal solutions with objective values within the given aspiration and reservation values. Computational results show the potential of our proposal in 2, 3 and 5-objective test problems, in comparison to other state-of-the-art algorithms.

2169-3536

10.1109/ACCESS.2021.3101899

Accurate fault detection and diagnosis (FDD) is critical to ensure the safe and reliable operation of industrial machines. Deep learning has recently emerged as effective methods for machine FDD applications. However, the gradient descent optimization method that is commonly used in deep learning suffers from several limitations, such as high computational cost and local sub-optimal solutions. Accordingly, this paper proposes a new parallel ensemble model comprising hybrid machine and deep learning for undertaking FDD tasks. Composed of three levels of learning, the proposed ensemble model employs two base learners and a meta-learner, and is executed in parallel through different platforms. The base learners adopt a hybrid Back-Propagation (BP) and Particle Swarm Optimization (PSO) algorithms to exploit the corresponding local and global optimization capabilities for identifying optimal features and improving FDD performance. The proposed model is validated through a series of experiments using two benchmark data sets, i.e., CWRU and MAFAUD. The results demonstrate a high performance with accuracy rates of 98.45% and 99.79% for CWRU and MAFAUD, respectively. Its parallel implementation is able to reduce the computation time, resulting in a speed-up of 5.8 time and 7.17 time, respectively. These findings indicate that the proposed model is effective and efficient for FDD of industrial machines, making it a promising solution for implementation in real-world environments.

2169-3536

10.1109/ACCESS.2023.3267089

In a typical data pipeline, the dataflow starts from the first node, where the data is initiated, and moves to the last node in the pipeline, where the processed data will be stored. Due to the sheer number of involved participants, it is crucial to protect the dataflow integrity in the pipeline. While previous studies have outlined solutions to this matter, the solution for an untrusted data pipeline is still left unexplored, which motivates us to propose SIGNORA. Our proposal combines the concept of a chain of signatures with blockchain receipt to provide dataflow integrity. The chain of signatures provides a non-repudiation guarantee from participants, while the hash of the data and its timestamps is anchored in the blockchain for a non-tampering guarantee through blockchain receipt. Aside from that, SIGNORA also satisfies essential requirements of running data pipeline processing in an open and untrusted environment, such as (i) providing reliable identity management, (ii) solving the trust and accountability issues through a reputation system, (iii) supporting various devices through multiple cryptographic algorithms (i.e., ECDSA, EdDSA, RSA, and HMAC), and (iv) off-chain processing. Our experiment results show that SIGNORA can provide dataflow integrity provisioning in multiple scenarios of data payload size with reasonable overhead. Furthermore, smart contract methods and several off-chain solutions have been addressed to reduce transaction costs. Finally, the reputation system has been designed to adapt to the system can adapt to the system of nodes' activities by increasing their scores when they actively perform honest behavior while reducing their scores when they become inactive. Therefore, SIGNORA can provide a high degree of accountability for participants collaborating in an untrusted environment.

2169-3536

10.1109/ACCESS.2022.3199878

In the last decade, data generated from different digital devices has posed a remarkable challenge for data representation and analysis. Because of the high-dimensional datasets and the rapid growth of data volume, a lot of challenges have been encountered in various fields such as data mining and data science. Conventional machine learning classifiers are limited by the high-dimensional data, which leads to the curse of dimensionality. To overcome this problem, memory limitation, computational cost, and low accuracy problem. Consequently, there is a need to reduce the dimension of datasets by choosing the most significant features that would represent the data efficiently with minimum volume. This study proposes an improved binary version of the equilibrium optimizer algorithm (IBEO) to mitigate features selection problem. Two main enhancements are added to the original equilibrium optimizer (EO) to strengthen its performance. The first advancement added to EO is the initialization of the population in the search space is the diversity of the population in the search space is the diversity of the search algorithm is the second advancement added to enhance the exploitation of EO. Wrapper approaches can offer premium solutions. Thus, we used k-nearest neighbour classifier and support vector machine classifiers as the most popular wrapper methods. Moreover, dealing with the problem of over-fitting is an essential task that urges on applying k-fold cross-validation to split each dataset into training and testing data. Comparative tests with different well-known algorithms such as grey wolf optimization, grasshopper optimization, particle swarm optimization, and cuckoo search algorithm are considered. The proposed algorithm is applied to the most commonly datasets used in the field to validate the performance. Statistical analysis studies demonstrate the effectiveness of the IBEO.

2169-3536

10.1109/ACCESS.2021.3108097

Internet-of-Things (IoT) is being widely embraced with the number of connected devices growing rapidly. Moreover, IoT applications are emerging in diverse verticals such as connected cars, connected factories, and smart agriculture. For new business models, in order to meet key network performance indicators, connectivity must be flexible and agile. An integrated satellite-aerial-terrestrial network (I-SAT) has recently stimulated interest in providing wireless communication due to its high maneuverability, versatile deployment, and pervasive connectivity. The resource planning, task distribution, and action management of an I-SAT can be accomplished through effective acquisition, coordination, transmission, and aggregation of diverse information. This paper considers an I-SAT network, in which multiple unmanned aerial vehicles (UAV) are deployed for remote base station (BS), in a cognitive setting, in the presence of satellite-receiver communication, are deployed to support smart vehicles on the ground. By taking into account different limitations and Quality of Service (QoS) constraints, the goal is to maximize the average throughput among users by jointly optimizing user association, BS/UAV transmission power, and UAV trajectory. The formulated problem is a non-convex optimization problem with a complicated expression that is hard to solve by the existing methods. To tackle this problem, an alternating iterative algorithm based on the block descent method is proposed to solve the problem. The problem is subdivided into three subproblems, transmitter-vehicle association optimization, BS/UAV power allocation optimization, and UAV trajectory control. Then, in an iterative process, these subproblems are solved sequentially. The proposed solution uses a segment-by-segment technique, which breaks the complete UAV flight trajectory into smaller time segments to reduce computation time when the network service period is considerable. As a result, each time segment's optimization can be solved more quickly. Furthermore, the paper presents the results of network simulations carried out to assess the efficiency of the proposed solution. The findings show that the presented scheme outperforms different benchmark schemes in terms of the average user throughput when observing multiple different scenarios.

1558-2248

10.1109/TWC.2021.3120264

The effective use of multimodal data to obtain accurate land cover information has become an interesting and challenging research topic in the field of remote sensing. In this article, we propose a new method, multiscale learning and attention enhancement network (MSLAENet), to implement hyperspectral image (HSI) and light detection and ranging (LiDAR) data fusion classification in an end-to-end manner. Specifically, our model consists of three main modules. First, we design the composite attention module, which adopts self-attention to enhance the feature representations of HSI and LiDAR data, respectively, and cross-attention to achieve cross-modal information enhancement. Second, the proposed multiscale learning module combines self-calibrated convolutions and hierarchical residual structure to extract different scales of information to further improve the representation capability of the model. Finally, the attention-based feature fusion module fully considers the complementary information properties between different modalities and adaptively fuses heterogeneous features from different modalities. To test the performance of MSLAENet, we conduct experiments on three multimodal remote sensing datasets and compare them with the state-of-the-art fusion model, which demonstrates the effectiveness and superiority of the model.

2151-1535

10.1109/JSTARS.2022.3221098

Requirement changes occur frequently during the product development process owing to diverse and personalized customer needs. This necessitates multiple reworks of the development task, causing delays. Therefore, it is necessary to analyze the impact of requirement change on the progress of product development. First, the development task is divided into three phases: concept development, detail design, and pilot production. Reworks that are a result of a requirement change are analyzed along with the reworks caused by requirements that are not changed. Then, development task activities and relationships are quantitatively described, and a simulation model is built based on the system dynamics method. This is combined with a practice case of product development, and the impact of requirement change on the progress of the development task is analyzed. The analysis shows that requirement changes greatly increase the development task duration and uncertainty of the development task schedule. The development task schedule is most sensitive to the deadline for requirement change, and the impact of a requirement change occurring at the end of phase 3 is greater.

2169-3536

10.1109/ACCESS.2020.3046753

To aggregate useful information among diversified sources, a hotspot research topic called truth discovery has emerged in recent years. Existing truth discovery methods attempt to infer the true attribute values for the entities by identifying and trusting reliable data sources. That is, the values provided by reliable sources are more likely to be the true values. However, all these methods neglect the relations among different entities, which play important roles in truth discovery task. When reliable data sources cannot provide sufficient information of entities, the true attribute values of these entities can still be inferred by propagating trustworthy information from related entities. Motivated by this, in this paper, we introduce the constrained truth discovery problem, where the constrained truth discovery problem is a universal problem in which each entity can express a large number of effective and widely existing relations among entities, into the process of truth discovery. We formulate it as a constrained optimization problem and analyze its hardness. To address the problem, we propose algorithms to partition the entities into disjoint groups, and generate arithmetic constraints for each disjoint group separately. Then, the true attribute values of the entities in each disjoint group are derived by minimizing the objective function under the corresponding arithmetic constraints. Experimental results on both real-world and synthetic datasets demonstrate that the proposed approach achieves good performance even with very few constraints and reliable sources.

1558-2191

10.1109/TKDE.2020.2982393

Traffic speed prediction based on real-world traffic data is a classical problem in intelligent transportation systems (ITS). Most existing traffic speed prediction models are proposed based on the hypothesis that traffic data are complete or have rare missing values. However, such data collected in real-world scenarios are often incomplete due to various human and natural factors. Although this problem can be solved by first estimating the missing values with an imputation model and then applying a prediction model, the former potentially breaks critical latent features and further leads to the error accumulation issues. To tackle this problem, we propose a graph-based spatio-temporal autoencoder that follows an encoder-decoder structure for spatio-temporal traffic speed prediction with missing values. Specifically, we regard the imputation and prediction as two sequential tasks and train them sequentially to eliminate the negative impact of imputation on raw data for prediction and accelerate the model training process. Furthermore, we utilize graph convolutional layers with a self-adaptive adjacency matrix for spatial dependencies modeling and apply gated recurrent units for temporal learning. To evaluate the proposed model, we conduct comprehensive case studies on two real-world traffic datasets with two different missing patterns and a wide and practical missing rate range from 20% to 80%. Experimental results demonstrate that the model consistently outperforms the state-of-the-art traffic prediction with missing values methods and achieves steady performance in the investigated missing scenarios and prediction horizons.

1558-0016

10.1109/TITS.2022.3233890

Nowadays, machine learning (ML) and deep learning (DL) methods have become fundamental building blocks for a wide range of AI applications. The popularity of these methods also makes them widely exposed to malicious attacks, which may cause severe security concerns. To understand the security properties of the ML/DL methods, researchers have recently started to turn their focus to adversarial attack algorithms that could successfully corrupt the model or perturb the model output. In this paper, we study the Label Flip Attack (LFA) problem, where the attacker attempts to corrupt the ML/DL model by flipping a small fraction of the labels in the training data. Prior art along this direction adopts combinatorial optimization problems, leading to limited scalability toward deep learning models. To this end, we propose a novel minimax problem which provides an efficient reformulation of the sample selection process in LFA. In the new optimization problem, the sample selection operation could be implemented with a single thresholding parameter. This leads to a new algorithm called Sample Thresholding. Since the objective and the model complexity are less dependent on the sample size, we can apply Sample Thresholding to attack deep learning models. Moreover, since the victim's behavior is not predictable in a poisonous attack setting, we have to employ surrogate models to simulate the true model employed by the victim model. Seeing the problem, we provide a theoretical analysis of such a surrogate paradigm. Specifically, we show that the performance gap between the true model employed by the victim and the surrogate model is small under mild conditions. On top of this paradigm, we extend Sample Thresholding to the crowdsourced ranking task, where labels collected from the annotators are vulnerable to adversarial attacks. Finally, experimental analyses on three real-world datasets speak to the efficacy of our method.

1939-3539

10.1109/TPAMI.2022.3220849

The small object semantic segmentation task is aimed at automatically extracting key objects from high-resolution remote sensing (HRS) imagery. Compared with the large-scale coverage areas for remote sensing imagery, the key objects, such as cars and ships, in HRS imagery often contain only a few pixels. In this article, to tackle this problem, the foreground activation (FA)-driven small object semantic segmentation (FactSeg) framework is proposed from perspective of FA. FA obeys the representation of the features in small objects. The objective is to enhance the representation of the features in small objects. The object representation in the framework is made up of a dual-branch decoder and collaborative probability (CP) loss. In the dual-branch decoder, the FA branch is designed to activate the small object features (activation) and suppress the large-scale background, and the semantic refinement (SR) branch is designed to further distinguish small objects (refinement). The CP loss is proposed to effectively combine the activation and refinement outputs of the decoder under the CP hypothesis. During the inference stage, the activation output and the refinement output can be viewed as the refinement of the binary outputs. In the optimization stage, small object mining (SOM)-based network optimization is applied to automatically select effective samples and refine the direction of the optimization while addressing the imbalanced sample problem between the small objects and the large-scale background. The experimental results obtained with two benchmark HRS imagery segmentation datasets demonstrate that the proposed framework outperforms the state-of-the-art semantic segmentation methods and achieves a good tradeoff between accuracy and efficiency. Code will be available at <https://github.com/zhaozhao001/FactSeg>.

1558-0644

10.1109/TGRS.2021.3097148

Edge Cloud (EC) empowers the beyond 5G (B5G) wireless networks to cope with large-scale and real-time traffic of Internet-of-Things (IoT) by minimizing the latency and providing compute power at the edge of the network. Due to a limited amount of resources at the EC compared to the back-end cloud (BC), intelligent resource management techniques become imperative. This paper studies the problem of multi-resource allocation (MRA) in terms of compute and wireless resources in an integrated EC and BC environment. Machine learning-based approaches are emerging to solve such optimization problems. However, it is challenging to adopt traditional discrete methods due to their high dimensionality issue. To this end, we propose a deep deterministic policy gradient (DDPG)-based deep reinforcement learning framework for solving the MRA problem. The TFLAN model to address the MRA problem. TFLAN combines convolution, gated recurrent unit and mine layers together to mine local and long-term temporal information from the task sequences for efficiently reduce the approximation. A novel heuristic-based priority experience replay (PER) method is formulated to accelerate the convergence speed. Further, a pruning principle helps the TFLAN agent to significantly reduce the computational complexity and improve the training speed among base stations and servers. The experimental results demonstrate that the distributed training approach suits well to the problem scale and can magnify the speed of the learning process. We validate the proposed framework by comparing with five state-of-the-art RL agents. Our proposed agent converges fast and achieves up to 28% and 72% reduction in operational cost and rejection-rate, and achieves up to 32% gain in the quality of experience on average, compared to the most advanced DDPG agent.

2169-3536

10.1109/ACCESS.2023.3249153

Machine Learning (ML) applications are growing in an unprecedented scale. The development of easy-to-use machine-learning application frameworks has enabled the development of advanced artificial intelligence (AI) applications with only a few lines of self-explanatory code. As a result, ML-based AI is becoming approachable by mainstream developers and small businesses. However, the development of ML algorithms for remote, high-throughput ML task execution, involving complex data-processing pipelines can still be challenging, especially with respect to production ML use cases. To cope with this issue, in this paper we propose a novel system architecture that enables Algorithm-agnostic, Scalable ML (ASML) task execution for high throughput applications. It aims to provide an answer to the research question of how to design and implement an abstraction framework, suitable for the deployment of end-to-end ML pipelines in a generic and standardized way. The proposed ASML architecture manages horizontal scaling, task scheduling, monitoring, and model execution of multi-client ML tasks using modular, extensible components that abstract the execution details of the underlying applications. Experiments in the context of object detection and recognition, as well as in the context of abnormality detection in medical image streams, demonstrate its capacity for parallel, mission critical, task execution.

2169-3536

10.1109/ACCESS.2021.3069857

Learning with streaming data has received extensive attention during the past few years. Existing approaches assume that the feature space is fixed or changes by following explicit regularities, limiting their applicability in real-time applications. For example, in a smart home platform, the feature space of the patient data used to describe the patient's symptoms changes over time. To address this problem, we propose a novel learning paradigm, namely, Generative Learning With Streaming Capricious (GLSC) data, which does not make any assumption on the feature space dynamics. In other words, GLSC handles the data streams with a varying feature space, where each arriving data instance can arbitrarily carry new features and/or stop carrying partial old features. Specifically, GLSC trains a learner on a universal feature space that establishes relationships among old and new features, so that the patterns learned in the old feature space can be used in the new feature space. The universal feature space is constructed by leveraging the relatedness among features. We propose a generative graphical model to model the construction process, and show that learning from the universal feature space can effectively improve the performance with theoretical guarantees. The experimental results demonstrate that GLSC achieves conspicuous performance on both synthetic and real data sets.

2162-2388

10.1109/TNNLS.2020.2981386

This work presents a method for summarizing scientific articles from the arXiv and PubMed datasets using a greedy Explanatory Summarization Algorithm. We used the approach along with Variable Neighborhood Search (VNS) to learn what is the top one quality in the Sum of ROUGE scores. The method is based on first selecting the most relevant sentences in the text and then selecting the most relevant sentences in the text. The text contains the maximum number of words with the higher TFIDF values along with minimum document frequency parameter tuning for TFIDF vectorization. As a result, the method achieves 0.43/0.12 and 0.40/0.13 for ROUGE-1/ROUGE-2 scores on arXiv and PubMed datasets, respectively. These results are comparable to the state-of-the-art models for computing complex neural network architectures and serious computational resources together with the large amounts of training data. In contrast, our method uses a straightforward statistical inference methodology.

2169-3536

10.1109/ACCESS.2021.3136302

The converter steelmaking process smelts hot metal to liquid steel and occupies an important position in industry. The composition of liquid steel at the endpoint is an essential quality index, including the concentrations of multiple elements, such as carbon, silicon, and manganese. Accurately predicting endpoint composition is the basis of production optimization. Hence, a multichannel diffusion graph convolutional network (MCDGNC) is presented in this article. Unlike conventional models, the developed MCDGNC describes the converter steelmaking process as a graph to exploit the correlations among element concentrations for an accurate endpoint composition prediction. We also develop a unique 8Ks-hop diffusion method to extract the globally consistent information over the graph for predicting each element. The proposed method addresses the composition prediction task for a realistic converter steelmaking process. To the best of our knowledge, this is the first time that up to 15 hops of diffusion of liquid steel are covered and predicted by a deep learning model. Compared with six benchmark models, MCDGNC presents state-of-the-art results, i.e., an average $SR^{(1/2)}$ of 0.8475 and an average MAE of 0.0189, which shows that the correlation mining of graph deep learning can indeed improve the prediction performance for endpoint composition.

1557-9662

10.1109/TIM.2020.3037953

In recent years, mobile crowdsensing has become an effective method for large-scale data collection. Incentive mechanism is fundamentally important for mobile crowdsensing systems. Many mobile crowdsensing systems expect to optimize multiple objectives simultaneously. Most of the existing works transform the multiple objective problem into a single objective problem or scalarization method. However, due to the uncertain importance (weights) of objectives and the instable quality of crowdsensed data, such transformation is usually unreasonable. In this article, we aim to optimize the worst performance of two objective functions in mobile crowdsensing in order to improve the system robustness. We model an auction-based biobjective robust mobile crowdsensing system, and design two independent objective functions to maximize the expected profit and coverage, respectively. The robustness of the robust user selection (RUS) problem and the robust user selection (RUS) problem are designed to solve the RUS problem. Through both rigorous theoretical analysis and extensive simulations, we demonstrate that the designed incentive mechanisms satisfy desirable properties of computational efficiency, individual rationality, truthfulness, and constant approximation to the tightened RUS problem. Moreover, the proposed incentive mechanism can be easily extended to multiojective robust mobile crowdsensing systems, and all desirable properties still hold. The simulation results reveal that our incentive mechanism achieves 11% improvement of the platform's utility, compared with the greedy algorithm for biobjective mobile crowdsensing systems on average.

2327-4662

10.1109/JIOT.2021.3072953

Sentiment analysis is one of the prominent research areas in data mining and knowledge discovery, which has proven to be an effective technique for monitoring public opinion. The big data era with a high volume of data generated by a variety of sources has provided enhanced opportunities for utilizing sentiment analysis in various domains. In order to take best advantage of the high volume of data for accurate sentiment analysis, it is essential to clean the data before the analysis, as irrelevant or redundant data will hinder extracting valuable information. In this paper, we propose a hybrid feature selection algorithm to improve the performance of sentiment analysis tasks. A group classification-based feature selection algorithm is proposed, which is based on the robustness of the feature selection algorithm. We propose a hybrid feature selection algorithm. We have performed comprehensive experiments in two different domains using a benchmark dataset, Stanford Sentiment Treebank, and a real-world dataset we have created based on World Health Organization (WHO) public speeches regarding COVID-19. The proposed feature selection model is shown to achieve significant performance improvements in both datasets, increasing classification accuracy for all utilized machine learning and text representation technique combinations. Moreover, it achieves over 70% reduction in feature size, which provides efficiency in computation and storage.

2169-3536

10.1109/ACCESS.2021.3118961

Topic modeling is important for tackling several data mining tasks in information retrieval. While seminal topic modelling techniques such as Latent Dirichlet Allocation (LDA) have been proposed, the ubiquity of social media and the brevity of its texts pose unique challenges for such traditional topic modelling techniques. Several extensions including auxiliary aggregation, self aggregation and direct learning have been proposed to mitigate these challenges, however some still remain. These include a lack of consistency in the topics generated and the decline in model performance in applications involving disparate document lengths. There is a recent paradigm shift towards neural topic models, which are not subject to resource-constrained environments. This paper reviews LDA-style techniques, taking a theoretical approach to analyse the relationship between word co-occurrences and topic models. Our analysis shows that by altering the word co-occurrences within the corpus, topic discovery can be enhanced. Thus we propose a novel data transformation approach dubbed DATM to improve the topic discovery within a corpus. A rigorous empirical evaluation shows that DATM is not only powerful, but it can also be used in conjunction with existing benchmark techniques to significantly improve their effectiveness and their consistency by up to 2 fold.

2169-3536

10.1109/ACCESS.2023.3282653

Intelligent fault diagnosis methods based on deep learning have attracted significant attention in recent years. However, it still faces many challenges, including complex and variable working conditions, noise interference, and insufficient valid data samples. Therefore, a novel deep transfer learning bearing fault diagnosis model is designed in this work to require less training data and improve self-adaptation ability. The model consists of a multiscale time-frequency feature map (MTFFM) and a global statistical feature matrix (GSFM) of vibration signals are first constructed using wavelet packet transform (WPT). A deep feature extraction network combining ResNet and SAM networks is then designed to realize the fused extraction of local and global time-frequency features. Finally, we construct a joint loss function by the combination of the multikernel maximum mean discrepancy (M-KMDD) and the domain adversarial neural network (DANN) to optimize the depth feature extraction network, which improves the cross-domain invariance and fault state discrimination of depth features. The proposed optimization method fully exploits the advantages of high-dimensional spatial distribution difference evaluation and gradient inversion adversarial strategy. Its effectiveness is demonstrated through variable working condition transfer fault diagnosis tasks, showing superior performance compared with other intelligent fault diagnosis methods.

1557-9662

10.1109/TIM.2023.3246494

Feature selection (FS) constitutes a series of processes used to decide which relevant features/attributes to include and which irrelevant features to exclude for predictive modeling. It is a crucial task that aids machine learning classifiers in reducing redundancy and improving classification accuracy. It has demonstrated its efficacy in many domains, comprising text classification (TC), image classification (IC), recommendation (REC), mining, and image recognition. While there are many traditional FS methods, recent research efforts have been devoted to applying metaheuristic algorithms as FS techniques for the TC task. However, there are few literature reviews concerning TC. Therefore, a comprehensive overview was systematically studied by exploring available studies of different metaheuristic algorithms used for FS to improve TC. This paper will contribute to the body of existing knowledge by answering the following research questions (RQs): 1) What are the FS that apply metaheuristic algorithms for FS to improve TC? 2) Does applying metaheuristic algorithms for FS lead to better accuracy than the typical FS methods? 3) How effective are the modified, hybridized metaheuristic algorithms for text FS problems? and 4) What are the gaps in the current studies and their future directions? These RQs lead to a study of recent works on metaheuristic-based FS methods, their contributions, and limitations. Hence, a final list of thirty-seven (37) related articles was extracted and investigated to align with our RQs to generate new knowledge in the domain of study. Most of the conducted research focused on addressing the TC in tandem with metaheuristic algorithms based on the wrapper and hybrid FS approaches. Future research should focus on using a hybrid-based FS approach as it intuitively handles complex optimization problems and potentially provide new research opportunities in this rapidly developing field.

2169-3536

10.1109/ACCESS.2022.3165814

While customer loyalty is among the underlying reasons for servitized firms, the servitization-customer loyalty link is underexplored. In this article, informed by organizational information processing theory, we study the servitization-customer loyalty link and explore the joint effects of organizational practices on the link. We characterize servitization as services supporting products (SSP) and services supporting clients' actions (SSC), and conceptualize organizational information processing as the use of different informational IT (IT) and social media (SM), and individual service-oriented cognition, which is manifested in service-oriented corporate culture (Culture). Based on a sample of 207 Chinese manufacturing firms, we find that while servitization does not necessarily enhance customer loyalty, successful servitization implementation depends on proper combinations of IT tools and Culture. Specifically, the SSP-OT-Culture interaction and SSC-SM-Culture interaction are positively associated with customer loyalty. Our findings not only provide empirical evidence that customer loyalty can be achieved by adopting servitization, but also explicitly show how to enhance customer loyalty by proper organizational practices, which provide new insights into both servitization and organizational information processing theory.

1558-0040

10.1109/TEM.2021.3052561

In the field of data mining, how to deal with high-dimensional data is a fundamental problem. If they are used directly, it is not only computationally expensive but also difficult to obtain satisfactory results. Unsupervised feature selection is designed to reduce the dimension of data by finding a subset of features in the absence of labels. Many unsupervised methods perform feature selection by exploring spectral analysis and manifold learning, such that the intrinsic structure of data can be preserved. However, most of these methods ignore a fact: due to the existence of noise features, the intrinsic structure directly built from original data may be unreliable. To solve this problem, a new unsupervised feature selection model is proposed. The graph structure, feature weights, and projection matrix are learned simultaneously, such that the intrinsic structure is constructed by the data that have been feature weighted and projected. For each data point, its nearest neighbors are acquired in the process of graph construction. Therefore, we call them adaptive neighbors. Besides, an additional constraint is added to the proposed model. It requires that a graph, corresponding to a similarity matrix, should contain exactly $8\delta\delta$ connected components. Then, we present an optimization algorithm to solve the proposed model. Next, we discuss the method of determining the regularization parameter β in our proposed method and analyze the computational complexity of the optimization algorithm. Finally, experiments are implemented on both synthetic and real-world datasets to demonstrate the effectiveness of the proposed method.

2168-2275

10.1109/TCYB.2021.3087632

Aspect-Based Sentiment Analysis (ABSA) is one of the highly challenging tasks in natural language processing. It extracts fine-grained sentiment information in user-generated reviews, as it aims at predicting the polarities towards predefined aspect categories or relevant entities in free text. Previous deep learning approaches usually rely on large-scale pre-trained language models and the attention mechanism, which applies the complete computed attention weights and does not place any restriction on the attention assignment. We argue that the original attention mechanism is not the ideal configuration for ABSA, as for most of the time only a small portion of terms are strongly related to the sentiment polarity of an aspect or entity. In this paper, we propose a masked attention mechanism customized for ABSA, with two different approaches to generate the mask. The first method sets an attention weight threshold that is determined by the maximum of all weights, and keeps only attention scores above the threshold. The second selects the top words with the highest weights. Both remove the lower score parts that are assumed to be less relevant to the aspect of focus. By ignoring part of input that is claimed irrelevant, a large proportion of input noise is removed, keeping the downstream model more focused and reducing calculation cost. Experiments on the Multi-Aspect Multi-Sentiment (MAIMS) and SemEval-2014 datasets show significant improvements over state-of-the-art pre-trained language models with full attention, which displays the value of the masked attention mechanism. Recent work shows that simple self-attention in Transformer quickly degenerates to a rank-1 matrix, and masked attention may be another cure for that trend.

2169-3536

10.1109/ACCESS.2022.3142178

<p>The task of cross-view image geo-localization aims to determine the geo-location (Global Positioning System (GPS) coordinates) of a query ground-view image by matching the image with GPS-tagged aerial (or satellite) images in the reference dataset. Due to the dramatic domain gap between the ground and aerial images, the problem is challenging. The existing approaches mainly adopt convolutional neural networks (CNNs) to learn discriminative features. However, these CNN-based methods often leverage appearance and orientation properties of scene objects to discriminate between the two views, which is not robust. In this article, we propose a novel spatial hierarchy information is crucial for cross-view feature correspondence. In this article, we propose an end-to-end network architecture, dubbed GeoNet. GeoNet consists of a ResNeXt module and a GeoCaps module. On the one hand, the ResNeXt module is developed to learn powerful intermediate feature maps and allows the stable propagation of gradients in deep CNNs. On the other hand, the GeoCaps module utilizes capsule network to capture intermediate feature maps into several capsules, whose length and orientation represent the existability and spatial hierarchy information of scene objects, respectively. Moreover, by using a dynamic routing-by-agreement mechanism, the GeoCaps module is capable of modeling parts-to-whole relationships between scene objects, which is viewpoint invariant and capable of bridging the cross-view domain gap. In addition to GeoNet, we introduce a simple yet effective metric learning method, based on which two weighted soft margin loss functions with online batch hard sample mining are devised. These functions not only speed up convergence but also improve the generalization ability of the network. Extensive experiments on three well-known datasets demonstrate that our GeoNet not only achieves state-of-the-art results for the ground-to-aerial and aerial-to-ground geo-localization tasks but also outperforms competing approaches for the few-shot geo-localization task.</p>	1558-0644	10.1109/TGRS.2021.3121337
<p>Most of the existing image style transfer algorithms transfer the whole image style as a whole. Style feature is a set of correlation matrix based on style image, namely Gram matrix. Each matrix is a global description of the style image. This kind of methods can perform well in the insensitive semantic scenes (such as the style transfer between landscape photos), but in the sensitive semantic scenes (such as the style transfer between portrait photos), the problem of semantic mismatch will be highlighted, such as transferring the background texture of the style image to the foreground of the target image. Although the existing research takes the manually annotated semantic image as an input of the algorithm, and then guides the style transfer based on the semantic information, and finally achieves good results in the style transfer between portraits. But there are still two problems: first, semantic images need to be manually annotated, which costs human resources. In practical applications, large-scale image style transfer is often needed. Second, the details of the synthesized image are fuzzy, and the definition is not enough. We propose an image style transfer algorithm based on semantic segmentation and semantic information. Our algorithm extracts the semantic information of style image and content image automatically through a semantic segmentation network and uses the semantic information to guide the style transfer. Our algorithm builds a semantic segmentation network based on mask R-CNN, introduces semantic information, and then makes style transfer on the patch level, realizes the style transfer between similar objects (consistent semantic information). Experiments on Celeba and Wikiart show that our method could automatically extract the semantic information of style image and content image. Compared with the state-of-art approaches in this field, our method can effectively avoid semantic mismatch in the process of image style transfer. That is, it can maintain semantic consistency in the process of style transfer.</p>	2169-3536	10.1109/ACCESS.2021.3054969
<p>As an interesting but under-explored task, story ending generation aims at generating an appropriate ending for an incomplete story. The challenges of the task are to deeply understand the story context, mine the storylines hidden in the story, and generate rational endings in logic and sentiment. Although existing pre-trained approaches have been proven effective to this task, how to learn to generate endings with appropriate plots and sufficient sentimental information still remains a major challenge. One possible reason is that an over reliance on external commonsense knowledge beyond the storylines and sentimental trends information hidden in the story context could lead to generation deviating from the main theme. To address this issue, we propose a two-stage Storylines and Sentiment Aware Pre-trained model (SSAP) for generating sentimentally relevant story endings. We apply a classifier for discriminating the sentiment of the story, and then employ a pre-trained language model, combining with storylines information, to conditionally generate sentences that match both the logic and sentiment of the story. Automatic and manual evaluations show that, without integrating external knowledge, our model can produce more consistent and diverse story endings than state-of-the-art baselines.</p>	2329-9304	10.1109/TASLP.2022.3145320
<p>The Blockchain has been given great attention in recent literature among emerging technologies in software architectures. More specifically, when verifiable transactions between untrusted parties are concerned in a safe and reliable environment, its peculiar decentralized and tamper-proof structure makes it suitable for a vast class of business domains, such as Cloud Manufacturing, which is a new paradigm in the industry based on cloud technologies. However, the stiffness of existing solutions, that are unable to provide and implement heterogeneous services in a Cloud environment, emphasizes the need of a standard framework to overcome this limit and improve collaboration. Firstly, this paper introduces a Blockchain based platform designed with Smart Contracts for improving digital processes in a manufacturing environment. The primary contribution is the integration of two popular cloud technologies within the Blockchain: Docker, a scalable platform to run applications in lightweight environments, and Cloud Storage services in the platform requires input files and produces output files by using cloud storage as a repository and it is delivered by the owner as a self-contained Docker image, whose digest is safely stored in the chain. Secondly, with the purpose of selecting the fastest route for each new process instance required by consumers, we introduce a task assignment problem based on a deep learning approach and past metrics. The proposed platform is applied to a real-world industrial case study regarding ophthalmic lenses manufacturing and the optimization of lens surface calculation.</p>	2169-3536	10.1109/ACCESS.2022.3194264
<p>Multi-label learning deals with training examples each represented by a single instance while associated with multiple class labels. Due to the exponential number of possible label sets to be considered by the predictive model, it is commonly assumed that label correlations should be well exploited to design an effective multi-label learning approach. On the other hand, class-imbalance stands as an intrinsic property of multi-label data which significantly affects the generalization performance of the multi-label predictive model. For each class label, the number of training examples with positive labeling assignment is generally much less than those with negative labeling assignment. To deal with the class imbalance issue in multi-label learning, a simple yet effective class imbalance aware learning strategy, called cross-coupling aggregation (COCOA) is proposed in this article. Specifically, COCOA works by leveraging the exploitation of label correlations as well as the exploitation of class-imbalance simultaneously. For each class label, a number of multiclass imbalance learners are activated by randomly coupling with other labels, whose predictions on the unseen instance are aggregated to determine the corresponding labeling relevancy. Extensive experiments on 18 benchmark datasets clearly validate the effectiveness of COCOA against state-of-the-art multi-label learning approaches especially in terms of imbalance-specific evaluation metrics such as click ratio, respectively.</p>	2168-2275	10.109/TCVB.2020.3027509
<p>Service composition enables the flexible and agile collaboration of multiple services to complete personalized manufacturing tasks in cloud manufacturing. Compared with traditional manufacturing mode and cloud computing, trust problems become more serious and crucial in cloud manufacturing because of the nontransparency and short-term cooperation mode. A trust evaluation method for service composition in cloud manufacturing is proposed in this article. To quantitatively calculate the trust, a trust evaluation index system is established that comprehensively considers the influencing factors in the production, transaction, and collaboration processes of cloud manufacturing services. The trust value is synthesized based on an index values using the criteria information through interrelation correlation method. To extract the temporal information in historical trust data, a time-aware predictive trust evaluation method based on gated recurrent unit is proposed to learn the changing pattern of trust value over time. The trust data are trained together with their timestamps to predict the trust in the scheduled transaction time. The correlation between services in service composition is modeled to mine the correlation information by association analysis. The trust of service composition depends on the trust values of all component services and the correlations between them. The experiments demonstrate the effectiveness of the proposed method through case studies and performance comparisons with other state-of-art methods.</p>	1941-0050	10.1109/TII.2022.3199268
<p>Transportation recommendation is one important map service in navigation applications. Previous transportation recommendation solutions fail to deliver satisfactory user experience because their recommendations only consider routes in one transportation mode (uni-modal, e.g., taxi, bus, cycle) and largely overlook situational context. In this work, we propose S²mapath (Hydra)Hydra, a multi-task deep learning based recommendation system that offers multi-modal transportation planning and is adaptive to various situational context (e.g., nearby point-of-interest (POI) distribution and weather). We leverage the availability of existing routing engines and big urban data, and design a novel two-level framework that integrates uni-modal and multi-modal (e.g., taxi/bus, bus/cycle) routes as well as heterogeneous urban data for intelligent multi-modal transportation recommendation. In addition to urban context features constructed from multi-source urban data, we learn the latent representations of users, origin-destination (OD) pairs and transportation modes based on user implicit feedbacks, which captures the collaborative transportation mode preferences of users and OD pairs. Moreover, we propose two models to recommend the proper route among various uni-modal and multi-modal transportation routes: (1) a light-weight gradient boosting tree (GBDT) based recommendation model, and (2) a multi-task and deep learning (MTWGL) based recommendation model leveraging the shared information in the framework to support real-time, large-scale route query and recommendation. We deploy S²mapath (Hydra)Hydra on Baidu Maps¹ (https://maps.baidu.com/), one of the world's largest map services. Real-world urban-scale experiments demonstrate the effectiveness and efficiency of our proposed system. Since its deployment in August 2018, S²mapath (Hydra)Hydra has answered over a hundred million route recommendation queries made by over ten million distinct users. The GBDT-based model and MTWGL-based model achieve 82.8 and 86.6 percent relative increment of user click ratio, respectively.</p>	1558-2191	10.1109/TKDE.2020.2985954
<p>One of the main obstacles of adopting digital pathology is the challenge of efficient processing of hyperdimensional digitized biopsy samples, called whole slide images (WSIs). Exploiting deep learning and introducing compact WSI representations are urgently needed to accelerate image analysis and facilitate the visualization and interpretability of pathology results in a postpandemic world. In this article, we introduce a new evolutionary approach for WSI representation based on large-scale multiblockwise optimization (LSMOP) of deep embeddings. We start with patch-based sampling to feed Kimahet, a histopathology-specialized deep network, and to extract a multitude of feature vectors. Coarse multiblockwise feature selection uses the mutation selection and the number of features. In the second stage, the frequency features histogram (FFH), a novel WSI representation, is constructed by multiple runs of coarse LSMOP. Fine evolutionary feature selection is then applied to find a compact (short-length) feature vector based on the FFH and contributes to a more robust deep-learning approach to digital pathology supported by the stochastic power of evolutionary algorithms. We validate the proposed schemes using The Cancer Genome Atlas (TCGA) images in terms of WSI quality, classification accuracy, and feature quality. Furthermore, a novel decision space for novel decision making in the LSMOP field is introduced. Finally, a patch-level decision aggregation approach is proposed to increase the interpretability of deep features. The proposed evolutionary algorithm finds a very compact feature vector to represent a WSI (almost 14000 times smaller than the original feature vectors) with 8% higher accuracy compared to the codes provided by the state-of-the-art methods.</p>	1941-0026	10.1109/TEVC.2022.3178299
<p>This article studies distributed computing (DC) mechanisms on heterogeneous mobile devices (MDs) for latency reduction (LR) in Internet-of-Things (IoT) services by mitigating the effect of straggling MDs. We propose novel coded DC mechanisms with time discounting and time discounting with time discounting that consider the time-discounting effect of time-discounting results and time discounting by MDs. Specifically, we propose a gradient descent computing with coding when a task publisher (TP) with a limited amount of budget offers incentives to encourage MDs' participation in the computation. To analyze a hierarchical decision-making structure of the TP and MDs, we formulate a strategic competition between them as a Stackelberg game. In the case that the MDs are the leaders, we design a CPU-cycle frequency control scheme to balance each MD's computing speed and energy consumption with the time discounting mechanism. As the tolling mechanism of the TP, we propose a time discounting mechanism to determine the best allocation for each MD. Then, we design an algorithm achieving the Stackelberg equilibrium, which is shown to be a unique Nash equilibrium of the game. The performance evaluation results show that the proposed mechanisms achieve 38% of LR on average compared to the benchmark mechanism. Furthermore, the results corroborate the efficiency of the proposed mechanisms in terms of the MDs' social welfare.</p>	2327-4662	10.1109/JIOT.2020.3045277
<p>Named entity recognition (NER) is the process of categorizing named entities in a given text that suffers from the lack of labeled corpora, which is a long-standing issue. Deep neural networks have been successfully applied to NER tasks. However, they require a large number of annotated data. Regardless of the number of data made available, annotation requires significant human effort, which is expensive and time-consuming. Moreover, collecting labeled data that reflect current and future surrounding statuses requires exhaustive follow-up and hours corresponding higher costs. Current NER methods typically focus on the supervised learning of hand-crafted data. The most well-known dataset for NER shared tasks, which was released at the 2003 Conference on Natural Language Learning, is used for basic training and evaluation. Although the data are qualified, the database has low coverage of timely material. In this paper, we illustrate methods for entity labeling up to date via distant supervision. To tackle the difficulty of annotating contemporary news texts, we generate labeled data articles that reflect the latest issues. We evaluated the proposed methods with long short-term memory (LSTM) and conditional random field (CRF) architectures using static and contextualized embedding methods. Our proposed models perform higher than state-of-the-art methods with average F1-scores 3.08% better with weakly labeled Wikipedia data and 3.47% better with Cable News Network data. When using the NER model with Fast embedding, our method shows 1.50 and 3.26% higher F1-scores with weakly labeled Wikipedia and news data, respectively. Qualitatively, the proposed model also performs better when extracting contemporary keywords.</p>	2169-3536	10.1109/ACCESS.2021.3067315
<p>Hyperspectral unmixing (HU) has been one of the most significant tasks in hyperspectral image (HSI) processing. In recent years, nonnegative matrix factorization (NMF) has received great attention in the HU due to its simultaneous estimation, flexible modeling, and little requirement on prior information. However, several common NMF algorithms still suffer from high computational complexity, instability, and low convergence rate. Motivated by the matrix manifold theory, this article proposes a new sparse cubicle-manifold (S²mapath (Hydra)Hydra) NMF method from the perspective of matrix manifold. The critical idea of the proposed method is to regard the abundance matrix as locating on the oblique manifold, which eliminates its constraint of nonnegativity and sum-to-one and incorporates its intrinsic Riemannian geometry. Meanwhile, the S² (L²/S²-norm) on the Euclidean space can be transformed equivalently into the S² (L²/S²-norm) on the oblique manifold. Then, via solving this sparse S²mapath (Hydra)Hydra NMF by the Riemannian conjugated gradient (RCG) algorithm and the multiplicative iterative rule, the proposed method not only ensures improvement in the solution accuracy but also leads to a fast and faster convergence rate. Experimental results from the synthetic and real-world datasets illustrate the effectiveness and efficiency of the proposed method compared with the state-of-the-art NMF methods in HU.</p>	1558-0644	10.1109/TGRS.2021.3082255
<p>Any successful change in an organization requires an appropriate change management method and a process for involved staff and department to accept the change and become engaged in order to achieve its success. It is even more important and difficult to adopt a novel change management method to bring multiple organizations across the business value chain into the change implementation. This research does not focused on change management within a single organization but rather emphasizes a change management method, including an appropriate change framework, well-defined critical success factors (CSFs), and related tools for implementing change in multiple organizations. This kind of change management method to support a process change through global value chain in multiple organizations, and the method is used in a case study to achieve a successful change. In order to succeed in optimizing GVC performance, this research applies the proposed change management method to the case GVC, to support technical change by obtaining the staff's full commitment and engagement. The achieved results from the case study prove that successful change comes not only through technical solutions implemented in the problem process throughout the GVC but also through strong support and engagement from all organizations and involved staff. The proposed change management method not only helped the case GVC to implement change successfully but also can help the relevant multiple organizations to improve the GVC performance and add value by optimizing their problem process.</p>	2329-924	10.1109/TCSS.2021.3067730
<p>Hyperspectral images (HSIs) provide rich spectral information that has contributed to the successful performance improvement of numerous computer vision and remote sensing tasks. However, it can only be achieved at the expense of images' spatial resolution. HSI super-resolution (HSI-SR), thus, addresses this problem by fusing low-resolution (LR) HSI with the multispectral image (MSI) carrying much higher spatial resolution (HR). Existing HSI-SR approaches either rely on the registration and the registration accuracy of the HR HSI estimates and the registration of the LR HSI estimates. In this article, we propose an unregistered and unsupervised mutual Dirichlet-Net (S² (L²/S²-MDN)) to exploit the uncharted problem domain of HSI-SR without the requirement of multimodality registration. The success of this endeavor would largely facilitate the deployment of HSI-SR since registration requirement is difficult to satisfy in real-world sensing devices. The novelty of this work is threefold. First, to stabilize the fusion procedure of two unregistered modalities, the network introduces a shared encoder-decoder structure. Second, the mutual information (MI) is further adopted to capture the nonlinear statistical dependencies between the representations from two modalities (carrying spatial information) and their raw inputs. By maximizing the MI, spatial correlations between different modalities can be well characterized to further reduce the spectral distortion. We assume that the representations follow a similar Dirichlet distribution for their inherent sum-to-one and nonnegative properties. Third, a collaborative S² (L²/S²-norm) is employed as the reconstruction error instead of the more common S² (L²/S²-norm) to better preserve the spectral information. Extensive experimental results demonstrate the superior performance of S² (L²/S²-MDN) as compared to the state of the art.</p>	1558-0644	10.1109/TGRS.2021.3079518
<p>Target-Oriented Opinion Word Extraction (TOWE) is a challenging information extraction task that aims to find the opinion words corresponding to given opinion targets in text. To solve TOWE, it is important to consider the surrounding words of opinion words as well as the opinion targets. Although most existing works have captured the opinion target using Deep Neural Networks (DNNs), they cannot effectively utilize the local context, i.e., relationship among surrounding words of opinion words. In this work, we propose a novel and powerful model for TOWE, Gated Relational target-aware Encoder and local context-aware Decoder (GRED), which dynamically leverages the information of the opinion target and the local context. Intuitively, the target-aware encoder catches the local context information, and the local context-aware decoder catches the local context information from the relationship among surrounding words. Then, GRED employs a gate mechanism to dynamically aggregate the outputs of the encoder and the decoder. In addition, we adopt a pretrained language model (Bidirectional and Auto-Regressive Transformer (BERT)), as the structure of GRED to improve the implicit language information. Extensive experiments on four benchmark datasets show that GRED surpasses all the baseline models and achieves state-of-the-art performance. Furthermore, our in-depth analysis demonstrates that GRED properly leverages the information of the opinion target and the local context for extracting the opinion words.</p>	2169-3536	10.1109/ACCESS.2022.3228835
<p>Anomaly detection is an important data mining task with numerous applications, such as intrusion detection, credit card fraud detection, and video surveillance. However, given a specific complicated task with complicated data, the process of building an effective deep learning-based system for anomaly detection still highly relies on human expertise and laboring trials. Also, while neural architecture search (NAS) has shown its promise in discovering effective deep architectures in various domains, such as image classification, object detection, and semantic segmentation, contemporary NAS methods are not suitable for anomaly detection due to the lack of intrinsic search space, unstable search process, and low sample efficiency. To bridge the gap, in this article, we propose AutoAD, an automated anomaly detection framework, which aims to search for an optimal neural network model within a predefined search space. Specifically, we first design a curiosity-guided search strategy to overcome the curse of local optimality. A controller, which acts as a search agent, is encouraged to take actions to maximize the information gain about the controller's internal belief. We further introduce an experience replay mechanism based on self-initiation learning to improve the sample efficiency. Experimental results on various real-world benchmark datasets demonstrate that the deep model identified by AutoAD achieves the best performance, comparing with existing handcrafted models and traditional search methods.</p>	2162-2388	10.1109/TNNLS.2021.3105636
<p>Cross domain recommender systems have been increasingly valuable for helping consumers identify useful items in different applications. However, existing cross-domain models typically require large number of overlap users, which can be difficult to obtain in some applications. In addition, they do not consider the duality structure of cross-domain recommendation tasks, thus failing to take into account bidirectional latent relations between users and items and achieve optimal recommendation performance. To address these issues, in this paper we propose a novel cross-domain recommendation model based on dual learning that transfers information between two related domains in an iterative manner to improve the recommendation performance. We develop a novel orthogonality mapping to extract user preferences over multiple items while preserving relations between users across different latent spaces. Furthermore, we combine the dual learning method with the metric learning method, which allows us to significantly reduce the required common user overlap across the two domains and leads to even better cross-domain recommendation performance. We test the proposed model on two large-scale industrial datasets and six domain pairs, demonstrating that it consistently and significantly outperforms all the state-of-the-art baselines. We also show that the proposed model works well with very few overlap users to obtain satisfactory recommendation performance comparable to the state-of-the-art baselines that use many overlap users.</p>	1558-2191	10.1109/TKDE.2021.3074395
<p>Cropland abandonment is crucial in agricultural management and has a profound impact on crop yield and food security. In recent years, many cropland abandonment identification methods based on remote sensing observation data have been proposed, but most of these methods are based on coarse-resolution images and use traditional machine learning methods for simple identification. To this end, we perform abandonment recognition on high-resolution texture features of the texture features of the abandoned cropland and propose a novel deep learning framework called pyramid scene parsing network-texture feature learning (PSPNet-STL). The model integrates high-level semantic feature extraction and deep mining of low-level texture features to identify cropland abandonment. First, we labeled the abandoned cropland area and built the high-resolution abandoned cropland (HRAC) dataset, a high-resolution cropland abandonment dataset. Second, we improved PSPNet by fusing statistical texture learning modules to learn role-level information on low-level feature maps and combined features for level semantic features for level semantic features for level semantic features for level semantic features. Compared with other methods, the proposed model has the best performance on this dataset, both in terms of accuracy and visualization, providing that deep mining of low-level statistical texture features is beneficial for crop abandonment recognition.</p>	2151-1535	10.1109/JSTARS.2023.3255541
<p>Magnetic resonance imaging (MRI) can provide multi-modality MR images by setting task-specific scan parameters, and has been widely used in various disease diagnosis and planned treatments. However, in practical clinical applications, it is often difficult to obtain multi-modality MR images simultaneously due to patient discomfort, and scanning costs, etc. Therefore, how to effectively utilize the existing modality images to synthesize missing modality images has become a hot research topic. In this paper, we propose a novel confidence-guided aggregation and cross-modality refinement network (GACR-Net) for multi-modality MR image synthesis, which effectively utilizes complementary and correlative information of multiple modalities to synthesize high-quality target-modality images. Specifically, to effectively utilize the complementary modality-specific characteristics, a confidence-guided aggregation module is proposed to adaptively aggregate the multiple target-modality images generated from multiple source-modality images by using the corresponding confidence maps. Based on the aggregated target-modality image, a cross-modality refinement module is presented to further refine the target-modality image by learning from the multiple source-modality images and aggregated target-modality image. By training the proposed GACR-Net in an end-to-end manner, high-quality and sharp target-modality MR images are effectively synthesized. Experimental results on the widely used benchmark demonstrate that the proposed method outperforms state-of-the-art methods.</p>	2168-2208	10.1109/JBHI.2021.3082541
<p>Densest subgraph detection has become an important primitive in graph mining tasks when analyzing communities and detecting events in a wide range of application domains. Currently, it is a challenging and practically crucial research issue to develop efficient densest subgraph methods that can handle both very large and continuously evolving graphs. In this paper, we propose a novel greedy algorithm that has been proposed to find the densest subgraphs, there is still a lack of a promising method to deal with large-scale and dynamically evolving graphs. In this paper, the problem is formulated and proved to be NP-Hard, an incremental greedy approximation approach is proposed, and its running time is O(m·n). In order to find the densest subgraph effectively by heuristically merging the local densest subgraphs, firstly, the edge flow of a dynamic graph is divided into several subgraphs in a given period of ΔT. Secondly, a local candidate set is generated by local densest subgraph candidates are collected heuristically from the global densest subgraph candidates. Last, the densest subgraphs are induced from the global densest subgraph candidates with constraints by static densest subgraph discovery algorithm. This incremental approach enables us to scale up the existing densest subgraph discovery algorithms, which focus mainly on small and static graphs and can thus handle very large dynamic graphs. Experiments on real-world networks with billions of nodes for comprehensive evaluations present excellent improvement in efficiency and accuracy. It reduces about 25% running time on average and presents a more accurate estimation of the structure of a graph with more compact subgraphs than the static method. It also performs well when dealing with graphs of varying densities.</p>	2169-3536	10.1109/ACCESS.2023.3277197
<p>Context prediction plays a crucial role in implementing autonomous driving applications. As one of important context-prediction tasks, crowd-and-vehicle counting is critical for achieving real-time traffic and crowd analysis, consequently facilitating decision-making processes for autonomous vehicles. However, the combination of crowd-and-vehicle counting also faces challenges, such as large-scale variations, imbalanced data distribution, and insufficient local patterns. In this paper, we first propose a novel pyramid network (FPFNet) for multi-scale information fusion. Our proposed FPFNet extracts the multi-scale information by requiring less features from the pyramid module, which can tackle the issue of large-scale variations. Meanwhile, the frequency feature pyramid module uses different frequency branches to obtain different scale information. We also adopt the attention mechanism to strengthen the extraction of different scale information. Moreover, we devise a novel loss function, namely global-local consistency loss, to address the existing problems of imbalanced data distribution and insufficient local patterns. Furthermore, we propose a novel context-prediction network (CPCNet), which is used to evaluate our proposed FPFNet. It is worth mentioning that the proposed CPCNet is the only dataset that contains both crowd-and-vehicle annotations. The experimental results show that FPFNet achieves the best performance on different backbones, e.g., 52.69 mean absolute error (MAE) on P2PNet with FFP module. The codes are available at: https://github.com/MUST-AI-Lab/FPFNet.</p>	1558-0016	10.1109/TITS.2022.3178848
<p>Multi Automated Guided Vehicle (multi-AGV) systems are widely used in Work-in-Process (WIP) warehouses to improve the efficiency of material transportation. However, collisions and deadlocks between AGVs are inevitable. Many algorithms have been proposed to solve these problems, but their performance is inefficient in the WIP environment due to the lack of consideration of its features. In this paper, to fill the between current research and real-world application requirement, we construct a collision and deadlock solving model for a multi-AGV system in a WIP warehouse (CSDMWW). Then we propose a coordination strategy based on dynamic spare point application (DSPA), aiming to improve the efficiency of solving AGV collisions and deadlocks in a WIP warehouse. In this method, the AGV records its predecessor, successor, and reserved points in its local controller and can only enter the set of sequential shared points if its application for spare points is successful. Otherwise, it has to stop to avoid causing an unsolvable deadlock. If a deadlock occurs, the AGV's in the sequential shared points, the AGV moves to the spare point to resolve it. Whenever an AGV leaves the set of consecutive shared points, it releases all its spare points. We apply the algorithm to both the central and local controllers to improve the calculation efficiency. Extensive simulation results demonstrate the feasibility of the DSPA scheme under realistic WIP warehouse environment and its higher efficiency compared to previous state-of-the-art methods.</p>	2169-3536	10.1109/ACCESS.2022.3195173
<p>The application of convolutional neural networks has been shown to significantly improve the accuracy of building extraction from very high-resolution (VHR) remote sensing images. However, there exist so-called semantic gaps among different kinds of buildings due to the large intraclass variance of buildings, and most of the present-day methods are ineffective in extracting various buildings in large areas that cover different scenes, for example, urban villages and high-rise buildings, because existing building extraction strategies are the same for various scenes. With the improvement of the resolution of remote sensing images, it is feasible to improve the image interpretation based on the scene prior. However, this idea has not been fully utilized in building extraction from VHR remote sensing imagery. This study proposes a scene-driven multitask parallel attention convolutional network (MTPA-Net) to resolve these limitations. The proposed approach classifies the input images into multiclass scenes and the network separately extracts the buildings in lower-level different scenes. In addition, a simple postprocessing method is applied to integrate the building extraction results and scene prior. Our proposed method does not require multimodal training and the network can learn in an end-to-end manner. The performance of our proposed method is evaluated on a data set that includes various urban and rural scenes with diverse landscapes. The experimental results show that the proposed MTPA-Net outperforms state-of-the-art algorithms by reducing misclassification areas and maintaining improved robustness.</p>	1558-0644	10.1109/TGRS.2020.3014312
<p>Accurate bearing remaining life prediction guarantees safety and continued profitability for the industry. Variable operating conditions of the bearing and difficulty in obtaining corresponding data labels in the industry result in low prediction accuracy of the model. To solve these problems, a bearing life prediction model based on an improved temporal convolutional network and transfer learning is proposed. First, the squeeze-and-excitation network is used to mine and recalibrate the deep features of source domain data. Second, the temporal convolutional network is used to calibrate the relationship between the features and lifetime, and the optimal source domain model is trained. Finally, the transfer learning training is conducted with the source domain model to obtain the transfer model, which accurately predicts the remaining life of the multi-operating condition signal. Comparative experiments were performed on IEEE PHM Challenge 2012 bearing life prediction data. The results show that the proposed method can better mine the inherent degradation trend of bearings and effectively improve the prediction accuracy of the remaining useful life. Compared with the existing popular prediction methods, the prediction error was reduced by "20.8% to 51.5%," which proves the effectiveness and feasibility of the proposed method.</p>	2169-3536	10.1109/ACCESS.2022.3223387
<p>The Internet of Things (IoT) has become widespread around the world. Since a large number of diverse devices, such as vehicles, household electrical appliances, smart phones, and environmental sensors are connected to the Internet, we can obtain a large volume of diverse IoT data, known as IoT big data. The generation of IoT big data means that efficient analytic systems are needed for many application scenarios, for example, to optimize urban planning, solve air pollution problems, and improve business decisions. In this survey, we review current systems that can efficiently analyze IoT data. Existing systems can be categorized into batch and stream processing systems. We review batch and stream batch processing systems for trajectory data. We also review batch and edge-aware batch processing systems for trajectory data. We also review batch and edge-aware batch processing systems can efficiently and effectively analyze specific data and tasks, no system exists that can handle all characteristics of IoT big data: volume, velocity, variety, veracity, and variability. We present some open issues and discuss the future of IoT big data analytic systems. This survey aims to help researchers and practitioners better understand current systems and develop new IoT big data analytic systems.</p>	2327-4662	10.1109/JIOT.2021.3131724
<p>Hyperspectral/multispectral and panchromatic of optical remote sensing images are commonly used for multisensor image fusion, which has been applied in various applications of Earth observation. However, the utilization of optical remote sensing data suffers from the limitation of bad weather and cloud contamination. To address aforementioned issue and enhance spatial details of polarimetric synthetic aperture radar (PolSAR) image, a novel dual-domain super-resolution image fusion method is proposed by combining improved generalized random vector (GRV) model with generalized linear combinatorial approximation (GALCA) technology in this study. The proposed method decomposes the task of image fusion into polarimetric and texture domain fusion by integrating polarimetric components of PolSAR image and texture detail component of panchromatic image, which can significantly improve preserving polarimetric information. The data fusion experiment is implemented with three data sets including the global resolutions of the PolSAR image and the global resolutions of the panchromatic images of GaoFen-1 (GF-1) and GaoFen-2 (GF-2) and the quad-pol SAR data of GaoFen-3 (GF-3) and Radarsat-2. Results show that the proposed dual-domain image fusion method provides a better performance compared with state-of-the-art multisensor fusion methods (BT, PCA, GS, induction, and PRACS) regarding qualitative and quantitative evaluations. In addition, results of image fusion are applied to image classification over agricultural and urban areas of China, which shows that classification accuracy is significantly improved when compared with the result using only the original image.</p>	1558-0644	10.1109/TGRS.2021.3134099
<p>Multiscale-ahead chaotic time series prediction is a kind of highly nonlinear problem, which puts forward higher requirements both for the dynamical memory and nonlinearity of the model. Echo state network (ESN) is frequently employed in the realm of chaotic time series modeling and prediction, but the basic ESN has been proved to have an antagonistic tradeoff between nonlinear transformation and memory capacity. To overcome this tradeoff, a new architecture named hierarchical ESN with augmented random features (HESN-ARF) is proposed. On the basis of the traditional linear random projection, the proposed HESN-ARF further leverages nonlinear kernel transformation to construct augmented random features, which can enable the linear and nonlinear properties to be fully represented. Moreover, the HESN-ARF utilizes low-rank kernel approximation to further reduce the computational cost, preserving the advantage of efficient modeling as much as possible while ensuring the capabilities of nonlinear transformation and dynamical memory simultaneously. The proposed HESN-ARF can mine and learn the latent evolution patterns hidden in the dynamic system layer by layer through the hierarchical strategy, and achieves excellent performance in multiscale-ahead chaotic time series prediction, as demonstrated by experimental findings on two synthetic chaotic systems and a real-world meteorological data set.</p>	2379-8939	10.1109/TCDS.2022.3176888

<p>The richness of spectral information in multimaterial hyperspectral images (MHSIs) offers the possibility to effectively detect subtle changes and properties of grounds. However, severe spectral variabilities and inadequate spatial co-exploration capabilities limit the performance of existing methods due to differences in acquisition times and conditions. Therefore, this article proposes a strategy of joint unmixing and multimaterial spatial information coguidance (JCIG) to fully exploit the spatial-temporal-spectral features. First, a multimaterial joint unmixing and abundance estimation method is used to achieve endmembers' extraction and abundance estimation. Whereas the method adds spectral perturbed regularization when compared to the traditional unmixing strategy, making it robust to spectral variability. Second, we propose a multimaterial coguidance method that highlights the contrast between changed and unchanged regions and removes the noise by transferring the common structure information between the multimaterial first principal component map and the abundance difference maps. It will obtain an enhanced abundance difference map and achieve an effective combination of multimaterial spatial information. The final change results can be obtained by combining and thresholding these enhanced abundance difference maps. Experiments on some data sets demonstrate that the proposed algorithm is sufficiently valid and robust for multimaterial images, especially for data containing spectral variabilities and obvious structures.</p>	1558-0644	10.1109/TGRS.2020.3045799
<p>Spectral unmixing plays a vital role in hyperspectral image analysis. It mainly consists of two procedures, i.e., endmember extraction and abundance estimation. Although most algorithms for each of the two procedures may exhibit good performance, few studies have been done considering both problems simultaneously. Therefore, hyperspectral unmixing accuracy is normally achieved by exploring all possible combinations of the two types of algorithms, which renders high computational overheads. We propose a novel orthogonal projection framework to conduct fast hyperspectral unmixing. It addresses both endmember extraction and abundance estimation with orthogonal projection endmember (OPE) and orthogonal projection abundance (OPA). Especially, the pixel with the largest orthogonal projection on any pixel is considered to be an endmember. We randomly choose one pixel from the hyperspectral data to compute the orthogonal projections of all pixels and extract the pixel with the largest projection as the first endmember. To avoid extracting the same endmembers, we compute orthogonal projections of all pixels to endmembers that have been previously extracted, and the pixel with the largest projection is considered as the next endmember. In terms of abundance estimation, we also utilize the concept of orthogonal projection and search for a diagonal matrix whose multiplication with the endmember matrix is not only a square matrix but also a diagonal matrix. Then, we exploit some specific matrix operations to estimate the abundance of each endmember at every pixel. We have evaluated the proposed OPE and OPA algorithms on synthetic and real data, and the experimental results have validated their effectiveness and efficiency in hyperspectral unmixing.</p>	1558-0644	10.1109/TGRS.2022.3150263
<p>In the field of point cloud registration, the ability to characterize the point cloud is core to improve the registration performance. Previous methods either convert point clouds as probability density models but ignore the rich feature of point clouds or only extract the local feature of point clouds without considering the global information. They did not fully utilize the point cloud information, so the characterization abilities of these methods are limited. To solve the above problems, we propose a point cloud registration based on learning Gaussian mixture models (GMMs) with global-weighted local representations. On the one hand, the point cloud is converted to GMM for registration. Unlike discrete point cloud data, GMM is a compact and lightweight representation. On the other hand, we generate GMM by extracting unique local features and global information from the point cloud. The global information is used to weigh the local feature. Thus, the resulting GMM is a distributed feature information representation ability, fully exploring the point cloud's local and global information. At the same time, we design a learning guide module to directly solve the transformation without following the expectation maximization (EM)-solving paradigm. Benefiting from the combination of GMM and learning deep information, this formulation greatly improves the ability to characterize point clouds. Our method shows superiority in registration accuracy and generalization performance on synthetic and real-world datasets. The source code will be made public.</p>	1558-0571	10.1109/LGRS.2023.3256005
<p>Identifying squamous cell carcinoma and adenocarcinoma subtypes of metastatic cervical lymphadenopathy (CLA) is critical for localizing the primary lesion and initiating timely therapy. B-mode ultrasound (BUS), color Doppler flow imaging (CDFI), ultrasound elastography (UE) and dynamic contrast-enhanced ultrasound provide effective tools for identification but synthesis of modality information is a challenge for clinicians. Therefore, based on deep learning, rationally fusing these modalities with clinical information to personalize the classification of metastatic CLA requires new explorations. In this paper, we propose Multi-step Modality Fusion Network (MSMFN) for multi-modal ultrasound fusion to identify histologic subtypes of metastatic CLA. MSMFN can mine the unique features of each modality and fuse them in a hierarchical three-step process. Specifically, first, under the guidance of high-level BUS semantic feature maps, information in CDFI and UE is extracted by modality interaction, and the static imaging feature vector is obtained. Then, a self-supervised feature orthogonalization loss is introduced to help learn modality heterogeneity features while maintaining maximal task-consistent category distinguishability of modalities. Finally, six encoded clinical information are utilized to avoid prediction bias and improve prediction ability. Three-fold cross-validation experiments demonstrate that our method surpasses existing and other multi-modal fusion methods with an accuracy of 80.06%, a true-positive rate of 81.81%, and a true-negative rate of 80.00%. Our network provides a multi-modal ultrasound fusion framework that considers prior clinical knowledge and modality-specific characteristics. Our code will be available at: https://github.com/RichardSunnyMeng/MSMFN.</p>	1558-254 X	10.1109/TMI.2022.3222541
<p>In recent decades, remote sensing object counting has attracted increasing attention from academia and industry due to its potential benefits in urban traffic, public safety, and road planning. However, this issue is becoming a challenge for completion because of complex technical barriers, such as large-scale variation, complex background interference, and nonuniform density distribution. Recent research has explored new prospects for object counting using convolutional neural networks (CNNs), but most existing CNN-based methods draw on larger and more complex architectures, which leads to a huge computational and storage burdens, severely limiting their application in real-world scenarios. In this article, a lightweight multiscale feature fusion network for remote sensing object counting, named LMSFFNet, is presented to achieve a better balance between the running speed of the network and the counting accuracy. Specifically, in the encoding process, we select a MobileNetV2 module as the backbone of the network to reduce the numbers of network parameters and computing cost. In return, a cascade structure of the channel-spatial interaction mechanisms compensates for the weaker feature extraction ability of the lightweight network. In the decoding process, a lightweight multiscale context fusion module (LMCFM) as a multiscale feature fusion module is developed to solve the problem that the number of parameters increases with the expansion of the object scale when extracting multiscale features. In addition, a lightweight module (LCSFM) is used to mine the scale features of the target object through two kinds of local object counting experiments, namely, experiments on remote sensing benchmarks (RSOC dataset) and crowd benchmarks (ShanghaiTech, UCF-QNRF, and UCF-CC_50 datasets), show the effectiveness of the proposed method.</p>	1558-0644	10.1109/TGRS.2023.3238185
<p>Automatic building extraction from high-resolution aerial and satellite images has many practical applications, such as urban planning and disaster management. However, the complex appearance and various scales of buildings in remote-sensing images bring a challenge for building extraction. In this study, we developed a novel multiscale building extraction method based on refined attention pyramid networks (RAPNets). We built an encoder-decoder structure based on residual convolution, attention mechanism, and pyramid pooling module to improve the performance of feature extraction in the encoding phase. Moreover, the salient multiscale features were extracted by embedding the convolutional block attention module into the lateral connections. Finally, the refined feature pyramid structure was adopted in the decoding path to fuse the multiscale features to obtain the final extraction results. Experiments on two standard data sets (Inria aerial image labeling data set and xBd data set) show that our method achieves reliable results and outperforms the comparing methods.</p>	1558-0571	10.1109/LGRS.2021.3075436
<p>Building footprint extraction plays an important role in many remote-sensing (RS) applications such as urban planning and disaster monitoring. Mainly, the exploitation of contextual information in a fixed receptive field is the focus of previous research, which makes it difficult to generally extract buildings that vary greatly in size and shape. However, some studies have shown that small buildings are more difficult to extract. To improve this problem, we attempt to teach the network to adjust the receptive field and enhance useful feature information adaptively. In this article, we propose a novel adaptive screening feature network (ASF-Net), which can independently screen and enhance effective feature information from two aspects. On the one hand, we propose a deepened space up-sampling block to screen useful information and help establish boundaries. On the other hand, we propose an Adaptive Information Utilization Block (AUIB) to enlarge the receptive field of feature maps and refine the incomplete building footprint. As a result, the more accurate multiscale building footprint is inferred from the enhanced features. Experimental results on the popular aerial image segmentation datasets show that ASF-Net obtains competitive results (80.2% intersection over union (IoU) on the Inria aerial image labeling dataset and 74.2% IoU on the Massachusetts buildings dataset) in comparison with several state-of-the-art models. The TensorFlow implementation is available at https://github.com/jyx0516/ASF-Net.</p>	1558-0644	10.1109/TGRS.2022.3161386
<p>Change detection plays an important role in Earth surface observation and has been extensively investigated over recent decades. A hyperspectral image (HSI) with high spectral resolution provides abundant ground object information, which is exploited by finer change detection. However, existing convolutional neural network (CNN)-based methods extract image maps with a fixed receptive field which is not suitable for detecting objects at diverse scales in HSI. In this article, we propose a deep multiscale pyramid network enhanced with spatial-spectral residual attention (DMP StNet (s²)(2) \$ r\$ aN) for HSI change detection, which has strong capability to mine multiresolution and multiscale spatial-spectral features, improving the performance in complex changed regions. There are two key characteristics: 1) the multiscale spatial-spectral features are extracted by the multiscale pyramid convolution and residual attention module StNet (S²)(2) \$ r\$ aN) of each scale and 2) the multiresolution features are obtained by aggregating multiscale features from different levels. As a result of this design, the proposed DMP StNet (s²)(2) \$ r\$ aN learns more discriminative features with both strong semantic information and rich spatial-spectral information. Experiments carried out on three datasets demonstrate the competitive performance of the proposed method in both qualitative and quantitative analyses.</p>	1558-2205	10.1109/TCSVT.2022.3224984
<p>Recently, self-paced contrastive learning has emerged as a promising method for unsupervised object re-identification. These methods generate pseudo labels, store centroid features in the memory bank, and periodically update them. However, the performance of the clustering methods within each cluster exists inevitably noisy labels, and self-paced learning is sensitive to the initialization of the memory bank. To solve this problem, we propose a novel self-paced contrastive learning method, namely, self-paced nearest neighbor identity-guided (NNNI) method to overcome these challenges. The advantage of NNNI is to provide the model with a highly accurate prior. Specifically, this method relies on the random identity sample commonly used in re-identification tasks to provide the nearest neighbor of the re-identity codes in the similarity matrix. It encodes the nearest neighbor information into the identity codes and uses it to guide the self-paced learning. This method has an exponential moving average to train high-quality representations. NNNI alleviates the negative effects of noise instances and corrects class collision issues during training. Extensive experiments show that our method is effective on unsupervised object re-identification and achieves state-of-the-art performance on three large-scale person re-identification datasets and one large-scale vehicle re-identification dataset, which is competitive with even supervised methods.</p>	2162-2388	10.1109/TNNLS.2021.3089140
<p>Textbook question answering (TQA) is a task that one should answer non-diagram and diagram questions accurately, given a large context which consists of abundant diagrams and essays. Although lots of studies have made significant progress in the natural image question answering (QA), they are not applicable to comprehending diagrams and reasoning over the long multimodal context. To address the above issues, we propose a relation-aware fine-grained reasoning (RAFTN) network that performs fine-grained reasoning over the nodes of relation-based diagram graphs. Our method uses semantic dependencies and relative positions between nodes in the diagram to construct relation graphs and applies graph attention networks to learn diagram representations. To extract and reason over the multimodal knowledge, we first extract the text that is the most relevant to questions, options, and the instructional diagram which is the most relevant to question diagrams at the word-sentence level and node-diagram level, respectively. Then, we apply instruction-diagram-relevant-text and question-guided attention to reason over the node of question diagrams, respectively. The experimental results show that our proposed method achieves the best performance on the TQA dataset compared with baselines. We also conduct extensive ablation studies to comprehensively analyze the proposed method.</p>	2151-1535	10.1109/JSTARS.2023.3273122
<p>Openly available satellite image time series (SITS) are considered an important resource for spatiotemporal change monitoring. However, obtaining semantically annotated datasets for such tasks is an expensive affair. To alleviate this problem, this article presents a novel framework to model and understand the image dynamics by discovering latent information in Sentinel-1 SITS, even with limited ground truth data. The framework suggests how to use visualizations to efficiently integrate domain knowledge both for execution and evaluation of the machine-learning pipeline in the absence from ground truth data in SITS change studies. In a case study at a Polar region, we extend a limited amount of ground truth data and then discover its temporal evolution at image patch level, in an unsupervised manner. The trustworthiness of the framework is ensured by integration of domain knowledge and intelligent visual verification strategies. A visualization tool is also implemented for this purpose. The proposed framework contains a classifier and feature modules. Our experiments show that a domain-knowledge-based classifier gives the best accuracy. The classifier semantically labeled the complete dataset of 24 study months, containing 153 600 patches with a size of 256 × 256 pixels by extending the available semantic labels from just three months. The temporal sequence of these semantic labels are then recorded and fed to a Bayesian model called Latent Dirichlet Allocation (LDA) to discover the underlying patterns. LDA generates a change map containing the dominant dynamic patterns to give a consolidated view of the evolution without having to browse the whole dataset. Further, color-coded change signatures explain the change classes.</p>	1558-2191	10.1109/TKDE.2021.3090075
<p>Tax evasion is an illegal activity in which individuals or entities avoid paying their true tax liabilities. Efficient detection of tax evasion has always been a crucial issue for both governments and academic researchers. Recent research has proposed the use of machine learning technology to detect tax evasion and has shown good results in some specific areas. Regrettably, there are still two major obstacles to detect tax evasion. First, it is hard to extract powerful features from the tax evasion data. Second, due to the tax evaders' practice of tax evasion, labeled samples are limited in practice. Such obstacles motivate the contributions of this work. In this paper, we propose a novel tax evasion detection framework named FBNE-PU (Fusion of the basic feature and network embedding with PU learning for tax evasion detection), a multitask method for detecting tax evasion in real-life scenarios. In this paper, we perform an in-depth analysis of the characteristics of the transaction network and propose a novel network embedding algorithm, the PhnGOGN. It significantly improves detection performance by extracting useful features and the tax-related features from the transaction network. Moreover, we use nPU (positive-unlabeled learning with non-negative risk estimation) to assist in predicting labels for unlabeled data. Finally, an MLP is trained as the decision function. Experiments on three real-world datasets demonstrate that our method significantly outperforms the comparison methods in the tax evasion detection task. Additionally, the source code and the experimental details have been made available at (https://github.com/PiggyGaGa/FBNE-PU).</p>	1949-3045	10.1109/TAFFC.2020.3025777
<p>Emotion recognition based on electroencephalography (EEG) is a significant task in the brain-computer interface field. Recently, many deep learning-based emotion recognition methods are demonstrated to outperform traditional methods. However, in terms of channel-wise emotion features for EEG emotion recognition, there have been few studies on attention-based emotion recognition. In this paper, we propose an attention-based convolutional recurrent neural network (ACRNN) based on EEG signals and improve the accuracy of emotion recognition. First, the proposed ACRNN adopts a channel-wise attention mechanism to adaptively assign the weights of different channels, and a CNN is employed to extract the spatial information of encoded EEG signals. Then, to explore the temporal information of EEG signals, extended self-attention is integrated into an RNN to recycle the importance based on intrinsic similarity in EEG signals. We conducted extensive experiments on the DEAP and DREAMER databases. The experimental results demonstrate that the proposed ACRNN outperforms state-of-the-art methods.</p>	2169-3536	10.1109/ACCESS.2020.3046618
<p>Safe and effective evacuation is very important to reduce casualties after earthquakes. Given that evacuation is a checking process rather than a preselection process, evolutionary game theory can be used to better understand the crowd dynamics by analyzing the initiation effects in terms of individual interactions during evacuation. The key purpose of this paper was to construct an evolutionary game model of emergency evacuation of a teaching building at a university after an earthquake to search for the specific constraints necessary to reach the expected collective behaviors for orderly evacuation. We first analyzed the evacuation scenarios, including the environment of the teaching building, emergency degree of the earthquake and behaviors of the crowd. The related game players in the evolution process were divided into three types: individual evacuees, calm evacuees and university staffs, and their payoff matrix was constructed according to the evacuation scenarios. Then, an evolutionary game model via the replicated dynamic system was created, and stable strategies were discussed. Next, we simulated eighteen evacuation scenarios with adjustment of the guiding authorities, emergency degree, and group-oriented coefficient; the simulation results showed that the worst stable strategies can be avoided and the expected stable strategies can be obtained by adjusting the constraints, which are closely related to the corresponding management measures. Finally, the performance of the proposed model was verified by comparisons with the real videos and the conventional strategies.</p>	2327-4682	10.1109/JIOT.2022.3190412
<p>Low-Earth orbit (LEO) satellites are recognized as one of the most promising infrastructures for realizing global Internet of Things (IoT) services. With the explosive growth of user terminals (UTs) and data traffic, the integration of massive multiple-input multiple-output (MIMO) techniques and LEO satellite communication systems has been regarded as a novel idea to enhance system capacity and realize global seamless high-speed Internet connection. However, network CSI and establishing a simple and efficient hybrid beamforming design for beamforming tasks due to the limitations of objectives such as high dynamic, long delay, and low payload in LEO satellite scenarios. It is embodied in three aspects: 1) the untenable channel reciprocity in time division duplex (TDD) systems; 2) the training feedback costs and feedback delay in frequency division duplex (FDD) systems; and 3) the complex nonconvex optimization process faced by hybrid beamforming design. Driven by the performance advantages of the deep learning (DL) technology to deal with various problems in the field of physical layer communication, this article proposes to use a deep neural network (DNN) to solve the above challenges and constructs SatCP and SatHB schemes for realizing downlink CSI acquisition and hybrid beamforming design, respectively. By deeply mining the potential correlation of the uplink-downlink channels between LEO satellites and UTs and exploring the mapping relationship between CSI and beamformers, the SatCP can assist LEO satellites to directly predict the future downlink CSI based on the observed uplink CSI with no need for downlink channel estimation, while the SatHB can easily generate the corresponding beamformers based on the downlink CSI predicted by the SatCP without requiring complex optimization. Numerical results demonstrate that the proposed SatCP and SatHB can play an effective auxiliary role in LEO satellite MIMO communication systems.</p>	2169-3536	10.1109/ACCESS.2021.3068293
<p>Aiming at the problem of spatial information loss in the semantic segmentation process, we propose a semantic segmentation network, termed the ventral and dorsal network (VDNet), which simulates the ventral and dorsal pathways of the cerebral visual cortex. The ventral pathway network focuses on extracting semantic information, and the dorsal pathway network focuses on extracting spatial information. We use the semantic enhancement module (SEM) to fuse information of different scales to enhance the spatial information. In addition, we use the spatial attention module (SAM) in the dorsal pathway network to assign weights to different locations in space to enhance the extraction of spatial information. By fusing the information of the two pathways, the final semantic segmentation result is obtained. Since the dorsal pathway network is used to specifically enhance the extraction of spatial information, the problem of spatial information loss during the segmentation process is effectively improved, and higher segmentation accuracy can be achieved by using only a small backbone network. On the Camvid, Gtyscape and PASCAL_VOC 2012 datasets, we achieve the mean intersection over union (mIoU) of 82.1%, 77.8%, and 81.0%, respectively, which verifies the effectiveness of the proposed method.</p>	2169-3536	10.1109/ACCESS.2023.3251560
<p>Location data is valuable for various applications such as epidemiology, natural disasters, and urban planning but causes exposure of sensitive information, e.g., home or work place, from collected data in a dataset. Local Differential Privacy (LDP)-based data collection is a promising technology to protect sensitive information. A mobile device modify data to make each piece of data indistinguishable from others but keeps its intrinsic value for statistical characteristics. The privacy protection in LDP is achieved by perturbing the data with random noise. However, this can be infeasible when the data is a shortcoming on it, as a data owner can never validate the modified data. In this paper, we propose a novel LDP-based data collection scheme to deal with various problems in the field of physical layer communication. This article proposes to use a deep neural network (DNN) to solve the above challenges and constructs SatCP and SatHB schemes for realizing downlink CSI acquisition and hybrid beamforming design, respectively. By deeply mining the potential correlation of the uplink-downlink channels between LEO satellites and UTs and exploring the mapping relationship between CSI and beamformers, the SatCP can assist LEO satellites to directly predict the future downlink CSI based on the observed uplink CSI with no need for downlink channel estimation, while the SatHB can easily generate the corresponding beamformers based on the downlink CSI predicted by the SatCP without requiring complex optimization. Numerical results demonstrate that the proposed SatCP and SatHB can play an effective auxiliary role in LEO satellite MIMO communication systems.</p>	2169-3536	10.1109/ACCESS.2023.3252627
<p>Over the past few years, deep learning has been introduced to tackle hyperspectral image (HSI) classification and demonstrated good performance. In particular, the convolutional neural network (CNN) based methods have progressed. However, due to the high dimensionality of HSI and equal treatment of all bands, the performances of CNN based methods are hampered. The labels of land-covers often differ between edge and the center pixels in pixel-centered HSI classification. These edge pixels may weaken the discrimination of spatial features and reduce classification accuracy. Motivated by the attention mechanism of the human visual system, the spatial proximity feature selection with residual spatial-spectral attention network is proposed in this article. It contains a residual spatial attention module, a residual spectral attention module, and a spatial proximity feature selection module. The residual spatial attention module aims to select the crucial spatial information, which assigns weights to different features by measuring the similarity between the surrounding elements and their central ones. The residual spectral attention module is designed for spectral bands which are selected from raw input data by emphasizing the valuable bands and suppressing the useless ones. According to the spatial distribution of features, the spatial proximity feature selection module is used to filter features effectively. Experiments on three public data sets demonstrate that the proposed network outperforms the state-of-the-art methods in comparison.</p>	2162-2388	10.1109/TNNLS.2021.3084195
<p>Network representation learning (NRL) has far-reaching effects on data mining research, showing its importance in many real-world applications. NRL, also known as network embedding, aims at preserving graph structures in a low-dimensional space. These network learning tasks, such as vertex classification, link prediction, and data visualization, can be used for subtasks, such as user recommendation, fraud detection, and network anomaly detection (GN) based models, e.g., GraphSAGE, have drawn a lot of attention for their success in inductive NRL. When conducting unsupervised learning on large-scale graphs, some of these models employ negative sampling (NS) for optimization, which encourages a target vertex to be close to its neighbors while being far from its negative samples. However, NS draws negative vertices through a random pattern or based on the degrees of vertices. Thus, the generated negative samples are not as good as the training ones, as the training ones are the most relevant to the target ones. Moreover, the negative samples are not as good as the training ones, as the training ones are the most relevant to the target ones. Moreover, the negative samples are not as good as the training ones, as the training ones are the most relevant to the target ones. To address these problems, we propose an adversarial training method tailored for unsupervised inductive NRL on large networks. For efficiently keeping track of high-quality negative samples, we design a caching scheme with sampling and updating strategies that has a wide exploration of vertex proximity while considering training costs. Besides, the proposed method is adaptive to various existing GCN-based models without significantly complicating their optimization process. Extensive experiments show that our proposed method can achieve better performance compared with the state-of-the-art models.</p>	1556-6021	10.1109/TIFS.2022.3158551
<p>Aspect-level sentiment classification aims to determine the sentiment polarity of a sentence toward a given aspect term or aspect category. For sentiment classification toward a given aspect term, some opinions may exist that are not the given aspect term's modifiers because a sentence may contain more than one aspect term. Hence, it is necessary to capture relevant opinion for a certain aspect term. To capture the nearest opinion of the aspect term, researchers have designed various methods to extract the nearest opinion from a sentence. However, this can be infeasible when the sentence has a complex syntactic structure. In this paper, we introduce dependency relation to detect the dependency-related sentiment feature for the aspect term in the dependency parse tree, and integrate this relationship into the convolutional neural network and bidirectional long short-term memory. Experiments show that the related sentiment features for an aspect term help models discriminate its sentiment polarity. The proposed models achieve state-of-the-art results among neural networks. The codes and datasets are released on https://github.com/xm000/Summet14-DW-CNN.</p>	2169-3536	10.1109/ACCESS.2022.3201893
<p>Instructional design and technology (IDT) professionals participate in communities of practice (CoPs) on Facebook to seek pedagogical and educational technology advice for solving instructional design (ID) problems. Much of the IDT literature has focused on formal educational environments and not on nonformal settings outside the classroom and beyond formal education. Further analysis of real and practical knowledge exchanged among community members is required to understand the purpose, functions, and organizational knowledge capital in online CoPs. To fill this gap, this study uses natural language processing (NLP) to analyze the practical knowledge of 6,096 anonymized users' posts from four large public IDT CoPs on Facebook from September 2017 to September 2020 after cleaning the dataset. User posts were publicly available and required no password authentication for access, including Instructional Designer (1,717), Designers for Learning (228), Adobe Certificate Users (599), and Articulate Storyline (522). The proposed methodology aims to extract practical knowledge of individual online CoPs in three parts. First, the characteristics of individual communication among members are extracted by calculating word and sentence lengths, word frequencies, and contiguous words. Second, the characteristics of members' exchange of practical knowledge are obtained through sentiment identification, entity recognition, and relationships between pedagogical and educational technology entities. Third, the functions of individual online CoPs are developed through topic modeling with latent Dirichlet allocation (LDA) and BERTopic. The findings suggest similarities and differences among IDT CoPs, present resource distribution conventions, and members exchanging pedagogical and educational technology advice. The study highlights the need for pedagogical foundations to support instructional and technical decisions, mechanisms for self-assessment of practical knowledge concerning IDT competencies, community protocols for addressing misconceptions about learning, onboarding materials for new members, and new topic structures to classify practical knowledge. NLP tasks are implemented using Python libraries to support the future development of awareness tools.</p>	2151-1535	10.1109/JSTARS.2022.3181355
<p>In agriculture, using high-resolution synthetic aperture radar (SAR) images to precisely segment offshore farms is helpful for reasonable layout planning and statistics of breeding density. However, conventional segmentation methods tend to have low accuracy and slow inference speed. Therefore, we propose a novel, precise, and fast segmentation scheme for offshore farms in high-resolution SAR images based on model fusion and half-precision parallel inference. Specifically, we propose several new high-performance improved UNet++ methods and reasonably fuse the test results. At the same time, a simulated annealing strategy and a morphological closing operation are introduced to improve the segmentation accuracy. In addition, we find that resizing the images to 256×256 pixels is better than 512×512 pixels for this task, which not only has higher segmentation accuracy but can also increase the inference speed by nearly 13%. Furthermore, a novel half-precision parallel inference strategy is proposed, which can fully utilize the GPU and increase the inference speed by 72.6%. Compared with some state-of-the-art methods, the proposed scheme that merges two improved UNet++ achieves superior accuracy with a frequency weighted intersection over union of 0.9876 and a single image inference time of 0.0218 s on the high-resolution SAR offshore farm dataset.</p>	1558-0644	10.1109/TGRS.2022.3179737
<p>The effective fusion of multisource data helps to improve the performance of land cover classification. Most existing convolutional neural network (CNN)-based methods adopt an early/late fusion strategy to fuse the low-/high-level features for classification, which still has two inherent challenges: 1) the conventional convolution operation performs a weighted average operation on each pixel in the receptive field, which will reduce the discriminability of the center pixel due to the influence of the interference pixels and 2) the spatial-spectral features of the hyperspectral image (HSI), the elevation features of light detection and ranging (LiDAR), and the complementary features between multisource data are not fully explored, which results in the reduction of classification accuracy. In this article, we propose a novel multisource data fusion network with self- and cross-guided attention (MB2FscgaNet) is proposed for the joint classification of LiDAR and HSI. The main concern of this article is how to accurately estimate more effective spectral-spatial-elevation features and yield more effective transfer in the network. Specifically, MB2FscgaNet adopts a multibranch feature fusion architecture to fully exploit the hierarchical features from LiDAR and HSI by level. At each level of the network, a self- and cross-guided weight is assigned to assist in higher weight to interesting areas and channel refined spectral and elevation features, and provide complementary information cross-guidance between LiDAR and HSI. We further designed a spectral supplement module (SeSuM) to improve the discriminative ability of the center pixel. Comparative classification results and ablation studies demonstrate that the proposed MB2FscgaNet achieves competitive performance against state-of-the-art methods.</p>	1558-0571	10.1109/LGRS.2022.3160882
<p>Transfer learning is an effective way to alleviate the problem of insufficient samples in a hyperspectral image (HSI) classification. However, the present transfer learning-based methods usually transfer knowledge from a single source domain, such as the natural image domain. Therefore, these methods cannot simultaneously transfer spectral and spatial knowledge to the target domain in HSI. Generally, the natural image has rich spatial structure and texture information, while the HSI has abundant spectral information. To better utilize the knowledge learned from natural image datasets and HSI datasets, we propose a dual-branch multimodal transfer feature fusion network (MTFFN) for HSI classification. In MTFFN, a dual-branch network structure is designed to transfer the two-modal knowledge from the natural image domain and the source HSI domain to the target domain in two branches, respectively. A multitask learning strategy is adopted to achieve feature fusion. The fused features are used to generate the final classification result. Moreover, a local attention mechanism is designed to extract more meaningful spectral features. Experiments on two public datasets show that the proposed method is effective (https://github.com/haipeng/MTFFN).</p>	1558-0644	10.1109/TGRS.2022.3226778
<p>Remote sensing (RS) image change detection (CD) is an Earth observation technique for detecting surface changes in the same area during a period. With the rapid development of deep learning, various deep neural networks especially Siamese ones have been widely used in the field of CD. However, they have the deficiency of insufficient contextual information aggregation, thus resulting in false and missed detections, and it is difficult to refine the detection of change edges. To alleviate these problems and obtain more accurate results, we propose an efficient self-weighted spatial-temporal attention network (SSA-Net). In contrast to the Siamese structure, our network is a novel joint learning framework composed of fusion subnetwork, difference subnetwork, and decoder. Fusion subnetwork is used to extract multiscale object features and provide complementary multiscale channel-aligning attention (MCA) module to capture the long-range semantic information for multiscale context aggregation. Difference subnetwork is used to extract the difference variation features, where we propose a feature differential reconfiguration (FDR) module to learn the temporal change information. FDR can effectively filter change information and reconstruct features to improve the perception of changed regions. To better balance the MCA and FDR modules, an asymmetric weighting (AW) module is proposed in the decoder to self-weight the multiscale features and generate the change map. Experiments demonstrate the efficiency of proposed subnetworks and modules, and the state-of-the-art performance of SSA-Net.</p>	2168-2372	10.1109/JTEHM.2020.3045642

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Author Keywords	IEEE Terms
Human-centric network;human resources allocation;business process management;process mining;process-aware information system	Resource management;Organizations;Data mining;Information systems;Standards organizations;Bipartite graph;Task analysis
Cable real-time online monitoring;edge computing;particle swarm optimization;task allocation;task queuing	Task analysis;Resource management;Edge computing;Monitoring;Real-time systems;Power cables
Resource allocation;online operational support;process improvement;Bayesian neural network;minimum cost and maximum flow algorithm	Resource management;Business;Predictive models;Process monitoring;Neural networks;Task analysis;Computational modeling;Bayes methods
Business process management;mixed integer programming;process redesign;redesign matrix;workflow optimization	Task analysis;Optimization;Best practices
Cloud computing;containers;elastic processes;business process management	Containers;Cloud computing;Manufacturing processes;Business process management
Deep reinforcement learning;edge computing;Internet of Everything (IoE);makespan;two-stage scheduling	Task analysis;Internet of Things;Processor scheduling;Reinforcement learning;Scheduling;Job shop scheduling;Optimal scheduling
Hybrid cloud;process mining;load balancing;event monitoring;Colored Petri Net	Cloud computing;Task analysis;Business;Load modeling;Sensitivity;Scheduling;Monitoring
MEC;task offloading;resource allocation;coal mine	Wireless communication;Coal mining;Task analysis;Servers;Resource management;Edge computing;Computational modeling
Business process management;process similarity;process model;token log;token log profile;event log	Business;Task analysis;Companies;Process modeling;Process control;Analytical models;Software algorithms
Cloud computing;fog computing;fuzzy swarm scheduler;makespan;salp swarm algorithm;fitness based quasi-reflection;ISSS-FQR;workflow scheduling	Task analysis;Cloud computing;Costs;Processor scheduling;Scheduling;Internet of Things;Edge computing
Deep deterministic policy gradient (DDPG);deep reinforcement learning (DRL);dynamic task allocation;edge computing (EC);Internet of Things;seamless service migration	Task analysis;Resource management;Internet of Things;Quality of service;Dynamic scheduling;Heuristic algorithms;Servers
Computer network management;multitasking;scheduling;parallel processing;directed graphs	Task analysis;Energy consumption;Scheduling;Optimal scheduling;Costs;Resource management;Job shop scheduling
Content preference;device-to-device (D2D) communication;matching algorithm;resource allocation;satisfaction;Social IoT	Resource management;Device-to-device communication;Internet of Things;Interference;Sensors;Quality of service;Games
Blockchain-enabled cloud manufacturing (BCMfg);dynamic selection evolutionary algorithm;multiobjective optimization;scheduling and process optimization	Cloud computing;Job shop scheduling;Optimization;Heuristic algorithms;Task analysis;Dynamic scheduling;Informatics
Project management;project planning;risk	Planning;Project management;Strategic planning;Organizations;Monitoring;Decision making;Australia
observation scheduling;comprehensive task clustering (CTC);bi-objective optimization;image quality;energy consumption (EC)	Task analysis;Optimization;Target tracking;Energy consumption;Strips;Image quality;Dynamic scheduling
Container cloud;learning automata;self-adapting scheduling;reward-penalty strategy	Task analysis;Containers;Job shop scheduling;Cloud computing;Optimal scheduling;Learning automata;Dynamic scheduling
Cloud computing;task scheduling;data dependency;decision tree;makespan;resource utilization;load balancing;energy consumption	Task analysis;Heuristic algorithms;Cloud computing;Scheduling;Load management;Decision trees;Resource management
Quality and metrics;business process management;process mining;event logs;completeness	Estimation;Task analysis;Measurement;Computational modeling;Algorithm design and analysis;Prediction algorithms
Data-driven optimization;decision trees;energy forecasting;energy storage system;energy trading;linear decision rules;prescriptive analytics	Forecasting;Optimization;Predictive models;Renewable energy sources;Energy storage systems;Uncertainty;Decision trees
Disassembly failure risk;disassembly sequence planning (DSP) problem;multiobjective multiverse optimization algorithm;stochastic simulation	Optimization;Stochastic processes;Uncertainty;Energy consumption;Hidden Markov models;Task analysis;Planning
Religious values;unified theory of acceptance and use of technology;theory of reasoned action;perfection;cooperation;government resource planning systems;attitude towards GRP systems;system usage	Behavioral sciences;Government policies;Employment;Planning;Position measurement;Resource management;Usability;Technology
Cloud computing;autonomic management;large business process;optimization	Optimization;Cloud computing;Computational modeling;Unified modeling language;Monitoring;Task analysis
Cloud computing;computation offloading;deep reinforcement learning (DRL);Internet of Vehicles (IoV);mobile edge computing;resource allocation	Task analysis;Delays;Vehicle dynamics;Computational modeling;Bandwidth;Heuristic algorithms;Roads
Trust-aware framework;data sensitive;big data security;trust-based scheduling;MapReduce	Cloud computing;Task analysis;Processor scheduling;Security;Big Data applications;Measurement;Data privacy;Heuristic algorithms;Trusted computing
Dynamic software project scheduling;multi-objective optimization;mathematical model;metaheuristics	Metaheuristics;Project managemnet;Dynamic scheduling;Uncertainty;Schedules;Heuristic algorithms;Mathematical models;Software engineering
Design process;modularity;network analysis;process modularity	Task analysis;Measurement;Biomass;Power generation;Complex systems;Mechanical engineering
Precision agriculture;heterogeneous UAVs;monitoring;coverage path planning	Path planning;Precision engineering;Monitoring;Genetic algorithms;Path planning;Agriculture;Wireless sensor networks;Smart agriculture

Artificial intelligence (AI);computer-aided engineering;flexible manufacturing systems;information processing;iterative methods;systems modeling	Planning;Production systems;Unified modeling language;IEC Standards;Automation
Mine 5G communication;mobile edge computing;deep learning;intelligent coal mine	5G mobile communication;Coal mining;Task analysis;Resource management;Servers;Delays;Base stations;Intelligent systems;Edge computing
Cloud computing;business-driven IT management (BDIM);optimization;simulation	Cloud computing;Costs;Optimization;Resource management;Data centers;Tools;Servers
Crowdsensing;attribute-based encryption;privacy preservation;task assignment;incentive mechanism	Task analysis;Crowdsensing;Privacy;Encryption;Sensors;Servers;Data privacy
IC packaging process engineer;operational competencies;problem-solving competencies;workforce competency identification	Integrated circuit packaging;Problem-solving;Manufacturing processes;Task analysis;Packaging;Integrated circuits;Companies
Edge resource allocation;intelligent video surveillance;deep deterministic policy gradient;edge status perception network	Cloud computing;Edge computing;Real-time systems;Computational modeling;Streaming media;Coal mining;Resource management
Business activity;critical role;network reliability;performance;workflow management	Business;Tools;Analytical models;Industrial engineering;Software reliability;Service-oriented architecture;Process control
Decision making;knowledge management;organizational aspects;technology management	Companies;Research and development;Tools;Planning;Transmission line measurements
Cloud computing;workflow scheduling;multi-objective optimization;evolutionary algorithm	Task analysis;Cloud computing;Costs;Optimization;Computational modeling;Elasticity;Statistics
H-IoT framework;EC;container-managed task crash recovery mechanism	Edge computing;Production;Task analysis;Manufacturing;Computer architecture;Job shop scheduling;Processor scheduling
Project scheduling;responsive;heuristics;critical/fuzzy	Schedules;Task analysis;Indexes;Robustness;Knowledge based systems;Electric breakdown
resource allocation;double auction;edge computing;task offloading;matching	Task analysis;Resource management;Computational modeling;Mobile handsets;Servers;Edge computing;Bandwidth
Workflow;scheduling;genetic algorithm;makespan;digital transformation	Task analysis;Scheduling;Processor scheduling;Metaheuristics;Cloud computing;Heuristic algorithms;Genetic algorithms
Delay constraint;edge computing;resource allocation;space-air-ground integrated vehicular networks	Resource management;Edge computing;Delays;Task analysis;Computer architecture;Quality of service;Optimization
Exploration;inference;parameter distribution;reinforcement learning (RL)	Task analysis;Optimization;Training;Artificial neural networks;Linear programming;Inference algorithms;Markov processes
Artificial intelligence;auction-based optimization algorithm;feature selection;rough set theory	Optimization;Feature extraction;Classification algorithms;Rough sets;Data mining;Task analysis
Asynchronous advantage actor-critic (A3C);blockchain;deep reinforcement learning;mobile edge computing;pricing;resource allocation	Wireless communication;Multi-access edge computing;Simulation;Reinforcement learning;Pricing;Blockchains;Resource management
Mobile edge computing;multi-agent reinforcement learning;task loss rate;unmanned air vehicle	Task analysis;Multi-access edge computing;Energy consumption;Indexes;Decision making;Wireless communication;Trajectory planning
Mobile crowdsensing;large-scale heterogeneous tasks;multi-skilled participants;organizing tasks and participants;data structure	Task analysis;Sensors;Resource management;Trajectory;Data structures;Real-time systems;Particle measurements
Decision support;identity and access management;human resources management;strategic management;redployment	Business;Employment;Databases;Companies;Task analysis;Permission;Security
MEC;small cell networks;admission control;resource allocation	Task analysis;Servers;Admission control;Resource management;Throughput;Vehicle dynamics;Stochastic processes
Scientific workflows;scientific applications;resource management;scheduling;montage;cybershake	Cloud computing;Processor scheduling;Scheduling;Resource management;Task analysis;Business;Performance evaluation
Big data;cross-layer;Hadoop;OpenFlow;software defined networking;task scheduling	Big Data;Task analysis;Control systems;Optical switches;Servers;Bandwidth;Social networking (online)
Dual self-attention;multi-channel EEG signals;residual network;seizure prediction	Electroencephalography;Feature extraction;Epilepsy;Sensitivity;Time-frequency analysis;Scalp;Spectrogram
Mobile crowdsensing;incentive allocation;bounded rationality;task recommendation;decision trees;user choice engineering	Task analysis;Decision making;Crowdsensing;Computational modeling;Resource management;Psychology;Mobile applications
Bandwidth allocation;configuration selection;edge computing;Lyapunov optimization;video analytics	Visual analytics;Streaming media;Bandwidth;Servers;Channel allocation;Energy resolution;Energy consumption
Dual-gripper robotic cell;reinforcement learning (RL);scheduling;time variations	Robots;Job shop scheduling;Tools;Task analysis;Manufacturing;Service robots;Mathematical model
Distributed deep reinforcement learning (DRL);imitation learning;Lévy flight;multiagent reinforcement learning;resource scheduling	Task analysis;Training;Servers;Resource management;Reinforcement learning;Internet of Things;Processor scheduling

Artificial intelligence (AI);goal programming (GP);multiple criteria decision-making (MCDM);team formation;technology acceptance;organizational change;innovation drivers	Artificial intelligence;Tools;Context modeling;Indexes;Scheduling;Resource management;Psychology
Deep learning;fine-tune network;global optimization;large-scale remote sensing image retrieval (RSIR);local loss;result ranking loss (RRL);sample mining	Optimization;Feature extraction;Training;Remote sensing;Image retrieval;Unsupervised learning;Fans
Communication cost;distributed computing;high utility pattern mining;scalability;spark	Data mining;Costs;Sparks;Distributed databases;Task analysis;Cluster computing;Scalability
Supervised latent Dirichlet allocation;Semantic word vector;Word2vec;Word embedding;Semantic similarity;Text categorization	Semantics;Text categorization;Resource management;Task analysis
Human computer interaction;intelligent systems;visualization;interactive systems;context awareness	Manufacturing;Manufacturing systems;Production;Collaboration;Service robots;Job shop scheduling;Context-aware services
Genetic algorithm (GA);optimization;peak shaving and valley filling;self-adaptive dispatching strategy;shared battery station (SBS)	Batteries;Dispatching;State of charge;Business;Optimization;Indexes;Electric vehicles
Direct current;electric machine;performance optimization;selection criteria	Optimization;Standards;Maintenance engineering;Costs;Personnel;Manufacturing;Job shop scheduling
Deep learning;edge detection;farmland extraction;fully convolutional networks;semantic segmentation	Feature extraction;Image edge detection;Image resolution;Semantics;Semantic segmentation;Data mining;Remote sensing
Trip purpose inference;cellular network data;latent Dirichlet allocation;travel behavior;big data	Cellular networks;Trajectory;Semantics;Unsupervised learning;Supervised learning;Resource management;Public transportation
Evolutionary game;mining pool;cloud mining pool;WoLF-PHC	Blockchains;Internet of Things;Cloud computing;Games;Computer architecture;Task analysis;Resource management
Frequent pattern mining;geo-social network;NaR-tree;edge sampling	Data mining;Collaboration;Spatial indexes;Image edge detection;Task analysis;Spatial databases;Pattern recognition
Bilevel gradient optimization;meta-learning;personalized image aesthetics assessment (PIAA);small sample learning (SSL)	Task analysis;Adaptation models;Optimization;Visualization;Integrated circuit modeling;Training
Exploration;optimization;parameter distribution;reinforcement learning (RL)	Optimization;Task analysis;Artificial neural networks;Noise measurement;Uncertainty;Reinforcement learning;Acceleration
Alternating direction method of multipliers (ADMMs);group sparsity;rule reduction;Takagi–Sugeno–Kang (TSK) fuzzy systems	Task analysis;Fuzzy systems;Data models;Optimization;Big Data;Security;Information processing
Learning rates;adaptive tracking factor;adaptive convergent equalization;bilevel directional optimization	Optimization;Signal processing algorithms;Convergence;Training;Task analysis;Adaptive equalizers;Prediction algorithms
Augmented intelligence;deep reinforcement learning (DRL);dueling Deep Q-Network (DQN);enterprise management systems (EMS);prioritized replay;two-stage scheduling	Job shop scheduling;Scheduling;Task analysis;Processor scheduling;Streaming media;Servers;Video surveillance
Privacy-preserving data mining;healthcare data;evolutionary computation;sanitization process	Medical services;Data privacy;Genetic algorithms;Databases;Optimization;Data integrity;Task analysis
Multi-object tracking;task decoupling;feature optimization;trajectory complement	Feature extraction;Task analysis;Trajectory;Optimization;Target tracking;Convolution;Data mining
Cross-modal attention;joint optimization;multimodal sentiment analysis;multi-task learning;multimodal fusion	Task analysis;Data models;Acoustics;Logic gates;Visualization;Sentiment analysis;Representation learning
Blockchain;edge computing;game theory;resource pricing;resource scheduling;propagation delay	Blockchains;Propagation delay;Bitcoin;Games;Servers;Convergence;Task analysis
Workflow authorization;satisfiability;resiliency;queueing;pseudo-Boolean	Task analysis;Authorization;Stochastic processes;Computational modeling;Resilience;Cloud computing;Processor scheduling
Deep neural network (DNN);Internet of Everything;mobile-edge computing (MEC);reinforcement learning;task offloading	Task analysis;Internet of Things;Computational modeling;Deep learning;Cloud computing;Training;Reinforcement learning
Radial Basis Function Neural Network (RBFNN);Manta Ray Foraging Optimization algorithm (MRFO);Landsat 8;classification;change detection;disaster mitigation;planning	Training;Satellites;Spirals;Radial basis function networks;Agriculture;Classification algorithms;Floods;Task analysis;Optimization;Image classification
Attention mechanism;dynamic label assignment strategy;feature fusion;traffic sign detection;YOLOv5	Target recognition;Mathematical models;Convolution;Data models;Task analysis;Labeling;Feature extraction;Traffic control
Human-robot collaboration;intention recognition;human factors and human-in-the-Loop	Robots;Task analysis;Bayes methods;Reinforcement learning;Adaptation models;Predictive models;Object recognition
Ancient river valley;backscatter mosaics;convolutional neural network;sediment classification;transfer learning	Sediments;Convolutional neural networks;Backscatter;Convolution;Deep learning;Transfer learning;Task analysis
Process-in-memory;graph pattern mining	Computer architecture;Pattern matching;Bandwidth;Hardware;Through-silicon vias
Cloud computing;scientific workflows;scheduling;load management;CyberShake;Montage	Task analysis;Cloud computing;Processor scheduling;Scheduling;Fault tolerant systems;Fault tolerance;Costs
Time and motion study;deep learning;action recognition;manual labor;performance;human effort	Feature extraction;Manuals;Three-dimensional displays;Task analysis;Industries;Data mining;Videos

Image restoration;regularization by denoising (RED);bounded denoiser;ADMM;fixed-point convergence	Convergence;Noise reduction;Image restoration;Signal processing algorithms;Task analysis;Superresolution;Optimization
Distributed task offloading;Internet of Things (IoT);mobile-edge computing (MEC);Nash equilibrium	Task analysis;Internet of Things;Servers;Delays;Cloud computing;Performance evaluation;Optimization
Blockchain;mobile edge computing;computation offloading;mining delay;non-cooperative game	Blockchains;Delays;Task analysis;Servers;Games;Resource management;Iterative methods
Chief Information Officer (CIO);Chief Information Security Officer (CISO);cyber-security;interviews;leadership;qualitative inquiry	Information security;Leadership;Stakeholders;Cyberattack;Computer crime
Common bus performance sharing;distributed computing systems;optimization;system reliability;universal generating function (UGF)	Reliability;Distributed computing;Computational modeling;Optimization
Copper burdening optimization;many-objective optimization;reference vector reinforcement learning (RVRL)	Optimization;Adaptation models;Copper;Reinforcement learning
Visual analytics;multiple criteria decision making;interactive optimization	Optimization;Visual analytics;Pareto optimization;Task analysis;Linear programming;Rivers;Pollution
Actor-critic (AC);clipped discount factor;policy feedback;proximal policy optimization (PPO);value function	Optimization;Estimation;Training;Task analysis;Trajectory;Space exploration;Games
Alternating optimization algorithm;multitarget regression;stochastic configuration network (SCN);structure matrix;supervisory mechanism	Correlation;Training;Task analysis;Stochastic processes;Adaptation models;Data models;Predictive models
Semantic similarity evaluation;named entities normalization;sentence classification;representation learning;BERT;BiLSTM	Task analysis;Bit error rate;Semantics;Hospitals;Data mining;Drugs;Context modeling
Person re-identification;cross-modality;middle-level features;attention mechanism;graph convolution	Feature extraction;Task analysis;Semantics;Cameras;Representation learning;Convolution;Training
Decision support;multi-criteria decision aiding;power networks;repair prioritization;incomplete analytic hierarchy process;assignment problem;Hungarian algorithm;CIPCast	Decision support systems;Costs;Maintenance engineering;Urban areas;Critical infrastructure;Analytic hierarchy process
Band selection;collaborative analysis;evolutionary multitasking optimization;hyperspectral images (HSIs);multiple datasets	Collaboration;Statistics;Sociology;Task analysis;Hyperspectral imaging;Optimization;Multitasking
BERT;biomedical ontologies;concept recognition;deep learning;human phenotype ontology;medical text mining	Bit error rate;Ontologies;Text recognition;Deep learning;Benchmark testing;Task analysis;Genetics
Machine learning;federated learning;resource allocation;bertrand game;nash equilibrium	Task analysis;Costs;Training;Games;Data models;Load modeling;Computational modeling
Video captioning;transformer;polishing mechanism;cross-modal modeling	Semantics;Visualization;Decoding;Transformers;Task analysis;Planning;Training
Trust management;big data;time bound optimization;real-time processing;security	Big Data;Trust management;Security;Computational complexity;Real-time systems;Databases;Data processing
Clustering idea;fusion strategy;interpretability;multiple views;prototype assignment;self-supervised learning	Remote sensing;Task analysis;Self-supervised learning;Prototypes;Training;Codes;Predictive models
Artificial Intelligence (AI);decision-making trial and evaluation laboratory (DEMATEL);decision support;multiple criteria decision analysis (MCDA);smart city;technology	Artificial intelligence;Smart cities;Stakeholders;Task analysis;Automation;Sustainable development;Planning
Deep people analytics;employee attrition;retention;prediction;interpretation;policies recommendation	Big Data;Organizations;Radio frequency;Predictive models;Support vector machines;Data models;Analytical models
Long-term information;video salient object detection	Proposals;Task analysis;Spatiotemporal phenomena;Object detection;Biological system modeling;Motion segmentation;Data mining
Business process management;workflow;service;Internet-of-Things;service-oriented architecture	Scheduling;Task analysis;Market research;Blockchains;Computer architecture;Monitoring;Transient analysis
Endmember extraction (EE);evolutionary algorithm (EA);global-to-local search;hyperspectral image (HSI);multiobjective optimization	Optimization;Hyperspectral imaging;Search problems;Task analysis;Sparse matrices;Indexes;Data mining
Unsupervised multimodal analysis;sample complexity;identifiability	Signal processing algorithms;Noise measurement;Task analysis;Costs;Convex functions;Noise robustness;Hyperspectral imaging
IoT;computation offloading;feedback queue;Hall's theorem;industrial sensor networks;energy usage	Task analysis;Sensors;Logic gates;Internet of Things;Delays;Servers;Cloud computing
Deep learning;feature fusion;graph convolution networks (GCNs);hypergraph learning;hyperspectral image (HSI) classification	Feature extraction;Convolution;Task analysis;Deep learning;Convolutional neural networks;Hyperspectral imaging;Data mining
Edge computing;YOLO;cloud-edge cooperation;real-time analysis	Cloud computing;Computational modeling;Edge computing;Coal mining;Object detection;Real-time systems;Image edge detection
Cloud services;game;user preference;utility;QoS optimization	Quality of service;Games;Cloud computing;Optimization;Task analysis;Computational modeling;Economics
Incremental learning;industrial cyber-physical system (ICPS);operation condition division;static and dynamic analysis	Feature extraction;Self-organizing feature maps;Internet of Things;Data mining;Process control;Indexes;Clustering methods

Blockchain;cooperative computation offloading;deep reinforcement learning (DRL);edge computing	Internet of Things;Intelligent agents;Heuristic algorithms;Task analysis;Convergence;Training
Global dictionary;gradual optimization;incremental learning;local dictionary;multiframe images;sparse and low-rank constraints	Dictionaries;Machine learning;Optimization;Sparse matrices;Image representation;Satellites;Matrices
Deep learning;grain losses and waste rate (LWR) prediction;multitask prediction;recurrent skip connection network (RSCN)	Task analysis;Predictive models;Informatics;Interviews;Economics;Loss measurement
Cloud databases;distributed databases;incomplete databases;query processing;skyline queries	Databases;Distributed databases;Data centers;Cloud computing;Optimization;Task analysis;Query processing
Intelligent optimization;Knill-Herd algorithm;mobile computing;mobile opportunistic network;mobile service composition;service reliability	Reliability;Mobile computing;Device-to-device communication;Service computing;Quality of service;Optimization
Stochastic optimization;stochastic gradient descent;parallel computing;deep learning;neural network	Optimization;Deep learning;Convergence;Stochastic processes;Mathematical model;Boltzmann distribution;Task analysis
Organizational Structure;Project Success;Project Management;R&D Environment;R&D Projects;Schedule Management;The Delphi Study	Research and development;Schedules;Organizations;Uncertainty;Delays;Project management;Task analysis
Stochastic optimization;differential privacy;robustness	Privacy;Optimization;Differential privacy;Robustness;Stochastic processes;Task analysis
Person search;person re-identification;deep neural networks	Feature extraction;Task analysis;Training;Search problems;Head;Detectors;Proposals
Visible-thermal person re-identification;attention mechanism;channel and spatial dependencies;cross-modality interaction	Feature extraction;Data mining;Residual neural networks;Telecommunications;Convolution;Training;Task analysis
Benchmarking;evolutionary optimization;multiobjective test problems;test suite;visualization	Generators;Visualization;Optimization;Search problems;Task analysis;Sociology;Shape
Center Loss;embranchment learning;hierarchical pseudo-label assignment;one-shot person re-ID	Artificial neural networks;Training;Feature extraction;Task analysis;Labeling;Data mining;Reliability
COVID-19;feature selection;medical data mining;multi-objective optimization;chimp optimizer;Harris Hawk optimizer	Feature extraction;COVID-19;Metaheuristics;Filtering algorithms;Optimization;Predictive models;Patient monitoring;Biomedical monitoring
Stationary ergodic process;mixing coefficients;long-range dependence;consistency;estimation;hypothesis testing	Estimation;Testing;Economics;Algebra;Upper bound;Time series analysis;Task analysis
Argument mining;data-driven requirement;review mining;software requirement	Feature extraction;Data mining;Task analysis;Supervised learning;Support vector machines;Software
Drone scheduling problem;emission control area;dynamic optimization problem;reinforcement learning	Monitoring;Drones;Dispatching;Sun;Task analysis;Regulation;Sulfur
Adversarial learning;poisoning attack;pairwise comparison;rank aggregation;robust game;distributionally robust optimization	Optimization;Heuristic algorithms;Sports;Voting;Uncertainty;Games;Data models
No-reference image quality assessment;generalization ability;optimization-based meta-learning;convolutional neural networks	Distortion;Measurement;Task analysis;Image quality;Adaptation models;Data models;Training
ABC classification;inventory classification;explainable Artificial Intelligence (XAI);explainable clustering;SHapley Additive exPlanations (SHAP);constrained clustering;semi-supervised clustering	Artificial intelligence;Buildings;Classification algorithms;Task analysis;Mathematical models;Decision making;Costs
ABAC;workforce optimization;downsizing;separation of duty;binding of duty	Access control;Organizations;Optimization;Computational modeling;Information systems;Personnel
Heuristic algorithms;Markov decision process (MDP);mobility prediction;spatiotemporal searches;trajectory analysis;ubiquitous computing	Search problems;Spatiotemporal phenomena;Automobiles;Trajectory;Cameras;Prediction algorithms;Law enforcement
Automotive Reliability;System-Level MTTF;Thermal Aware;ECU;ISO 26262	Reliability;Task analysis;Optimization;Computational modeling;Temperature sensors;Transient analysis;Runtime
Multi-tier vehicular edge computing;C-V2X;Uu/PC5 interface;partial offloading;resource allocation	Resource management;Task analysis;Servers;TV;Edge computing;Vehicle-to-everything;Heuristic algorithms
Fog computing;multi-FSs offloading;nonlinear energy harvesting (EH);nonorthogonal multiple access (NOMA);wireless power transfer (WPT)	NOMA;Frequency selective surfaces;Edge computing;Wireless communication;Internet of Things;Computational modeling;Servers
Sentiment analysis;Rasa;DIET;sentence classification;NLU	Sentiment analysis;Task analysis;Text mining;Computer architecture;Bit error rate;Text categorization;Transformers;Natural language processing
Cloud computing;faas;faas composition;function-as-a-service;modeling;serverless computing;temporal point process	FAA;Codes;Load modeling;Containers;Serverless computing;Databases;Computational modeling
Multi-access edge computing;unmanned aerial vehicle;stochastic games;age of update;multi-agent deep reinforcement learning	Task analysis;Servers;Indium phosphide;III-V semiconductor materials;Games;System dynamics;Q-factor
Block storage;blockchain;computation offloading;cooperative;Stackelberg game	Blockchain;Games;Task analysis;Computational modeling;Servers;Internet of Things;Data mining
Learning analytics;programming;computer science education;sequence mining;Hidden Markov Models;automated assessment	Programming profession;Data mining;Soft sensors;Trajectory;Hidden Markov models;Education;Task analysis

Automatic license plate recognition;multi-scale fusion;lightweight model;data augmentation	License plate recognition;Image recognition;Feature extraction;Object detection;Licenses;Character recognition;Task analysis
Alarm forecasting;deep learning;imbalanced classification;industrial IoT;Industry 4.0;multi-label classification;predictive maintenance	Forecasting;Predictive models;Codes;Monitoring;Deep learning;Task analysis;Predictive maintenance
Evolutionary multiobjective optimization;preferences;aspiration and reservation points;weight vectors	Pareto optimization;Approximation algorithms;Linear programming;Optimization;Proposals;Task analysis
Fault detection and diagnosis;deep learning;machine learning;ensemble learning;parallel computing;hybrid optimization	Feature extraction;Machinery;Hidden Markov models;Computational modeling;Task analysis;Mathematical models;Ensemble learning
Dataflow integrity;blockchain;chain of signatures;blockchain receipt;data pipeline	Blockchains;Data processing;Cloud computing;Pipeline processing;Receivers;Behavioral sciences;Smart contracts;Data flow computing
Equilibrium optimizer (EO);feature selection;optimization;machine learning (ML);opposition based learning (OBL);classification	Feature extraction;Genetic algorithms;Convergence;Support vector machines;Transfer functions;Search problems;Particle swarm optimization
Integrated networks;unmanned aerial vehicles (UAVs);satellite communications;cognitive radio (CR);throughput maximization;user association;power optimization;trajectory control	Trajectory;Internet of Things;Satellites;Throughput;Satellite broadcasting;Resource management;Optimization
Attention mechanism;fusion classification;hyperspectral image (HSI) and light detection and ranging (LiDAR) data;multiscale feature;self-calibrated convolutions	Feature extraction;Remote sensing;Laser radar;Data mining;Deep learning;Data models;Task analysis
Product development;requirement change;development progress;system dynamics	Task analysis;Product development;System dynamics;Testing;Uncertainty;Research and development;Mathematical model
Truth discovery;denial constraints;arithmetic constraints;source weights;iterative process	Reliability;Urban areas;Remuneration;Optimization;Task analysis;Partitioning algorithms;Correlation
Traffic speed prediction;missing data;spatio-temporal modeling;deep learning;multi-task learning	Task analysis;Predictive models;Training;Multitasking;Feature extraction;Deep learning;Data mining
Label flipping attack;machine learning	Data models;Training data;Training;Deep learning;Predictive models;Testing;Optimization
Deep learning;high-resolution remote sensing (HRS) imagery;semantic segmentation;small objects	Semantics;Image segmentation;Task analysis;Remote sensing;Optimization;Feature extraction;Decoding
Edge cloud computing;wireless networks;deep deterministic policy gradient;resource allocation;smart city;IoT;beyond 5G;distributed training;heuristic priority experience replay	Resource management;Internet of Things;Edge computing;Costs;Computational modeling;5G mobile communication;Cloud computing;Heuristic algorithms;Wireless networks
Artificial intelligence;parallel processing;distributed computing;machine vision;medical services	Task analysis;Computer architecture;Pipelines;Systems architecture;Program processors;Throughput;Software as a service
Biconvex optimization;capricious data streams;graphical model;online learning	Medical services;Task analysis;Graphical models;Learning systems;Data mining;Prediction algorithms;Training
Extractive text summarization;greedy algorithm;variable neighborhood search	Data mining;Optimization methods;Computational modeling;Training;Task analysis;Search problems;Redundancy
Converter steelmaking process;deep learning;diffusion graph;endpoint composition prediction;graph convolutional networks (GCNs)	Steel;Liquids;Correlation;Metals;Predictive models;Prediction algorithms;Neural networks
Biobjective problem;incentive mechanism;mobile crowdsensing;robustness	Crowdsensing;Sensors;Task analysis;Robustness;Linear programming;Optimization;Smart phones
Binary classification;evolutionary computation;feature selection;multiobjective optimization;sentiment analysis	Feature extraction;Sentiment analysis;Task analysis;Machine learning;Analytical models;Measurement;Data mining
Document transformation;greedy algorithm;information retrieval;latent dirichlet allocation;multi-set multi-cover problem;probabilistic generative topic modelling	Data models;Reliability;Australia;Task analysis;Social networking (online);Context modeling;Benchmark testing;Document handling
Domain adaptation (DA);fault diagnosis;residual network (ResNet);self-attention mechanism (SAM);wavelet packet transform (WPT)	Feature extraction;Fault diagnosis;Time-frequency analysis;Vibrations;Deep learning;Transfer learning;Training
Feature selection;text classification;metaheuristic optimization algorithms;wrapper-based approach;hybrid-based approach	Metaheuristics;Feature extraction;Text categorization;Classification algorithms;Systematics;Search problems;Business
Culture;customer loyalty;information processing;information technology;servitization;social media	Information processing;Cognition;Task analysis;Manufacturing;Social networking (online);Complexity theory;Uncertainty
Adaptive neighbor;dimensionality reduction;projection;unsupervised feature selection;weighted features	Feature extraction;Optimization;Manifolds;Data mining;Computational modeling;Task analysis;Manifold learning
Sentiment analysis;attention mechanism;pre-trained language model;masked attention	Task analysis;Sentiment analysis;Bit error rate;Deep learning;Data mining;Transformers;Semantics

Convolutional neural network;segmentation;muti-organ;CNN-Transformer;CT;MRI	Image segmentation;Feature extraction;Transformers;Medical diagnostic imaging;Convolution;Data mining;Training
Automated deployments for microservices;capacitated task assignment problem (CTAP);deriving feasible microservice deployments;optimization algorithms	Containers;Computer architecture;Cloud computing;Servers;Scalability;Task analysis;Tools
Multiset membership lookup;data stream mining	Image color analysis;Data structures;Hash functions;Memory management;Data mining;Query processing;Color
Context modeling;feature integration;self-attention;text classification	Feature extraction;Context modeling;Data mining;Task analysis;Deformable models;Visualization;Stacking
Internet of Things;blockchain;edge computing;stackelberg game	Blockchains;Internet of Things;Servers;Task analysis;Games;Security;Edge computing
Attention;hybrid optimization;neural architecture search (NAS);person reidentification (reID);retrieval	Search problems;Task analysis;Computer architecture;Optimization;Training;Computational modeling;Feature extraction
Caching;greedy heuristics;Lyapunov optimization;service provisioning;vehicular edge computing (VEC)	Energy consumption;Time factors;Task analysis;Optimization;Outsourcing;Simulation;Servers
Adversarial training;image inpainting;self-supervised learning;semantic segmentation;structural similarity (SSIM)	Task analysis;Remote sensing;Training;Image restoration;Semantics;Self-supervised learning;Image reconstruction
Renewable energy;wave energy location;fuzzy sets;simulation;DEA;fuzzy BWM;fuzzy TODIM;decision making	Australia;Renewable energy sources;Decision making;Production;Bibliographies;Task analysis
Change detection (CD);cropland;deep learning (DL);remote sensing;transformer	Feature extraction;Transformers;Head;Data mining;Task analysis;Decoding;Biological system modeling
Benchmark dataset;built-up;change detection (CD);deep learning (DL);multispectral data fusion;very high resolution (VHR)	Feature extraction;Synthetic aperture radar;Data mining;Spatial resolution;Remote sensing;Task analysis;Semantics
Multi-access edge computing;short-packet communication;time-varying channel;unmanned aerial vehicle;vehicular network	Internet of Things;Time-varying channels;Optimization;Autonomous aerial vehicles;Reliability;Task analysis;Resource management
Phase identification;phase connectivity;distribution network;clustering;AMT;signal processing	Voltage measurement;Power demand;Time series analysis;Smart meters;Power measurement;Correlation;Network topology
Subspace clustering;multi-attribute representation learning;non-convex low-rank tensor approximation;auto-weighted tensor nuclear norm	Tensors;Optimization;Minimization;Correlation;Clustering methods;Task analysis;Sun
data publication;data sanitization;association rules hiding;evolutionary algorithm	Data privacy;Privacy;Filtering;Sociology;Companies;Task analysis;Statistics
Fuzzy logic;business process modeling;information security risk;risk assessment	Information security;Security;Risk management;Standards;Software;Biological system modeling;ISO Standards
5G cellular systems;blockage mitigation;guard capacity;multiconnectivity;new radio technology;session continuity	Resource management;Measurement;Fading channels;Capacity planning;Vehicle dynamics;Receiving antennas;Propagation losses
Compact representation;reliable classification;point-level weakly-supervised action localization	Training;Prototypes;Reliability;Representation learning;Annotations;Task analysis;Probabilistic logic
Hadoop;MapReduce;noninvasive;parameter searching;performance optimization;self-tuning system	Tuning;Optimization;Task analysis;Search methods;Monitoring;Big Data;Structured Query Language
Bit-depth enhancement;frequency character-istics;iterative correction;residual recovery	Feature extraction;Training;Image restoration;Task analysis;Convolutional codes;Complexity theory;Data mining
COVID-19;ADASYN;Bayesian optimization;classification;inpatient's facility data	COVID-19;Computational modeling;Optimization;Computed tomography;Bayes methods;Viruses (medical);Pandemics
Electricity consumption;microgrid;prediction;machine learning;COVID-19;Google mobility;Google trends;predictive analytics;decision support system;energy management system	Buildings;COVID-19;Meteorology;Predictive models;Energy consumption;Data models;Internet
Image aesthetics assessment (AA);aesthetic score distribution;topic feature;multi-task learning	Semantics;Multitasking;Task analysis;Fuses;Visualization;Streaming media;Predictive models
Domain mismatch;meta-learning;meta-generalized speaker verification;Speaker verification	Performance evaluation;Recording;Task analysis;Speech processing;Optimization
Encoder-decoder;multitask learning;ship detection in SAR image;synthetic aperture radar (SAR) image	Marine vehicles;Radar polarimetry;Synthetic aperture radar;Decoding;Feature extraction;Task analysis;Background noise
Electron beam welding;choice of process parameters;software;decision support;prediction;ridge regression;random forest;genetic algorithm;algorithm ensembles;machine learning	Welding;Prediction algorithms;Electron beams;Predictive models;Correlation;Random forests;Testing
NFV;delay;multicast;resource optimization	Delays;Unicast;Optimization;Multicast algorithms;Bandwidth;Routing;Hardware
Log parsing;offline algorithm;PatCluster;frequent words	Feature extraction;Clustering algorithms;Deep learning;Pattern matching;Frequency measurement;Task analysis;Optimization

Feature extraction;p sparse representation;projection learning;fuzzy block weight matrix;discriminative information preservation	Sparse matrices;Feature extraction;Task analysis;Representation learning;Optimization;Data models;Data mining
Heterogeneous information networks;clustering;community detection;label propagation;graph mining	Clustering algorithms;Prediction algorithms;Optimization;Task analysis;Servers;Microbiology;Medical services
Mobile edge computing;spatial crowdsourcing;task allocation;mobile networks	Crowdsourcing;Task analysis;Trajectory;Sensors;Big Data;Wireless sensor networks;Recruitment
Arabic text classification;feature selection;grey wolf optimizer;principal component analysis;logistic regression	Feature extraction;Text categorization;Support vector machines;Principal component analysis;Task analysis;Logistics;Data mining;Water resources
Core decomposition;core maintenance;distributed system;dynamic graphs	Task analysis;Maintenance engineering;Heuristic algorithms;Crosstalk;Synchronization;Protocols;Distributed algorithms
Education management;strategic intelligence management;data warehouse;OLAP cubes	Organizations;Business intelligence;Standards organizations;Decision making;Knowledge management;Data warehouses;Tools
Action recognition;convolutional neural network;optimization	Three-dimensional displays;Kernel;Computer architecture;Feature extraction;Benchmark testing;Optimization;Data mining
Convolutional block attention module (CBAM);convolutional neural network (CNN);deep semantic statistics matching (D2SM) loss;hybrid attention mechanism;pansharpening;Transformer	Feature extraction;Transformers;Pansharpening;Computational modeling;Task analysis;Remote sensing;Spatial resolution
Contextual information;road extraction;roads and buildings;signed distance map (SDM);spatial attention mechanism	Roads;Data mining;Buildings;Feature extraction;Optical imaging;Optical sensors;Image segmentation
Image classification;pattern recognition;data processing;learning systems	Heating systems;Electronics industry;Behavioral sciences;Training;Task analysis;Industries;Demand forecasting
Asset management (AM);management framework;multiobjective optimization;product-service system (PSS);servitization;simulation modeling	Stakeholders;Asset management;Analytical models;Simulation;Optimization
Dual-context projection score (DCPS);proposal quality score (PQS);pseudosoft label;remote sensing image (RSI);weakly supervised object detection (WSOD)	Proposals;Remote sensing;Reliability;Object detection;Training;Task analysis;Semantic segmentation
Weakly supervised learning;temporal action localization;sub-action granularity	Location awareness;Proposals;Task analysis;Aggregates;Training;Prediction algorithms;Marine vehicles
Change detection (CD);convolutional neural network (CNN);dual-feature mixed attention (DFMA);high-resolution optical remote sensing (RS) images;Siamese network;transformer	Feature extraction;Transformers;Remote sensing;Task analysis;Image segmentation;Data mining;Convolutional neural networks
Information management system;blockchain technology;machine learning;smart contract;predictive analysis	Medical services;Blockchain;Reliability;Distributed databases;Predictive analytics;Smart contracts;Distributed ledger
Supervisory control and data acquisition (SCADA);Markov chain clustering (MCC);preprocessing;security;rapid probabilistic correlated optimization (RPCO);block correlated neural network (BCNN) and attack detection	SCADA systems;Feature extraction;Security;Optimization;Reliability;Protocols;Data models
Mobile crowdsourcing;worker recruitment;social networks;memetic algorithm	Task analysis;Recruitment;Estimation;Social networking (online);Mobile computing;Memetics;Games
Algorithms;data structures;succinct data structures;data stream processing;heavy hitter	Clocks;Computer crime;Query processing;Frequency estimation;Art;Task analysis;Optimization
Video moment retrieval;graph neural network;unpaired learning	Visualization;Task analysis;Generators;Training;Graph neural networks;Semantics;Detectors
COVID-19 pandemic;Indo-Pacific;budget planning;DEMATEL; μ 1tiple criteria decision-making (MCDM)	Planning;COVID-19;Linguistics;Force;Decision making;Security;Pandemics
Apache spark;big data frameworks;performance evaluation;stochastic activity network;state-space explosion;approximation technique;fixed-point iteration method	Sparks;Yarn;Task analysis;Data models;Computational modeling;Analytical models;Big Data
Multi-relational learning;tensor product graph;label propagation;hyperlink prediction;multiple graph alignment;tensor decomposition and completion	Tensors;Hypertext systems;Task analysis;Scalability;Prediction algorithms;Optimization;Approximation algorithms
Spatio-temporal data mining;human mobility pattern;graph convolutional networks;passenger flow prediction;smart city	Autoregressive processes;Predictive models;Task analysis;Optimization;Data models;Australia;Smart cities
Data mining;data clustering;mean-shift;kernel-based method;nearest neighbors	Convergence;Kernel;Bandwidth;Clustering algorithms;Task analysis;Standards;Sensitivity
Artificial intelligence;business;business data processing;computational and artificial intelligence;data systems engineering management;decision support systems;decision making;expert systems;intelligent systems;knowledge based systems;management;technology management	Big Data;Data models;Tools;Taxonomy;Task analysis;Companies;Business
Federation;pricing;reinforcement learning;optimization	Pricing;Heuristic algorithms;Dynamic scheduling;Cloud computing;Business;Task analysis;Resource management
Dual-weighted pseudo-label loss;graph domain adversarial network (GDAN);hyperspectral image (HSI) classification;spectral-spatial graph	Feature extraction;Task analysis;Probability distribution;Training;Geoscience and remote sensing;Predictive models;Optimization
Document content extraction;instance segmentation;BlendMask	Image segmentation;Feature extraction;Semantics;Poles and towers;Tools;Data mining;Task analysis
Internet of vehicles;multimedia video;5G;vehicle-road collaboration	5G mobile communication;Collaboration;Telematics;Streaming media;Roads;Base stations;Transportation

Batch hard-mining;capsule network;cross-view image matching;image geo-localization	Task analysis;Global Positioning System;Semantics;Location awareness;Network architecture;Visualization;Satellites
Image style transfer;semantic segmentation;semantic mismatching;feature extraction;fine semantic guidance;mask R-CNN	Semantics;Feature extraction;Image segmentation;Data mining;Optimization;Kernel;Training
Story ending generation;pre-trained language model;storylines;sentiment conditional generation	Context modeling;Task analysis;Market research;Commonsense reasoning;Motion pictures;Transformers;Speech processing
Cloud manufacturing;blockchains;software architecture;distributed ledger;smart contracts;computer architecture	Blockchains;Cloud computing;Manufacturing;Smart contracts;Computer architecture;Business;Task analysis
Class-imbalance;cross-coupling aggregation (COCOA);machine learning;multi-label learning	Training;Correlation;Predictive models;Labeling;Task analysis;Couplings;Technological innovation
Association analysis;cloud manufacturing;gated recurrent unit (GRU);service composition;trust evaluation	Manufacturing;Cloud computing;Task analysis;Collaboration;Correlation;Production;Indexes
Multi-modal transportation;personalized recommendation;multi-task learning;deployment	Public transportation;Machine learning;Routing;Meteorology;Engines;Graphical models
Deep neural network (DNN);digital pathology;dimension reduction;evolutionary computation (EC);feature selection;image representation;innovation;large-scale multiobjective optimization (LSMOP);transfer learning	Feature extraction;Optimization;Evolutionary computation;Data mining;Histopathology;Cancer;Task analysis
Coded distributed computing (DC);incentive mechanism;load management;Stackelberg game	Distributed computing;Encoding;Task analysis;Internet of Things;Games;Resource management;Distributed databases
Computational and artificial intelligence;named entity recognition;natural language processing;neural networks;transfer learning;weakly supervised learning	Training;Transfer learning;Internet;Information services;Encyclopedias;Electronic publishing;Task analysis
$L_{1/2}$ regularization;hyperspectral unmixing (HU);nonnegative matrix factorization (NMF);oblique manifold	Manifolds;Sparse matrices;Hyperspectral imaging;Optimization;Convergence;Task analysis;Indexes
Change framework;change management;critical success factors (CSFs);global value chain (GVC)	Organizations;Tools;Automation;Teamwork;Manufacturing;Leadership;Control systems
Hyperspectral image (HSI);mutual information (MI);super-resolution (SR);unregistered;unsupervised deep learning	Spatial resolution;Image reconstruction;Data mining;Bayes methods;Superresolution;Tensors;Optimization
Target-oriented opinion words extraction;aspect-based sentiment analysis;neural network model;deep learning;sentiment analysis;information retrieval	Decoding;Task analysis;Logic gates;Data mining;Transformers;Context modeling;Sentiment analysis
Anomaly detection;curiosity-guided search;experience replay;neural architecture search (NAS);self-imitation learning	Anomaly detection;Computer architecture;Search problems;Task analysis;Aerospace electronics;Space exploration;Computational modeling
Cross domain recommendation;dual learning;metric learning;orthogonal mapping	Measurement;Transfer learning;Learning systems;Data models;Task analysis;Optimization;Motion pictures
Cropland abandonment;deep learning (DL);remote sensing;statistical learning;very high resolution (VHR)	Feature extraction;Remote sensing;Semantic segmentation;Task analysis;Semantics;Convolution;Spatial resolution
Magnetic resonance imaging;medical image synthesis;confidence-guided aggregation;cross-modality refinement	Image synthesis;Medical diagnostic imaging;Magnetic resonance imaging;Generative adversarial networks;Task analysis;Fuses;Training
Densest subgraphs;incremental greedy approximation;heuristically merging;local candidate;global densest subgraph candidates	Heuristic algorithms;Approximation algorithms;Greedy algorithms;Social networking (online);Density functional theory;Image edge detection;Data mining
Context prediction;frequency feature pyramid;discrete cosine transformation;global-local consistency loss	Feature extraction;Data mining;Convolution;Task analysis;Frequency-domain analysis;Correlation;Kernel
AGVs;WIP warehouse;collision and deadlock resolution;dynamic spare point application	System recovery;Vehicle dynamics;Heuristic algorithms;Workstations;Task analysis;Layout;Dynamic scheduling
Building footprint extraction;deep learning;remote sensing image;scene driven	Buildings;Feature extraction;Remote sensing;Data mining;Task analysis;Semantics;Optical imaging
Bearing;prediction of residual life;SENet;time convolution network;particle swarm optimisation;life prediction	Convolution;Predictive models;Transfer learning;Data models;Rolling bearings;Degradation;Task analysis
Distributed data processing;edge computing;smart city;spatiotemporal data;streaming processing;trajectory data	Internet of Things;Sensors;Big Data;Data analysis;Smart cities;Batch production systems;Meteorology
Generalized adaptive linear combination approximation (ALCA) method;improved spherically invariant random vector (SIRV) model;polarimetric domain;super-resolution image fusion;texture domain	Image fusion;Optical imaging;Optical sensors;Spatial resolution;Optical scattering;Adaptive optics;Remote sensing
Echo state network (ESN);hierarchical strategy;kernel method;low-rank kernel approximation;time series prediction	Reservoirs;Time series analysis;Kernel;Computational modeling;Neurons;Task analysis;Predictive models

Distributed machine learning (ML);hardware-aided acceleration;large model training;training acceleration	Training;Computational modeling;Data models;Computer architecture;Optimization;Internet of Things;Task analysis
Deep reinforcement learning;non-technical loss (NTL);energy theft;feature cost efficiency;data imbalanced problem	Neural networks;Mathematical models;Electricity supply industry;Data models;Classification algorithms;Power system stability;Reinforcement learning;Deep learning;Cost benefit analysis;Energy consumption
Multi-Persona mobile computing;intelligent offloading;mobile edge computing;multi-objective optimization;resource management;computation cost	Mobile handsets;Task analysis;Performance evaluation;Optimization;Medical services;Business;Mobile computing
Feature representation;game behavior mining;parallel processing;semisupervised learning	Games;Feature extraction;Hidden Markov models;Data mining;Computational modeling;Parallel processing;Data models
Named entity recognition;social media posts;adversarial training;bilinear attention network	Visualization;Social network services;Feature extraction;Task analysis;Logic gates;Data mining;Training
Achievable bound;data utility;fundamental limits;identity authentication;machine learning;upper bound	Authentication;Data models;Big Data;Organizations;Upper bound;Entropy;Interference
Component recommendation;machine learning;natural language processing;pretrained language model;software engineering	Predictive models;Software;Computer bugs;Semantics;Feature extraction;Deep learning;Task analysis
Facet annotation;long short-term memory;multitask learning (MTL);text segmentation	Task analysis;Semantics;Data mining;Probabilistic logic;Electronic mail;Data structures;Computational modeling
Data representation;dimensionality reduction;feature selection;kernel;low-rank embedding; $\ell_{2,1}$ norm	Kernel;Feature extraction;Dimensionality reduction;Optimization;Sparse matrices;Task analysis;Support vector machines
Adversarial data augmentation (ADA);deep learning;fuzzy boundary;multiscale feature;parcel extraction;urban–rural area	Feature extraction;Data mining;Image segmentation;Multitasking;Remote sensing;Deep learning;Convolutional neural networks
Multiple instance graph (MIG) learning;object detection;remote sensing images (RSIs);weakly supervised learning	Proposals;Remote sensing;Object detection;Detectors;Supervised learning;Annotations;Task analysis
Domain adaptation (DA);extreme gradient boosting (XGBoost);intelligent fault diagnosis;multiscale mixed domain feature (MMDf);rolling bearings	Feature extraction;Fault diagnosis;Signal processing;Adaptation models;Signal processing algorithms;Employee welfare;Rolling bearings
Multimodal;social image;triplet network;variational autoencoder (VAE)	Learning systems;Correlation;Visualization;Social networking (online);Task analysis;Image edge detection;Cybernetics
Disparity estimation;machine vision;neural architecture search;optimization;transfer learning	Computer architecture;Estimation;Task analysis;Field programmable gate arrays;Neural networks;Training;Graphics processing units
Ant colony optimization;cloud computing;placement;scheduling;virtualization	Virtual machining;Cloud computing;Servers;Data centers;Telecommunication traffic;Task analysis;Energy consumption
Polyp segmentation;deep network;boundary constraint;cross-layer feature integration;endoscope	Feature extraction;Shape;Data mining;Image segmentation;Bioinformatics;Endoscopes;Task analysis
Adaptive structure;change detection (CD);genetic algorithm;remote sensing image;semisupervised network	Remote sensing;Training;Task analysis;Feature extraction;Neural networks;Data mining;Adaptive systems
Relation classification;few-shot learning;metric learning;prototypical network	Data models;Semantics;Prototypes;Computational modeling;Training;Task analysis;Robustness
Backtracking-based framework;distributed graph querying;incremental subgraph matching;subgraph isomorphism;subgraph matching	Distributed databases;Pattern matching;Graph theory;Big Data;Software algorithms;Optimization;Distributed computing
Semantic signal processing;semantic communications;semantic graph signals;goal-oriented signal processing;goal-oriented communications	Semantics;Technological Innovation;Signal processing;Hidden Markov models;Data mining;Feature extraction;Computational modeling
ALBERT;aspect level;ConvNets;sentiment analysis	Feature extraction;Data mining;Convolution;Task analysis;Sentiment analysis;Analytical models
Recognition;localization;SLAM;representation learning;place recognition	Feature extraction;Training;Task analysis;Optimization;Robots;Heuristic algorithms;Computer architecture
Big data;data analytics;human-augmented analytics;machine learning;prescriptive analytics;reinforcement learning	Decision making;Reinforcement learning;Artificial intelligence;Business;Task analysis;Data analysis;Complexity theory
Adversarial training;deep domain generalization;fault transfer diagnosis;rotating machinery;unseen target domain	Training;Fault diagnosis;Task analysis;Machinery;Feature extraction;Data models;Informatics
Crowdsourcing;cleaning uncertain data;approximation algorithm;heuristic algorithm	Crowdsourcing;Cleaning;Uncertainty;Data integrity;Approximation algorithms;Urban areas;Databases
Attention mechanism;deep learning;remote sensing image change detection;transformers	Feature extraction;Transformers;Semantics;Remote sensing;Fuses;Task analysis;Decoding
Classification;deep learning;feature fusion;group spatial-spectral attention	Feature extraction;Task analysis;Spatial resolution;Satellites;Indexes;Image fusion;Data mining
Attention mechanism;change detection (CD);remote sensing;transformer	Feature extraction;Remote sensing;Transformers;Image reconstruction;Computer architecture;Task analysis;Semantics
COVID-19;weighted heterogeneous educational network (WHEN);freshman;recommendation;random walk	Data mining;COVID-19;Training;Social networking (online);Task analysis;Collaboration

Clustering;computer science education;educational data mining;topic modeling	Task analysis;Computational modeling;Python;Semantics;Measurement;Manuals;Labeling
Brain-computer interface (BCI);electroencephalogram (EEG);multitask learning;pattern decoding;subclass regularization	Electroencephalography;Decoding;Feature extraction;Task analysis;Optimization;Data mining;Sparse matrices
Sports visualization;game simulation;model interpretation;etc	Sports;Markov processes;Visualization;Analytical models;Tools;Task analysis;Software
Series-parallel mechanism;dynamic modeling;motion performance;error analysis	Robots;Robot kinematics;Pallets;Mathematical model;Kinematics;Dynamics;Task analysis
Edge computing;flow-based programming (FBP);Internet of Things (IoT) application development;resource management	Internet of Things;Edge computing;Computational modeling;Cloud computing;Resource management;Task analysis;Computer architecture
Lyrics transcription in polyphonic music;music information retrieval;integrated fine-tuning;vocal extraction	Acoustics;Data mining;Pipelines;Hidden Markov models;Data models;Multiple signal classification;Task analysis
Knowledge and data engineering tools and techniques;machine learning;optimization;time series analysis	Time series analysis;Anomaly detection;Transmission line matrix methods;Task analysis;Sparse matrices;Minimization;Probabilistic logic
Requirements classification;non-functional requirements;GAT;BERT	Syntactics;Bit error rate;Task analysis;Semantics;Natural languages;Requirements engineering;Deep learning
Aspect-based sentiment analysis (ABSA);aspect-category sentiment analysis (ACSA);heterogeneous graph neural network (GNN)	Semantics;Sentiment analysis;Graph neural networks;Predictive models;Data mining;Task analysis;Computational modeling
Healthcare analytics;interpretable machine learning;mixed integer programming;patient satisfaction;survey data mining	Hospitals;Machine learning;Medical services;Data models;Task analysis;Predictive models;Trajectory
Hyperparameter;random forest;bitcoin;gray wolf optimization;tweet sentiment analysis;VADER	Sentiment analysis;Blogs;Social networking (online);Bitcoin;Classification algorithms;Data models;Semantics
Embedding extraction;Internet of Things (IoT);joint optimization;multioject tracking (MOT);position prediction	Feature extraction;Internet of Things;Task analysis;Robustness;Data mining;Trajectory;Predictive models
Deep reinforcement learning (DRL);edge computing;IoT;joint service placement;sensing-data-driven applications	Internet of Things;Sensors;Training;Quality of service;Optimization;Task analysis;Heuristic algorithms
BERT-LDA hybrid model;large-scale Internet public opinion;emotional evolution;the anti-ELAB movement	Bit error rate;Analytical models;Task analysis;Internet;Sentiment analysis;Semantics;Computational modeling
IoT;security requirements;weightage;MOORA;MCDM;entropy method	Security;Internet of Things;Authentication;Protocols;Performance evaluation;Cloud computing;Entropy
Server sizing;capacity planning;Unix to Linux (U2L) migration	Servers;Business;Size measurement;Hardware;Standards;Java;Benchmark testing
Feature extraction;WTSN;low-rank representation;projection learning	Feature extraction;Robustness;Data models;Principal component analysis;Dimensionality reduction;Data mining;Task analysis
Subspace clustering;Grassmann manifolds;adaptive neighborhood regularization	Manifolds;Laplace equations;Learning systems;Videos;Clustering methods;Streaming media;Electronic mail
Label distribution learning;generalizable multi-source person re-identification	Task analysis;Training;Cameras;Kernel;Image resolution;Data mining;Analytical models
Attentive training;speech enhancement;speaker extraction;speaker separation;talker-independent	Training;Speech enhancement;Data mining;Interference;Task analysis;Time-domain analysis;Speech
Graph reasoning;multi-object tracking;multitask learning (MTL);satellite video	Task analysis;Videos;Satellites;Cognition;Multitasking;Training;Spatiotemporal phenomena
Hyperspectral unmixing;low tensor rank;nonlocal similarity;nonnegative tensor factorization (NTF)	Tensors;TV;Hyperspectral imaging;Data models;Task analysis;Optimization;Data mining
Facial expression recognition;general encoder;pre-training;coarse-contrastive learning	Face recognition;Task analysis;Feature extraction;Training data;Training;Representation learning;Data mining
Balanced leadership;horizontal leadership;realist social theory;transition;transition management (TM)	Leadership;Organizations;Modeling;Uncertainty;Project management
Weakly supervised object localization;feature recalibration;multi-scale class activation mapping	Location awareness;Neurons;Task analysis;Pattern recognition;Automation;Search problems;Proposals
Instance selection;feature selection;semi-supervised learning;similarity preserving;optimization;co-selection	Feature extraction;Task analysis;Semisupervised learning;Data mining;Robustness;Optimization;Supervised learning
Change captioning;representation disentanglement;viewpoint-adaptive;position-embedded representation learning	Task analysis;Image coding;Adaptation models;Encoding;Computer science;Transformers;Semantics
Polarimetric synthetic aperture radar (PolSAR);projective dictionary pair learning (DPL);nonlinear projective dictionary pair learning (NDPL)	Dictionaries;Feature extraction;Machine learning;Adaptation models;Data models;Data mining;Task analysis
Building extraction;deep learning;encoder-decoder network;atrous spatial pyramid pooling;remote sensing imagery;cross-entropy and dice loss	Buildings;Feature extraction;Image segmentation;Architecture;Data mining;Computational modeling;Task analysis
Digital discrimination;sharing economy;systematic review;evidence-based design	Task analysis;Sharing economy;Protocols;Systematics;Business;Software design;Planning

Boundary optimization;feature enhancement;feature perception;remote sensing images (RSIs);salient object detection (SOD)	Feature extraction;Saliency detection;Optical sensors;Semantics;Optical imaging;Object detection;Data mining
Affine invariance;feature matching;locality preservation;mismatch removal;motion consistency	Remote sensing;Feature extraction;Reliability;Topology;Task analysis;Parametric statistics;Image matching
Salient object detection;feature aggregation;dynamic routing mechanism;hard sample mining	Routing;Feature extraction;DSL;Task analysis;Logic gates;Semantics;Object detection
Link performance function;link capacity;deep learning;BPR function;macroscopic and microscopic traffic modeling	Business process re-engineering;Roads;Estimation;Neural networks;Transportation;Calibration;Deep learning
Hyperspectral image classification;cube-CNN;computation-to-GPU mapping mechanism;multi streams;multi-GPUs	Training data;Graphics processing units;Image classification;Hyperspectral imaging;Machine learning;Data mining;Feature extraction
Artificial neural network (ANN);chest X-ray;computer-ided detection (CAD);deep learning;stochastic learning;tuberculosis (TB)	Tuberculosis;Solid modeling;Deep learning;Stochastic processes;X-ray imaging;Lung;Biomedical imaging;Artificial neural networks
Multimodal learning;contrastive learning;retrieval;video representation;recommender system;robustness	Task analysis;Representation learning;Measurement;Business process re-engineering;Visualization;Transformers;Face recognition
heart failure;diagnosis;text classification;deep learning	Heart;Vocabulary;Recurrent neural networks;Medical services;Logic gates;Feature extraction;Resource management
Visual question answering;image and language parsing;deep reasoning;attention model	Cognition;Visualization;Layout;Logic gates;Task analysis;Knowledge discovery;Image coding
Attention mechanism;change detection (CD);high-resolution images;recurent neural network (RNN);remote sensing	Feature extraction;Remote sensing;Data mining;Classification algorithms;Task analysis;Change detection algorithms;Clustering algorithms
Attention mechanism;cardiac MR;cardiac motion scoring;optical flow	Myocardium;Motion segmentation;Task analysis;Feature extraction;Optical flow;Data mining;Estimation
Clustering;data utility;dimensionality reduction;k-anonymity;microaggregation	Data models;Data privacy;Computational modeling;Benchmark testing;Task analysis;Dimensionality reduction;Business
Address recognition;named entity recognition;deep learning;conditional random fields	Semantics;Feature extraction;Hidden Markov models;Data mining;Character recognition;Deep learning;Finite element analysis;Text recognition;Network address translation
Internet of Things;collaborative device-edge-cloud architecture;frequent function interaction;IoT service allocation index;service requests' priority	Internet of Things;Resource management;Indexes;Collaboration;Peer-to-peer computing;Computer architecture;Routing
Deep graph neural networks;graph data mining;graph normalization;graph representation learning	Training;Analytical models;Data models;Task analysis;Smoothing methods;Degradation;Aggregates
Multimodal sentiment analysis;textual and visual modalities;feature extraction;multimodality fusion	Sentiment analysis;Feature extraction;Task analysis;Semantics;Visualization;Computational modeling
Generalization bounds;kernel splits;kernel forests;random forests;random uniform stability;regularization;slack re-scaling	Kernel;Random forests;Training;Decision trees;Forestry;Stability criteria;Task analysis
Inconsistent text detection;graph neural network;node representation	Context awareness;Semantics;Graph neural networks;Computational modeling;Coherence;Bit error rate;Solid modeling;Text mining
Gait authentication;gait recognition;wearable sensor data;recurent neural network;LSTM network	Gait recognition;Task analysis;Feature extraction;Gyroscopes;Legged locomotion;Data mining;Computer vision
Trigger detection;two-stage method;hybrid network;sentence embeddings;attention mechanism	Feature extraction;Task analysis;Neural networks;Support vector machines;Semantics;Training;Production
Band selection (BS);convolutional neural network (CNN);graph convolutional network (GCN);hyperspectral image classification (HSIC);spectrum rebuilding (SR)	Correlation;Hyperspectral imaging;Convolutional neural networks;Task analysis;Redundancy;Image reconstruction;Convolution
Attention mechanism;cross-scene classification;deep domain adaptation;multiscale feature extraction;remote sensing (RS);residual learning	Feature extraction;Task analysis;Data mining;Adaptation models;Transfer learning;Periodic structures;Manifolds
Broad learning system;self-encoding network;feature extraction;classification	Feature extraction;Training;Data mining;Learning systems;Stacking;Optimization;Task analysis
Chinese short text;ak-granularity;weights;data sparsity	Feature extraction;Optimization;Deep learning;Convolutional neural networks;Support vector machines;Text mining;Machine learning algorithms;China
Convolutional neural network (CNN);deep learning;multiscale residual;SE-attention;satellite image analysis;water body extraction	Remote sensing;Image segmentation;Feature extraction;Semantics;Earth;Rivers;Convolutional neural networks
Activity identification;wearable sensor;data classifier;accelerometer;sports activities	Smart phones;Feature extraction;Data mining;Activity recognition;Data analysis;Accelerometers;Monitoring
Canonical correlation analysis (CCA);electroencephalogram (EEG);functional network connectivity (FNC);large-scale brain network;P900;S estimator	Electroencephalography;Brain modeling;Correlation;Synchronization;Signal to noise ratio;Cognitive processes;Adaptation models;Substrates;Information exchange
Token-level fact correction;factual consistency in abstractive summarization;summary fact checker;token fact checker;fact emender	Training data;Error correction;Abstracts;Measurement;Content analysis;Data models;Data mining;Text analysis

Change detection (CD);hyperspectral image;joint unmixing;multitemporal information coguidance	Hyperspectral imaging;Perturbation methods;Feature extraction;Training;Optimization;Task analysis;Data mining
Abundance estimation;endmember extraction;hyperspectral unmixing;orthogonal projection	Hyperspectral imaging;Estimation;Libraries;Data mining;Optimization;Task analysis;Solid modeling
Feature representation;Gaussian mixture model (GMM);point cloud registration	Point cloud compression;Feature extraction;Data mining;Predictive models;Task analysis;Rail to rail inputs;Optimization
Deep learning;multi-modal fusion;ultrasound;cervical lymphadenopathy	Ultrasonic imaging;Task analysis;Lesions;Clinical diagnosis;Feature extraction;Neck;Lymph nodes
Attention mechanism;efficient and lightweight network;multiscale feature fusion;object counting	Feature extraction;Remote sensing;Computer architecture;Interference;Task analysis;Decoding;Benchmark testing
Aerial image;building extraction;deep learning;refined attention pyramid networks (RAPNets);satellite image	Feature extraction;Buildings;Semantics;Data mining;Task analysis;Satellites;Data models
Aerial image;building footprint extraction;deep learning;semantic segmentation	Buildings;Feature extraction;Data mining;Semantics;Remote sensing;Task analysis;Image segmentation
Change detection;convolutional neural network (CNN);hyperspectral image (HSI);multiscale feature extraction;spatial-spectral residual attention	Feature extraction;Convolution;Data mining;Kernel;Semantics;Random access memory;Task analysis
Object re-identification;non-contrastive;nearest neighbor;unsupervised learning	Training;Task analysis;Noise measurement;Cameras;Artificial neural networks;Visualization;Semantics
Diagram understanding;machine reading comprehension (MRC);multi-modality;textbook question answering (TQA)	Semantics;Cognition;Knowledge discovery;Task analysis;Visualization;Shape;Frontal lobe
Change maps;color-coded change signatures;domain knowledge;Latent Dirichlet Allocation (LDA);satellite image time series (SITS);unsupervised;visualization	Semantics;Task analysis;Spatiotemporal phenomena;Data visualization;Time series analysis;Data mining;Classification algorithms
Tax evasion detection;network embedding;PU learning;graph convolutional network;transaction network	Finance;Feature extraction;Data mining;Companies;Training;Task analysis;Government
Electroencephalogram (EEG);emotion recognition;channel-wise attention;self-attention	Electroencephalography;Feature extraction;Emotion recognition;Data mining;Task analysis;Convolution;Databases
Emergency evacuation after an earthquake;evolutionary game theory;collective behaviors in emergency evacuation;constrained conditions;paths to desired evolutionary stabilities	Earthquakes;Games;Buildings;Game theory;Computational modeling;Elevators;Floors
Channel prediction;deep learning (DL);hybrid beamforming;low-Earth orbit (LEO) satellite;massive multiple-input multiple-output (mMIMO)	Low earth orbit satellites;Satellites;Array signal processing;Downlink;Satellite broadcasting;Radio frequency;Communication systems
Cerebral visual cortex;convolutional neural network;dorsal pathway;semantic segmentation;ventral pathway	Semantics;Data mining;Image segmentation;Visualization;Feature extraction;Brain modeling;Task analysis
Local differential privacy;oblivious transfer protocol;location data;privacy-preserving data mining;data security	Protocols;Data collection;Privacy;Perturbation methods;Proposals;Differential privacy;Receivers;Location awareness;Data security
Face Anti-Spoofing (FAS);Face Presentation Attack Detection (Face PAD);domain generalization;Meta Pattern (MP)	Feature extraction;Face recognition;Neural networks;Faces;Deep learning;Optimization;Data mining
Residual spatial attention module;residual spectral attention module;spatial proximity feature selection;hyperspectral image classification	Feature extraction;Convolutional neural networks;Training;Hyperspectral imaging;Data mining;Task analysis
Adversarial learning;graph neural network;inductive learning;negative sampling (NS);network embedding	Generators;Adaptation models;Adversarial machine learning;Computer science;Computational modeling;Probabilistic logic
Aspect-level-sentiment classification;opinion mining;dependency parse tree;natural language processing;neural networks;convolutional neural network;bidirectional long short-term memory	Feature extraction;Task analysis;Syntaxtics;Batteries;Sentiment analysis;Computer architecture;Semantics
Data mining;instructional design;online learning;communities of practice;social media	Social networking (online);Data mining;Electronic learning;Syntaxtics;Semantics;Pandemics;Online services;Computer aided instruction;Design methodology;Educational technology
Half-precision parallel inference;improved UNET++;SAR images;segmentation;simulated annealing	Image segmentation;Feature extraction;Task analysis;Radar polarimetry;Licenses;Simulated annealing;Data mining
Hyperspectral image (HSI);joint classification;light detection and ranging (LIDAR);self- and cross-guided attention (SCGA)	Feature extraction;Laser radar;Data mining;Task analysis;Fuses;Principal component analysis;Hyperspectral imaging
Hyperspectral image (HSI) classification;local attention mechanism;multitask learning;transfer learning	Feature extraction;Task analysis;Kernel;Convolution;Knowledge engineering;Data mining;Three-dimensional displays
Asymmetric weighting (AW) module;change detection (CD);deep learning;feature differential reconfiguration (FDR) module;multicore channel-aligning attention (MCA) module	Feature extraction;Task analysis;Neural networks;Data mining;Decoding;Semantics;Deep learning
Augmented reality (AR);HoloLens;medical imaging;image registration;surgery	Hardware;Visualization;Three-dimensional displays;Surgery;Tools;Medical services;Licenses

Crowd counting;efficient and lightweight convolution module;scale regression module;regional normalized cross-correlation loss	Feature extraction;Data mining;Correlation;Graphics processing units;Decoding;Costs;Computer science
Data aggregation;fog computing;mobile crowdsensing (MCS);privacy;reliability;verifiability	Servers;Data aggregation;Data privacy;Task analysis;Reliability;Privacy;Crowdsensing
Deep unfolding;information fusion;multisource;remote sensing;super-resolution (SR);transformer	Transformers;Image reconstruction;Remote sensing;Kernel;Degradation;Task analysis;Superresolution
Software defect prediction;just-in-time defect prediction;developer experience metric;software quality management	Measurement;Codes;Predictive models;Government;Task analysis;Software quality;Inspection
Building extraction;convolutional neural network (CNN);multiscale feature;remote sensing images	Feature extraction;Buildings;Data mining;Remote sensing;Layout;Convolutional neural networks;Task analysis
Graph partitioning;multi-agent systems;network virtualization;software-defined networking (SDN);virtual network embedding	Substrates;Control systems;Virtualization;Multi-agent systems;Task analysis;Bandwidth;Delays
Esports;topic modeling;prevalence analysis;sentiment analysis;steam	Games;Sentiment analysis;Task analysis;Transformers;Resource management;Bit error rate;Analytical models
Artificial bee colony algorithm;multiple-choice multidimensional knapsack problem;hamming distance;surrogate relaxation	Artificial bee colony algorithm;Approximation algorithms;Heuristic algorithms;Search problems;Hamming distances;Linear programming;Convergence
Aspect-level sentiment classification;domain adaptation;topic modeling;multi-view attention	Adaptation models;Neural networks;Task analysis;Computational modeling;Probabilistic logic;Social networking (online);Semantics
Graph auto-encoder;adaptive weight;ensemble;EGRWR-GAE;EGSRWR-GAE	Adaptation models;Data models;Feature extraction;Task analysis;Computational modeling;Noise measurement;Predictive models;Encoding
MLS;point clouds;deep learning;street tree extraction;shading area calculation;bilateral augmentation;improved RandLA-Net;density-based iterative α -shape	Vegetation;Point cloud compression;Feature extraction;Data mining;Three-dimensional displays;Semantics;Task analysis
Genetic algorithm;natural scene text;optimal feature selection;SFS;feature fusion;feature space dimensionality reduction	Feature extraction;Genetic algorithms;Classification algorithms;Support vector machines;Optimization;Text categorization;Sociology
Vehicle re-identification;image retrieval;global relational attention;multi-granularity	Feature extraction;Vehicles;Representation learning;Data mining;Image retrieval;Computational modeling
Intrinsic image decomposition;color compensation;multi-scale attention;mutual constraint	Image color analysis;Feature extraction;Image decomposition;Image reconstruction;Lighting;Task analysis;Decoding
Fractional vegetation cover (FVC);geoparcel;grassland;remote sensing;spatial prediction;vegetation index (VI)	Vegetation mapping;Remote sensing;Spatial resolution;Biological system modeling;Shape;Satellites;Indexes
Abstract syntax tree;adaptive transformers;source code summarization;fusion network;shortest path	Codes;Transformers;Source coding;Syntactics;Data mining;Task analysis;Adaptive systems;Shortest path problem
ANN search;architecture;cloud;data-center;FPGA;in-storage computing;near-memory computing;SmartSSD	Nearest neighbor methods;Kernel;Approximation algorithms;Partitioning algorithms;Bandwidth;Memory management;Feature extraction
Associated capsules;capsule network;gait recognition;multi-sensor;spatio-temporal	Feature extraction;Gait recognition;Data mining;Legged locomotion;Heuristic algorithms;Data models;Biological system modeling
Feature selection;streaming features;unsupervised learning	Feature extraction;Heuristic algorithms;Computer science;Social networking (online);Real-time systems;Blogs;Machine learning algorithms
Electroencephalogram;emotion recognition;explained variance ratio;feature extraction;multi-class common spatial pattern;subject-independent	Feature extraction;Electroencephalography;Emotion recognition;Covariance matrices;Real-time systems;Data mining;Matrix decomposition
Edge-cloud hybrid environment;microservice deployment;reinforcement learning;smart Internet-of-Things (IoT) system	Servers;Cloud computing;Heuristic algorithms;Internet of Things;Edge computing;Quality of service;Image edge detection
Convolutional neural network (CNN);graph neural network (GNN);regularization;road extraction	Roads;Feature extraction;Remote sensing;Data mining;Task analysis;Convolutional neural networks;Satellites
Change detection;dual path denoising network (DPDNet);label noise;synthetic aperture radar (SAR)	Training;Speckle;Synthetic aperture radar;Feature extraction;Convolution;Radar polarimetry;Task analysis
open vehicle routing problem with time window (OVRPTW);hybrid column generation algorithm (HCGA);mixed integer programming;label setting algorithm	NP-hard problem;Vehicle routing;Metaheuristics;Benchmark testing;Approximation algorithms;Search problems;Hybrid power systems
Feature extraction;feature fusion;hyperspectral image (HSI);light detection and ranging (LIDAR);superpixel segmentation	Laser radar;Feature extraction;Hyperspectral imaging;Sensors;Data mining
Sports video analysis;tactic recognition;group activity recognition;deep learning	Videos;Trajectory;Sports;Games;Feature extraction;Adaptation models;Data mining
Bone ultrasound imaging;deep learning;ultrasound computed tomography;U-Net;velocity inversion	Bones;Ultrasonic imaging;Imaging;Acoustics;Image segmentation;Deep learning;Data mining
Multi-view clustering;deep clustering;unsupervised learning;self-supervised learning	Representation learning;Task analysis;Matrix decomposition;Decoding;Computer science;Complexity theory;Unsupervised learning

Semi-supervised learning;multi-view classification;discriminative representation;pseudo-labeling	Representation learning;Training;Predictive models;Forestry;Feature extraction;Entropy;Task analysis
Multimodal segmentation;graph attention;graph mutual information;MRI	Magnetic resonance imaging;Feature extraction;Lesions;Image segmentation;Liver;Fuses;Mutual information
Traffic estimation;TrafficGAN;generative model	Estimation;Roads;Public transportation;Global Positioning System;Urban areas;Sociology;Statistics
Classification;feature importance;language model;long text;method	Computational modeling;Computational efficiency;Analytical models;Text categorization;Task analysis;Standards
Image segmentation;one-shot learning;semantically meaningful prototype	Image segmentation;Prototypes;Semantics;Training;Feature extraction;Task analysis;Testing
Federated learning;heterogeneous structured model;neural network;singular value decomposition	Servers;Costs;Matrix decomposition;Training;Data models;Optimization;Data privacy
Service computing;cloud computing;quality of service;service composition;metaheuristics;hybrid metaheuristics;mapping study	Metaheuristics;Quality of service;Internet of Things;Optimization;Cloud computing;Search problems;Systematics
Convolutional neural network;cost sensitive;multitask learning;photoplethysmography (PPG);sleep apnea-syndrome (SAS);wearable device	Feature extraction;Sleep apnea;Wearable sensors;Electrocardiography;Multitasking;Biomedical monitoring;Convolutional neural networks;Plethysmography
Facial expression recognition;greedy strategy;multiple weights optimality-seeking;swin transformer	Transformers;Face recognition;Merging;Data models;Feature extraction;Training data;Task analysis
Atrous convolution;building extraction;unity networking (UNet);very high-resolution (VHR) remote sensing imagery	Buildings;Feature extraction;Convolution;Remote sensing;Decoding;Data mining;Spatial resolution
Software hardware codesign;optimal parallelization degree;self-similarity;graph neural networks;intelligent scheduler	Conferences;Portable document format;Indexes;Typesetting;Loading;Web sites;Warranties
Weighted voting classifier;movie recommendation;classification;feature engineering	Motion pictures;Predictive models;Data models;Genetic algorithms;Bayes methods;Social networking (online);Recommender systems
RGB-T;semantic segmentation;graph reasoning;power equipment;scene comprehension	Feature extraction;Semantics;Visualization;Data mining;Power systems;Inspection;Image edge detection
Change detection (CD);deep clustering;multiscale fusion;octave convolution;self-attention (SA) mechanism;synthetic aperture radar (SAR) images	Feature extraction;Radar polarimetry;Speckle;Synthetic aperture radar;Convolution;Clustering algorithms;Pipelines
Clustering;diffusion-fusion;graph learning;preserving local manifold structure;tensor product graph (TPG)	Manifolds;Learning systems;Tensors;Laplace equations;Data models;Task analysis;Stacking
structure-borne noise;NVH analysis;interactive visual analysis	Vibrations;Engines;Frequency-domain analysis;Data models;Harmonic analysis;Automotive engineering;Computational modeling
Uncertainty visualization;tabular data;spreadsheet augmentation	Uncertainty;Costs;Automobiles;Tools;Visualization;Computational modeling;Maintenance engineering
Multi-metric extraction;machine vision;optical character recognition	Data mining;Predictive models;Measurement;Annotations;Visualization;Benchmark testing;Transforms
Personality trait;deep learning;artificial intelligence;convolutional neural network;long short-term memory;social networks;machine learning	Social networking (online);Deep learning;Feature extraction;Convolutional neural networks;Machine learning;Blogs;Data mining
Open source software;software security;vulnerability database	Security;Databases;Soft sensors;Codes;Software development management;Supply chains;Open source software
Multi-criteria decision-making (MCDM);normalization;electric vehicles;last-mile delivery;alternative ranking order method accounting for two-step normalization (AROMAN)	Decision making;Electric vehicles;Transportation;Robustness;Logistics;Sustainable development;Batteries
Automated builds;build systems;continuous integration	Acceleration;Software;Tools;Statistics;Sociology;Organizations;Testing
Internet of Things;cloud computing;blockchain;artificial intelligence;wireless body sensor networks;nanotechnology	Internet of Things;Wireless sensor networks;Cloud computing;Sensors;Artificial intelligence;Communication system security;Blockchains

INSPEC Controlled Terms
business data processing;decision making;human resource management;information systems;resource allocation;social networking (online)
distributed processing;Internet of Things;particle swarm optimisation;power cables;power engineering computing;power generation reliability;power generation scheduling;power system security;smart power grids
business data processing;learning (artificial intelligence);optimisation;process monitoring;resource allocation
business process re-engineering;formal specification;optimisation;software engineering;workflow management software
business data processing;cloud computing;resource allocation;scheduling;virtual machines
Big Data;cloud computing;computational complexity;deep learning (artificial intelligence);Internet of Things;learning (artificial intelligence);optimisation;reinforcement learning;resource allocation;scheduling
cloud computing;data mining;Petri nets;resource allocation
cloud computing;Internet of Things;mining;particle swarm optimisation;resource allocation
business data processing;matrix algebra;optimisation
ant colony optimisation;cloud computing;computer centres;Internet of Things;learning (artificial intelligence);mobile computing;optimisation;particle swarm optimisation;resource allocation;scheduling;search problems
cloud computing;Internet of Things;learning (artificial intelligence);Markov processes;mobile communication;optimisation;resource allocation
energy consumption;Internet of Things;multiprocessing systems;parallel algorithms;power aware computing;processor scheduling;workflow management software
cellular radio;human computer interaction;Internet of Things;mobile computing;probability;resource allocation
blockchains;cloud computing;distributed processing;evolutionary computation;manufacturing systems;production engineering computing;scheduling;service-oriented architecture
organisational aspects;planning;procurement;project management;risk management;strategic planning
aerospace computing;artificial satellites;combinatorial mathematics;energy consumption;genetic algorithms;image processing;pattern clustering;scheduling;search problems;sorting
cloud computing;learning automata;multiprocessing systems;processor scheduling;quality of service;resource allocation
cloud computing;customer satisfaction;decision trees;entropy;processor scheduling;resource allocation;scheduling;virtual machines
business data processing;data mining
decision trees;learning (artificial intelligence);optimisation;power markets;power system planning;stochastic processes;stochastic programming
assembling;assembly planning;design for disassembly;optimisation;profitability;recycling;stochastic processes
cultural aspects;government data processing;human factors;human resource management;innovation management;organisational aspects;personnel;statistical analysis
business data processing;cloud computing;resource allocation;service-oriented architecture
cloud computing;deep learning (artificial intelligence);edge computing;Internet of Things;learning (artificial intelligence);Markov processes;mobile computing;optimisation;reinforcement learning;resource allocation;telecommunication computing;vehicular ad hoc networks
Big Data;cloud computing;computational complexity;data analysis;data privacy;graph theory;parallel processing;resource allocation;scheduling;virtual machines
business data processing;optimisation;personnel;project management;resource allocation;scheduling;software development management;software engineering
design engineering;process planning;resource allocation
agricultural robots;agriculture;autonomous aerial vehicles;genetic algorithms;mobile robots;motion control;multi-robot systems;path planning

artificial intelligence;control engineering computing;IEC standards;intelligent manufacturing systems;manufacturing systems;planning;planning (artificial intelligence);production control;production engineering computing;production planning;software engineering;specification languages
5G mobile communication;cache storage;cellular radio;edge computing;mobile computing;resource allocation;telecommunication computing
business data processing;cloud computing;decision support systems;planning
cryptography;data privacy;incentive schemes;Internet of Things;mobile computing;outsourcing;sensor fusion
computer aided instruction;educational courses;human resource management;industrial training;manufacturing industries;manufacturing processes;organisational aspects;teaching
gradient methods;learning (artificial intelligence);Markov processes;minimisation;object detection;optimisation;resource allocation;video signal processing;video surveillance
business data processing;organisational aspects
human resource management;investment;knowledge management;organisational aspects;strategic planning;technology management
cloud computing;evolutionary computation;genetic algorithms;optimisation;Pareto optimisation;scheduling;workflow management software
Internet of Things;process control;production engineering computing;telecommunication scheduling;transport protocols
fuzzy set theory;heuristic programming;scheduling
energy consumption;integer programming;linear programming;mobile computing;peer-to-peer computing;power aware computing;resource allocation
computational complexity;distributed processing;genetic algorithms;integer programming;metaheuristics;scheduling;workflow management software
channel allocation;duality (mathematics);edge computing;optimisation;resource allocation;telecommunication computing;vehicular ad hoc networks
deep learning (artificial intelligence);inference mechanisms;multi-agent systems;optimisation;reinforcement learning
data mining;electronic commerce;learning (artificial intelligence);optimisation;pattern classification;rough set theory;statistical analysis
blockchains;data mining;deep learning (artificial intelligence);mobile computing;optimisation;reinforcement learning;resource allocation
aerospace computing;autonomous aerial vehicles;control engineering computing;decision making;energy consumption;integer programming;Internet of Things;mobile computing;multi-agent systems;nonlinear programming;scheduling
data structures;Gaussian distribution;mobile computing;recommender systems;resource allocation;trees (mathematics)
artificial intelligence;cost reduction;decision support systems;human resource management;organisational aspects;personnel;strategic planning
cellular radio;mobile computing;next generation networks;optimisation;queueing theory;resource allocation;stochastic processes;telecommunication congestion control;telecommunication traffic
cloud computing;power aware computing;scheduling;software fault tolerance;workflow management software
Big Data;cloud computing;computer network security;data analysis;scheduling;search problems;software defined networking;telecommunication traffic
data analysis;diseases;electroencephalography;Fourier transforms;medical disorders;medical signal processing;neurophysiology;signal classification
behavioural sciences computing;decision making;mobile computing;optimisation;psychology;trees (mathematics)
bandwidth allocation;cloud computing;optimisation;video coding;video signal processing;video streaming;video surveillance
flow shop scheduling;grippers;industrial robots;minimisation;Petri nets;reinforcement learning
deep learning (artificial intelligence);energy consumption;integer programming;Internet of Things;mobile computing;multi-agent systems;nonlinear programming;power aware computing;scheduling;search problems

artificial intelligence;decision making;groupware;human computer interaction;man-machine systems;mathematical programming;organisational aspects;technology acceptance model
Big Data;data mining;geophysical image processing;image classification;image retrieval;learning (artificial intelligence);optimisation;pattern classification;remote sensing
data mining;minimisation;pattern clustering
natural language processing;pattern classification;sentiment analysis;text analysis
cloud computing;data mining;manufacturing systems;production engineering computing
battery powered vehicles;control facilities;customer satisfaction;electric vehicle charging;genetic algorithms;power generation dispatch;scheduling
business data processing;design engineering;industrial power systems;inspection;installation;maintenance engineering;personnel;power system faults;purchasing
agriculture;crops;deep learning (artificial intelligence);edge detection;feature extraction;geophysical image processing;image representation;image resolution;image segmentation;object detection;remote sensing;sustainable development
behavioural sciences computing;cellular radio;data mining;mobile computing;mobile handsets;natural language processing;telecommunication signalling;travel industry
blockchains;cloud computing;computer network security;cryptocurrencies;data mining;data privacy;distributed databases;evolutionary computation;game theory;Internet of Things;optimisation;reinforcement learning
bioinformatics;computational complexity;data mining;geographic information systems;graph theory;information retrieval;social networking (online)
generalisation (artificial intelligence);gradient methods;image processing;learning (artificial intelligence);optimisation;query processing
function approximation;learning (artificial intelligence);multi-agent systems;optimisation
data mining;fuzzy control;fuzzy set theory;fuzzy systems;generalisation (artificial intelligence);learning (artificial intelligence);optimisation;regression analysis
data mining;emotion recognition;learning (artificial intelligence);optimisation;text analysis
data mining;data privacy;diseases;genetic algorithms;health care;medical information systems;search problems
feature extraction;object detection;object tracking;optimisation;target tracking
brain;data mining;emotion recognition;feature extraction;learning (artificial intelligence);pattern classification;text analysis;video signal processing
blockchains;cloud computing;cryptocurrencies;data mining;game theory;mobile computing;power aware computing;pricing;scheduling
authorisation;data privacy;health care;probability;workflow management software
cloud computing;computational complexity;decision making;deep learning (artificial intelligence);edge computing;Internet of Things;metaheuristics;mobile computing;parallel processing;reinforcement learning;resource allocation
agriculture;geophysical image processing;image classification;learning (artificial intelligence);neural nets;radial basis function networks;remote sensing
convolutional neural nets;deep learning (artificial intelligence);feature extraction;image classification;object detection;regression analysis;traffic engineering computing
Bayes methods;human-robot interaction;learning (artificial intelligence);multi-robot systems;path planning
backscatter;convolutional neural nets;data mining;deep learning (artificial intelligence);feature extraction;geophysical image processing;image classification;learning (artificial intelligence);neural nets;sediments
bioinformatics;data mining;graph theory;memory architecture;pattern matching;social networking (online)
cloud computing;fault tolerant computing;natural sciences computing;scheduling;workflow management software
decoding;encoding;hidden Markov models;image motion analysis;image recognition;learning (artificial intelligence);video signal processing

convergence;convex programming;image denoising;image resolution;image restoration;inverse problems
cellular radio;cloud computing;game theory;Internet of Things;mobile computing
concave programming;data mining;delays;game theory;iterative methods;mobile computing;optimisation
business data processing;human resource management;organisational aspects;security of data
distributed processing;optimisation;redundancy;resource allocation
copper;evolutionary computation;learning (artificial intelligence);metallurgical industries;optimisation;production engineering computing;surface treatment;vectors
data analysis;data visualisation;decision making;iterative methods;optimisation;river pollution
convergence;deep learning (artificial intelligence);estimation theory;feedback;optimisation;reinforcement learning
optimisation;regression analysis;stochastic processes;target tracking
data analysis;natural language processing;pharmaceutical industry;recurrent neural nets;sales management
convolutional neural nets;feature extraction;graph theory;image motion analysis;image representation;image retrieval;learning (artificial intelligence);object detection;video signal processing;video surveillance
analytic hierarchy process;business continuity;critical infrastructures;decision making;decision support systems;disasters;distribution networks;geographic information systems;maintenance engineering;risk analysis
data mining;evolutionary computation;geophysical image processing;groupware;hyperspectral imaging;remote sensing;spectral analysis
convolutional neural nets;data mining;deep learning (artificial intelligence);feature extraction;learning (artificial intelligence);natural language processing;ontologies (artificial intelligence);text analysis
data privacy;finite state machines;game theory;iterative methods;learning (artificial intelligence);Markov processes;telecommunication computing;time-varying channels;wireless channels
computer vision;feature extraction;learning (artificial intelligence);natural language processing;natural languages;path planning;polishing;text analysis;video signal processing
Big Data;security of data;trusted computing
data mining;geophysical image processing;image classification;image fusion;learning (artificial intelligence);pattern classification;pattern clustering;remote sensing;unsupervised learning
artificial intelligence;decision making;smart cities;strategic planning
Big Data;data analysis;data mining;human factors;human resource management;learning (artificial intelligence);organisational aspects;personnel;statistical analysis
data mining;image colour analysis;image fusion;image sequences;object detection;video signal processing
blockchains;business data processing;Internet;Internet of Things;open systems;service-oriented architecture;software architecture;Web services;workflow management software
evolutionary computation;feature extraction;geophysical image processing;hyperspectral imaging;search problems
computational complexity;convex programming;data analysis;data mining;greedy algorithms;matrix decomposition;text analysis;unsupervised learning;vectors
cloud computing;feedback;graph theory;Internet of Things;queueing theory;scheduling;wireless sensor networks
feature extraction;geophysical image processing;graph theory;hyperspectral imaging;image classification;image fusion;learning (artificial intelligence);multilayer perceptrons;neural nets
cloud computing;mining industry;object detection;video signal processing;video surveillance
cloud computing;game theory;purchasing;quality of service
condition monitoring;learning (artificial intelligence);mineral processing industry;process control;process monitoring;self-organising feature maps

blockchains;cloud computing;game theory;Internet of Things;learning (artificial intelligence);linear programming;Markov processes;mobile computing;multi-agent systems
dictionaries;image classification;image motion analysis;image representation;image sequences;learning (artificial intelligence);video signal processing
agriculture;feature extraction;image reconstruction;image representation;learning (artificial intelligence);mean square error methods;recurrent neural nets
cloud computing;computer centres;data handling;database management systems;query processing
mobile communication;mobile computing;optimisation;scheduling;smart phones;telecommunication computing;Web services
gradient methods;learning (artificial intelligence);neural nets;optimisation;parallel algorithms;pattern classification;stochastic processes
forecasting theory;organisational aspects;project management;research and development;scheduling
data handling;data privacy;gradient methods;learning (artificial intelligence);optimisation;sampling methods;stochastic processes
feature extraction;image enhancement;learning (artificial intelligence)
feature extraction;image representation;image retrieval;pedestrians
behavioural sciences;evolutionary computation;Pareto optimisation;search problems
learning (artificial intelligence);object recognition;pattern clustering;pedestrians
diseases;feature extraction;genetic algorithms;medical information systems;particle swarm optimisation;pattern classification;search problems
Markov processes;mixing;optimisation;sequences;statistical mechanics;statistical testing;stochastic processes
data mining;learning (artificial intelligence);mobile computing;review sites
autonomous aerial vehicles;dispatching;learning (artificial intelligence);optimisation;scheduling
computer network security;decision theory;game theory;information retrieval;integer programming;learning (artificial intelligence);optimisation;sport
convolutional neural nets;deep learning (artificial intelligence);distortion;feature extraction;image processing;natural scenes;optimisation
artificial intelligence;decision making;image classification;inventory management;Pareto distribution;pattern classification;pattern clustering
authorisation;information systems;personnel
mobile computing;object tracking;police data processing;probability;query formulation;safety;search problems;town and country planning
automobile industry;automotive electronics;automotive engineering;embedded systems;failure analysis;genetic algorithms;integrated circuit reliability;mathematical programming;multiprocessing systems;optimisation;power aware computing;processor scheduling;real-time systems;reliability;reliability theory;system recovery;thermal management (packaging)
cellular radio;cloud computing;mobile computing;mobile radio;probability;resource allocation;transportation
array signal processing;concave programming;energy harvesting;multi-access systems;radio networks;radiofrequency interference;search problems;telecommunication power management
learning (artificial intelligence);natural language processing;natural languages;pattern classification;text analysis
cloud computing;data analysis;probability;service-oriented architecture
deep learning (artificial intelligence);Markov processes;mobile computing;reinforcement learning;resource allocation;stochastic games
cloud computing;data mining;game theory;iterative methods;pricing
computer aided instruction;computer science education;data mining;educational courses;further education;hidden Markov models;teaching

data augmentation;deep learning (artificial intelligence);image recognition;object detection;traffic engineering computing
condition monitoring;data mining;learning (artificial intelligence);maintenance engineering;natural language processing;neural nets;object detection;pattern classification;production engineering computing;recurent neural nets
decision making;evolutionary computation
backpropagation;deep learning (artificial intelligence);fault diagnosis;machinery;mechanical engineering computing;parallel processing;particle swarm optimisation
blockchains;digital signatures;pipeline processing;public key cryptography
data mining;feature extraction;feature selection;learning (artificial intelligence);particle swarm optimisation;pattern classification;search problems;statistical analysis;support vector machines
aircraft communication;artificial satellites;autonomous aerial vehicles;cellular radio;concave programming;control engineering computing;convex programming;Internet of Things;iterative methods;quality of service;radio links;remotely operated vehicles;resource allocation;trajectory control
feature extraction;geophysical image processing;hyperspectral imaging;image classification;image fusion;image representation;learning (artificial intelligence);object detection;optical radar;remote sensing;sensor fusion
product development;production engineering computing;project management;scheduling
data mining;formal logic;graph theory;optimisation
convolutional neural nets;graph theory;intelligent transportation systems;learning (artificial intelligence);recurent neural nets;road traffic;spatiotemporal phenomena;traffic engineering computing
computer network security;crowdsourcing;deep learning (artificial intelligence);learning (artificial intelligence);minimax techniques;optimisation
data mining;feature extraction;geophysical image processing;image representation;image segmentation;object detection;optimisation;probability;remote sensing
5G mobile communication;cloud computing;computational complexity;computer network security;deep learning (artificial intelligence);function approximation;gradient methods;Internet of Things;optimisation;recurent neural nets;resource allocation;telecommunication computing
learning (artificial intelligence);object detection;scheduling
data mining;feature extraction;graph theory;learning (artificial intelligence)
abstracting;greedy algorithms;information retrieval;natural language processing;natural sciences computing;optimisation;text analysis
convolutional neural nets;data mining;graph theory;learning (artificial intelligence);production engineering computing;quality management;smelting;steel;steel industry;steel manufacture
approximation theory;crowdsourcing;data handling;greedy algorithms;incentive schemes;mobile computing;Pareto optimisation
data mining;entropy;evolutionary computation;feature extraction;feature selection;learning (artificial intelligence);natural language processing;pattern classification;text analysis
data mining;information retrieval;natural language processing;social networking (online);text analysis
convolutional neural nets;deep learning (artificial intelligence);fault diagnosis;feature extraction;learning (artificial intelligence);machine bearings;mechanical engineering computing;neural nets;rolling bearings;time-frequency analysis;vibrational signal processing;wavelet transforms
data mining;feature extraction;feature selection;image recognition;learning (artificial intelligence);metaheuristics;optimisation;pattern classification;search problems;text analysis
customer services;manufacturing industries;organisational aspects;service industries
computational complexity;data mining;feature extraction;graph theory;learning (artificial intelligence);matrix algebra;optimisation;pattern clustering;spectral analysis;unsupervised learning
data mining;learning (artificial intelligence);natural language processing;text analysis

biological organs;biomedical MRI;cardiology;computerised tomography;diseases;image classification;image segmentation;kidney;medical image processing
business data processing
computational complexity;data structures;optimisation;query processing;resource allocation;table lookup
data mining;feature extraction;learning (artificial intelligence);natural language processing;pattern classification;text analysis
blockchains;computer network security;data analysis;data mining;data privacy;edge computing;game theory;Internet of Things;pricing
deep learning (artificial intelligence);feature extraction;image classification;neural net architecture;search problems
cache storage;distributed processing;energy consumption;greedy algorithms;minimisation;traffic engineering computing
feature extraction;geophysical image processing;image classification;image representation;image segmentation;learning (artificial intelligence);photogrammetry;remote sensing
analytic hierarchy process;data envelopment analysis;facility location;fuzzy set theory;optimisation
agriculture;convolutional neural nets;deep learning (artificial intelligence);feature extraction;geophysical image processing;image classification;image resolution;object detection;remote sensing
convolutional neural nets;deep learning (artificial intelligence);feature extraction;feature selection;geophysical image processing;geophysical techniques;hyperspectral imaging;image classification;image colour analysis;image fusion;image resolution;object detection;random forests;remote sensing by radar;synthetic aperture radar
autonomous aerial vehicles;concave programming;convex programming;edge computing;integer programming;Internet of Things;Markov processes;optimisation;time-varying channels;vehicular ad hoc networks
data mining;learning (artificial intelligence);pattern clustering;power consumption;power distribution planning;power engineering computing;power grids;smart power grids
concave programming;matrix algebra;minimisation;pattern clustering;tensors;unsupervised learning
data mining;data privacy;particle swarm optimisation
business data processing;computer crime;enterprise resource planning;expert systems;fuzzy logic;fuzzy set theory;risk management;security of data
5G mobile communication;millimetre wave communication;millimetre wave propagation;mobility management (mobile radio);probability;quality of service;queueing theory;stochastic processes
data mining;feature extraction;image classification;image motion analysis;image recognition;image representation;image sequences;learning (artificial intelligence);object recognition;pattern classification;video signal processing
data handling;optimisation;parallel processing;public domain software
convolutional neural nets;error correction;feature extraction;image colour analysis;image enhancement;image representation;iterative methods;learning (artificial intelligence);optimisation
Bayes methods;decision support systems;decision trees;diseases;epidemics;explanation;learning (artificial intelligence);medical information systems;microorganisms;optimisation;patient diagnosis;pattern classification
autoregressive moving average processes;building management systems;diseases;distributed power generation;epidemics;Internet;neural nets;power consumption;power engineering computing;power generation planning;supervised learning;support vector machines
feature extraction;image classification;learning (artificial intelligence);social networking (online)
gradient methods;optimisation;signal representation;signal sampling;speaker recognition;supervised learning
encoding;geophysical image processing;image denoising;object detection;radar imaging;regression analysis;remote sensing by radar;ships;synthetic aperture radar
electron beam welding;genetic algorithms;learning (artificial intelligence);polynomials;production engineering computing;regression analysis
computer networks;integer programming;linear programming;multicast communication;resource allocation;virtualisation
data mining;file organisation;grammars;natural language processing;system monitoring

feature extraction;fuzzy set theory;image classification;image recognition;image representation;learning (artificial intelligence);matrix algebra;pattern classification
data mining;information networks;matrix algebra;optimisation;pattern clustering
approximation theory;business data processing;computational complexity;crowdsourcing;dynamic programming;greedy algorithms;mobile computing;recruitment
data mining;feature extraction;natural language processing;optimisation;pattern classification;principal component analysis;regression analysis;text analysis
data analysis;data mining;distributed processing;graph theory
decision making;educational administrative data processing
convolutional neural nets;image classification;learning (artificial intelligence);optimisation;stereo image processing;vectors;video signal processing
convolutional neural nets;deep learning (artificial intelligence);feature extraction;geophysical image processing;remote sensing
data mining;deep learning (artificial intelligence);feature extraction;geophysical image processing;image colour analysis;image fusion;image resolution;image segmentation;image texture;optical images;remote sensing;roads
customer services;data mining;data visualisation;image classification;image representation;learning (artificial intelligence);neural nets;pattern classification;semiconductor industry;supply chain management
asset management;customer services;decision making;decision support systems;knowledge management;machinery production industries;optimisation;organisational aspects;product design;product development;reliability;risk management;strategic planning;sustainable development
feature extraction;geophysical image processing;image classification;image segmentation;learning (artificial intelligence);object detection;probability;remote sensing;supervised learning
computer vision;feature extraction;gesture recognition;image classification;image motion analysis;image recognition;learning (artificial intelligence);object detection;pattern classification;pattern clustering;video signal processing
blockchains;data mining;health care;information management;learning (artificial intelligence);medical information systems;scheduling;security of data;veterinary medicine
data acquisition;data mining;learning (artificial intelligence);Markov processes;neural nets;pattern classification;SCADA systems
computational complexity;evolutionary computation;mobile computing;optimisation;social networking (online)
data handling;data mining;data structures;database management systems
data mining;image classification;image motion analysis;image retrieval;learning (artificial intelligence);natural language processing;object detection;query processing;video signal processing
Big Data;cluster computing;data analysis;data mining;iterative methods;parallel processing;queueing theory;scheduling
computerised tomography;data mining;graph theory;image segmentation;learning (artificial intelligence);medical image processing;network theory (graphs);proteins;tensors
feature extraction;graph theory;learning (artificial intelligence);mobile computing;mobility management (mobile radio);optimisation;pattern clustering;road traffic;road vehicles;telecommunication network routing;traffic engineering computing;transportation
Gaussian processes;iterative methods;nearest neighbour methods;optimisation;pattern clustering
Big Data;data analysis;learning (artificial intelligence);statistical analysis;technology acceptance model
cloud computing;deep learning (artificial intelligence);Markov processes;pricing
feature extraction;graph theory;hyperspectral imaging;image classification;learning (artificial intelligence);neural nets;statistical distributions
data mining;document image processing;feature extraction;image sampling;image segmentation;information retrieval;learning (artificial intelligence);object detection
5G mobile communication;multimedia communication;optimisation;quality of service;resource allocation;vehicular ad hoc networks;video coding

convolutional neural nets;deep learning (artificial intelligence);feature extraction;geography;geophysical image processing;image classification;image matching;object recognition
feature extraction;fuzzy set theory;image segmentation;image texture
information retrieval;learning (artificial intelligence);natural language processing;pattern classification;text analysis
blockchains;cloud computing;contracts;production engineering computing;security of data;software architecture;storage management
learning (artificial intelligence);pattern classification
cloud computing;data mining;groupware;production engineering computing;recurrent neural nets;scheduling;trusted computing;Web services
Big Data;cartography;decision trees;deep learning (artificial intelligence);intelligent transportation systems;query processing;recommender systems;traffic engineering computing;transportation;ubiquitous computing;user experience
cancer;decision making;deep learning (artificial intelligence);evolutionary computation;feature extraction;genomics;image classification;image representation;medical image processing
decision making;energy consumption;game theory;gradient methods;Internet of Things;mobile computing;power aware computing;resource allocation
data mining;learning (artificial intelligence);natural language processing;natural languages;neural nets;pattern classification;text analysis
geometry;geophysical image processing;hyperspectral imaging;matrix decomposition
management of change;optimisation;organisational aspects
computer vision;geophysical image processing;hyperspectral imaging;image fusion;image reconstruction;image registration;image representation;image resolution;remote sensing;statistical analysis
data mining;deep learning (artificial intelligence);information retrieval;natural language processing;text analysis;ubiquitous computing
data handling;data mining;deep learning (artificial intelligence);optimisation;search problems;security of data
learning (artificial intelligence);recommender systems
agriculture;convolutional neural nets;crops;deep learning (artificial intelligence);feature extraction;geophysical image processing;image classification;image segmentation;image texture;learning (artificial intelligence);remote sensing
biomedical MRI;data mining;diseases;image registration;learning (artificial intelligence);medical image processing
approximation theory;computational complexity;data mining;graph theory;greedy algorithms;optimisation
decision making;learning (artificial intelligence);object detection;pattern classification;pattern clustering;video signal processing
automatic guided vehicles;collision avoidance;multi-robot systems;warehouse automation
convolutional neural nets;feature extraction;geophysical image processing;image classification;image resolution;learning (artificial intelligence);remote sensing;terrain mapping
condition monitoring;convolutional neural nets;learning (artificial intelligence);machine bearings;maintenance engineering;mechanical engineering computing;profitability;remaining life assessment
Big Data;data analysis;data handling;Internet of Things;parallel processing
agriculture;geophysical image processing;image classification;image fusion;image resolution;image sensors;radar imaging;radar polarimetry;remote sensing;remote sensing by radar;sensor fusion;synthetic aperture radar
approximation theory;chaos;data analysis;data mining;learning (artificial intelligence);random processes;recurrent neural nets;time series

artificial intelligence;Big Data;computer vision;Internet of Things;learning (artificial intelligence);natural language processing;ubiquitous computing
data analysis;data mining;deep learning (artificial intelligence);feature selection;learning (artificial intelligence);pattern classification;power engineering computing;power system protection
cloud computing;genetic algorithms;mobile computing;mobility management (mobile radio);virtualisation
computational complexity;computer games;pattern clustering
data mining;data visualisation;feature extraction;learning (artificial intelligence);natural language processing;neural nets;social networking (online);text analysis
authorisation;Big Data;business data processing;deep learning (artificial intelligence)
data mining;learning (artificial intelligence);natural language processing;pattern classification
data mining;data structures;information retrieval;learning (artificial intelligence);natural language processing;text analysis
data mining;feature extraction;Hilbert spaces;image representation;learning (artificial intelligence);matrix algebra
data augmentation;feature extraction;geophysical image processing;image segmentation;remote sensing
data mining;geophysical image processing;graph theory;image classification;learning (artificial intelligence);object detection;remote sensing
data mining;fault diagnosis;feature extraction;feature selection;gradient methods;learning (artificial intelligence);machine bearings;mechanical control equipment;rolling bearings;variational techniques;vibrational signal processing;vibrations
image representation;information retrieval;learning (artificial intelligence);pattern classification;social networking (online)
convolutional neural nets;learning (artificial intelligence);simulated annealing;stereo image processing
cloud computing;health care;virtual machines
computerised tomography;convolutional neural nets;deep learning (artificial intelligence);endoscopes;feature extraction;image classification;image fusion;image segmentation;medical image processing;object detection
geophysical image processing;neural nets;optimisation;remote sensing;semi-supervised learning (artificial intelligence)
data mining;entropy;learning (artificial intelligence);natural language processing;pattern classification;text analysis;unsupervised learning
backtracking;computational complexity;data mining;distributed databases;graph theory;optimisation;query processing
graph theory;hidden Markov models;learning (artificial intelligence);signal representation
data mining;emotion recognition;feature extraction;learning (artificial intelligence);natural language processing;pattern classification;text analysis
image recognition;image retrieval;object recognition;optimisation;search problems;supervised learning
data analysis;decision making;human computer interaction;optimisation;stock markets;supervised learning;unsupervised learning
deep learning (artificial intelligence);fault diagnosis;feature extraction;learning (artificial intelligence);vibrational signal processing
approximation theory;crowdsourcing;data mining;optimisation;probability;query processing
convolutional neural nets;deep learning (artificial intelligence);feature extraction;geophysical image processing;image classification;image fusion;image representation;learning (artificial intelligence);object detection;remote sensing
feature extraction;geophysical image processing;image classification;image fusion;image resolution;sensor fusion
computer aided instruction;data mining;further education;learning (artificial intelligence);matrix decomposition;recommender systems

computer aided instruction;learning (artificial intelligence);matrix decomposition;natural language processing;pattern clustering;text analysis
brain-computer interfaces;electroencephalography;learning (artificial intelligence);medical signal processing;pattern classification;pattern clustering;support vector machines
computer games;data analysis;data mining;data visualisation;Markov processes;sport
design engineering;dynamic response;error analysis;industrial robots;mathematical analysis;palletising;robot kinematics;variable structure systems
Internet of Things;resource allocation
audio signal processing;feature extraction;music
data mining;learning (artificial intelligence);stochastic processes;time series
data mining;formal specification;grammars;graph theory;learning (artificial intelligence);natural language processing;pattern classification;trees (mathematics)
data mining;graph theory;learning (artificial intelligence);natural language processing;neural nets;pattern classification;text analysis
electronic health records;health care;hospitals;integer programming;learning (artificial intelligence);medical information systems;patient care
data mining;investment;learning (artificial intelligence);optimisation;pattern classification;social networking (online);text analysis
feature extraction;image sequences;Internet of Things;learning (artificial intelligence);object detection;object tracking;regression analysis;target tracking;video signal processing;video surveillance
deep learning (artificial intelligence);Internet of Things;quality of service;reinforcement learning
learning (artificial intelligence);pattern classification;politics;social networking (online);social sciences computing;text analysis
decision making;entropy;internet of Things;optimisation
Internet;Linux;microprocessor chips;performance evaluation;statistical analysis
entropy;feature extraction;image classification;learning (artificial intelligence);matrix algebra;optimisation
graph theory;image processing;learning (artificial intelligence);matrix algebra;pattern clustering;video signal processing
learning (artificial intelligence);video surveillance
deep learning (artificial intelligence);speaker recognition;speech enhancement;speech intelligibility
geophysical image processing;graph theory;groupware;image motion analysis;image resolution;image sequences;learning (artificial intelligence);object detection;object tracking;remote sensing;temporal reasoning;video signal processing
geophysical image processing;image representation;matrix decomposition;tensors
emotion recognition;face recognition;feature extraction;image representation;learning (artificial intelligence)
human resource management;organisational aspects;project management;social sciences
convolutional neural nets;image classification;object detection;supervised learning
concave programming;convex programming;feature selection;semi-supervised learning (artificial intelligence)
image representation;learning (artificial intelligence);natural language processing
geophysical image processing;image classification;image representation;learning (artificial intelligence);radar imaging;radar polarimetry;remote sensing by radar;synthetic aperture radar
entropy;feature extraction;geophysical image processing;image resolution;image segmentation;learning (artificial intelligence);object detection;regression analysis;remote sensing
Internet;marketing data processing;organisational aspects;social networking (online);social sciences computing

feature extraction;geophysical image processing;object detection;remote sensing
computational complexity;computational geometry;data mining;feature extraction;geophysical image processing;image matching;image registration;photogrammetry;remote sensing;transforms
feature extraction;graph theory;image fusion;image motion analysis;learning (artificial intelligence);object detection;video signal processing
learning (artificial intelligence);neural nets;road traffic;telecommunication traffic;traffic engineering computing;transportation
cartography;convolutional neural nets;deep learning (artificial intelligence);feature extraction;geophysical image processing;graphics processing units;hyperspectral imaging;image classification;parallel architectures;remote sensing
backpropagation;deep learning (artificial intelligence);diagnostic radiography;diseases;feature extraction;image classification;learning (artificial intelligence);lung;medical image processing;radiology
data mining;database management systems;deep learning (artificial intelligence);health care;medical information systems;natural language processing;pattern classification;recurrent neural nets;text analysis
grammars;inference mechanisms;learning (artificial intelligence);natural language processing;neural nets;question answering (information retrieval);trees (mathematics)
feature extraction;geophysical image processing;image classification;image fusion;image representation;image resolution;land cover;learning (artificial intelligence);remote sensing
biomechanics;biomedical MRI;cardiology;diseases;echocardiography;feature extraction;image motion analysis;image segmentation;image sequences;medical image processing
computational complexity;data privacy;learning (artificial intelligence);pattern classification;pattern clustering;security of data
feature extraction;image classification;information retrieval;learning (artificial intelligence);natural language processing;pattern classification;support vector machines
cloud computing;Internet of Things;service-oriented architecture;ubiquitous computing;Web services
deep learning (artificial intelligence);gradient methods;graph theory;mathematics computing;message passing;optimisation
behavioural sciences computing;data mining;emotion recognition;feature extraction;pattern classification;text analysis;video signal processing
data mining;decision trees;greedy algorithms;image recognition;learning (artificial intelligence);optimisation;pattern classification;support vector machines;trees (mathematics)
data mining;document handling;document image processing;electronic publishing;information retrieval;Internet;pattern classification;social networking (online);text analysis
convolutional neural nets;deep learning (artificial intelligence);feature extraction;gait analysis;image motion analysis;image segmentation;object recognition;recurrent neural nets
data mining;diseases;feature extraction;learning (artificial intelligence);pattern classification;text analysis
convolutional neural nets;feature extraction;geophysical image processing;hyperspectral imaging;image classification;object detection;supervised learning
feature extraction;geophysical image processing;image classification;image representation;learning (artificial intelligence);remote sensing
feature extraction;image classification;learning (artificial intelligence);pattern classification;unsupervised learning
entropy;feature extraction;natural language processing;pattern classification;text analysis
convolutional neural nets;feature extraction;geophysical image processing;hydrological techniques;image segmentation;remote sensing;rivers
data analysis;data mining;decision making;image recognition;learning (artificial intelligence);sport
cognition;electroencephalography;medical signal processing;neurophysiology
abstracting;error correction;natural language processing;text analysis

feature extraction;geophysical image processing;hyperspectral imaging;principal component analysis
geophysical image processing;hyperspectral imaging;matrix multiplication;remote sensing
expectation-maximisation algorithm;feature extraction;Gaussian processes;image registration;image representation;learning (artificial intelligence);mixture models;probability
biological tissues;biomedical ultrasonics;cancer;deep learning (artificial intelligence);Doppler measurement;feature extraction;image classification;learning (artificial intelligence);medical image processing;tumours
cellular neural nets;computer vision;feature extraction;image motion analysis;image segmentation;image sequences;neural nets;object detection;remote sensing;sensor fusion;video signal processing
feature extraction;geophysical image processing;image classification;image fusion;image resolution;object detection;remote sensing
feature extraction;geophysical image processing;image segmentation;object detection;remote sensing
convolution;feature extraction;geophysical image processing;image classification;learning (artificial intelligence);neural nets;object detection
iterative methods;learning (artificial intelligence);pattern clustering;regression analysis;unsupervised learning
computer aided instruction;data mining;diagrams;graph theory;inference mechanisms;learning (artificial intelligence);mathematics computing;natural language processing;question answering (information retrieval);text analysis
auditing;fraud;learning (artificial intelligence);multilayer perceptrons;pattern classification;taxation
convolutional neural nets;deep learning (artificial intelligence);electroencephalography;emotion recognition;feature extraction;learning (artificial intelligence);medical signal processing;recurrent neural nets
educational institutions;emergency management;evolutionary computation;game theory
array signal processing;channel capacity;channel estimation;concave programming;deep learning (artificial intelligence);frequency division multiplexing;MIMO communication;satellite communication;telecommunication computing;telecommunication traffic;time division multiplexing;wireless channels
convolutional neural nets;image classification;image segmentation
computer network security;data privacy;Internet of Things;mobile computing;smart phones
deep learning (artificial intelligence);face recognition;feature extraction;image colour analysis;image fusion
convolutional neural nets;deep learning (artificial intelligence);feature extraction;feature selection;geophysical image processing;hyperspectral imaging;image classification;learning (artificial intelligence)
data mining;data visualisation;graph theory;learning (artificial intelligence);pattern classification;pattern clustering;unsupervised learning
convolutional neural nets;pattern classification;recurrent neural nets;sentiment analysis
computer aided instruction;knowledge management;natural language processing;social networking (online)
aquaculture;image segmentation;radar imaging;simulated annealing;synthetic aperture radar
convolutional neural nets;geophysical image processing;geophysical techniques;hyperspectral imaging;image classification;land cover;optical radar
feature extraction;geophysical image processing;hyperspectral imaging;image classification;image fusion;image texture;learning (artificial intelligence);remote sensing
deep learning (artificial intelligence);feature extraction;geophysical image processing;image fusion;image reconstruction;remote sensing
augmented reality;computer vision;image registration;medical image processing;surgery

complex networks;decoding;encoding;feature extraction;filtering theory;image resolution;interpolation;iterative methods;least squares approximations;object detection;optimisation;regression analysis;video surveillance
data mining;data privacy;mobile computing
deep learning (artificial intelligence);feature extraction;geophysical image processing;image fusion;image reconstruction;image resolution;iterative methods;learning (artificial intelligence);remote sensing;sensor fusion
just-in-time;program testing;quality assurance;software metrics;software quality;software reliability
feature extraction;geophysical image processing;image classification;image representation;image resolution;image segmentation;learning (artificial intelligence);neural nets;object detection;remote sensing
computer network management;multi-agent systems;optimisation;software defined networking;virtualisation
artificial bee colony algorithm;computational complexity;knapsack problems;optimisation;particle swarm optimisation;search problems
learning (artificial intelligence);neural nets;pattern classification;sentiment analysis;word processing
convolutional neural nets;deep learning (artificial intelligence);feature extraction;graph theory;learning (artificial intelligence);pattern clustering;random processes
computational geometry;feature extraction;image reconstruction;object detection;vegetation
feature extraction;feature selection;genetic algorithms;image representation;metaheuristics;natural scenes;pattern classification;support vector machines;text analysis
feature extraction;image representation;image retrieval;learning (artificial intelligence)
feature extraction;feature selection;image colour analysis;image representation;neural nets;optimisation
geophysical image processing;land cover;random forests;regression analysis;vegetation;vegetation mapping
deep learning (artificial intelligence);feature extraction;information retrieval;learning (artificial intelligence);software maintenance;source code (software)
cloud computing;graph theory;multiprocessing systems;programmable logic arrays;search problems;solid state drives
Bayes methods;decision making;feature extraction;gait analysis;learning (artificial intelligence);recurrent neural nets
data mining;feature extraction;feature selection;learning (artificial intelligence);pattern classification;pattern clustering;statistical analysis;text analysis;unsolicited e-mail;unsupervised learning
electroencephalography;emotion recognition;feature extraction;medical signal processing;pattern classification;signal classification;spatial filters
cloud computing;genetic algorithms;geographic information systems;Internet of Things;learning (artificial intelligence);metaheuristics;quality of service;random processes;Web services
feature extraction;graph theory;image classification;image segmentation;neural nets;remote sensing;roads
feature extraction;geophysical image processing;image classification;image representation;learning (artificial intelligence);radar imaging;synthetic aperture radar;unsupervised learning
logistics;metaheuristics;minimisation;vehicle routing
entropy;face recognition;feature extraction;Gabor filters;geophysical image processing;image classification;image segmentation;optical radar;principal component analysis;radar imaging;remote sensing by radar
computer games;feature extraction;filtering theory;graph theory;image representation;learning (artificial intelligence);spatiotemporal phenomena;sport;video signal processing
acoustic tomography;biomechanics;biomedical ultrasonics;bone;convolutional neural nets;deep learning (artificial intelligence);image reconstruction;image segmentation;medical image processing;ultrasonic imaging
deep learning (artificial intelligence);feature extraction;image representation;pattern clustering;supervised learning;unsupervised learning

image classification;image representation;pattern classification;semi-supervised learning (artificial intelligence)
biomedical MRI;convolutional neural nets;feature extraction;image enhancement;image segmentation;liver;medical image processing
neural nets;road traffic;traffic information systems
pattern classification;text analysis
feature extraction;image classification;image segmentation;learning (artificial intelligence);object detection;object recognition
data privacy;deep learning (artificial intelligence);learning (artificial intelligence);pattern classification;singular value decomposition;time series
diseases;feature extraction;learning (artificial intelligence);medical disorders;medical signal detection;medical signal processing;neural nets;pattern classification;photoplethysmography;pneumodynamics;signal classification;sleep
data augmentation;emotion recognition;face recognition;feature extraction;image classification;optimisation
convolutional neural nets;deep learning (artificial intelligence);feature extraction;geophysical image processing;image classification;image resolution;image segmentation;object detection;remote sensing
Big Data;complex networks;concurrency control;directed graphs;learning (artificial intelligence);multiprocessing systems;network-on-chip;optimisation;program compilers
Bayes methods;data mining;decision trees;genetic algorithms;information filtering;information filters;information retrieval;Internet;learning (artificial intelligence);pattern classification;recommender systems;regression analysis;search engines;social networking (online);support vector machines
edge detection;feature extraction;graph theory;image colour analysis;image fusion;image segmentation;infrared imaging;inspection;learning (artificial intelligence);power engineering computing;power transmission lines;transformer substations
convolutional neural nets;feature extraction;geophysical image processing;image classification;image representation;image segmentation;object detection;pattern clustering;radar imaging;remote sensing by radar;speckle;synthetic aperture radar;unsupervised learning
graph theory;learning (artificial intelligence);pattern clustering;tensors
automobile industry;automotive engineering;data analysis;data visualisation;design engineering;frequency-domain analysis;geometry;interactive systems;internal combustion engines;mechanical engineering computing;numerical analysis;vibrations
data visualisation;fuzzy set theory;probability;spreadsheet programs
advertising;neural nets;object detection
behavioural sciences computing;cognition;convolutional neural nets;deep learning (artificial intelligence);pattern classification;psychology;recurrent neural nets;statistical analysis;text analysis
database management systems;public domain software;security of data;Web sites
decision making;electric vehicles;fuzzy set theory;operations research;sensitivity analysis;transportation
cache storage;graph theory;project management;public domain software;security of data;software development management;software libraries;software maintenance;software quality
artificial intelligence;Big Data;blockchains;body sensor networks;cloud computing;Internet of Things;nanotechnology;reviews;telecommunication computing

INSPEC Non-Controlled Terms	Mesh_Terms	Article Citation Count	Patent Citation Count	Reference Count
experimental verification;human-centric network-based resource allocation approaches;process-aware information systems;efficient allocating human resource;business operations;enterprise;available human resources;work productivity;human resource allocation;resource allocation strategies;organizations;social network metrics;human resources allocation		1		42
system reliability;system security;scheduling strategy;processing overhead;linear distribution characteristics;discrete particle swarm optimization;cable online monitoring tasks;smart grid;Internet of Things;cable real-time online monitoring business;optimized task allocation problem;task queuing problem;delay-sensitive tasks;dynamic task allocation;edge nodes;edge computing;task allocation mechanism		3		37
active research;actual process improvement;appropriate resources;business processes;leveraging predictions;prediction models;predictive business process;predictive information;predictive process monitoring;process analysts;process instance;resource allocation				48
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cloud platform;container instances;cloud resource environment;repetitive scheduling problem;self-adapting task scheduling algorithm;task scheduling problem;cloud environment;task load;dynamic scheduling;learning automata scheduling models;nonautomata technology based algorithms;environment adaptability;container cloud;cloud computing;container technology;ADATSA;PSOS;KBS scheduling engine;QoS		7		39
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doc2vec;document semantic vector;global semantic information;global topic embedding word vector utilizing local semantic embedding word vector;local semantic information;semantic loss;semantic space;semantic Word embeddings;semantic word vector;SLDA;supervised latent Dirichlet allocation;word representation;Word2vec;w2vec model			19
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automated recognition;BERT;clinical data mining;clinical text data;clinical texts;clinically relevant text segment;CNN models;combined deep learning method;core model;direct HPO term;given CTS;HPO term assignment;Human Phenotype Ontology terms;PhenoBERT;recently developed deep learning-based methods;recognition task;state-of-the-art NLP model;traditional dictionary-based methods;two-levels CNN module	Humans;Deep Learning;Benchmarking;Data Mining;Family;Phenotype				29
Bertrand-game based framework;channel quality;distributed iterative algorithm;finite-state discrete-time Markov chain;FSDT-MC;Nash equilibrium;task-load-aware game-theoretic framework;time-varying task load;wireless federated learning					16
bridging video;two-step polishing transformer;video captioning;natural language processing;video content;natural language sentences;captions;sequence mapping;polishing mechanism;human polishing process;generate-polish framework;polish framework;two-step transformer based polishing network;caption candidate;polishing-module					58
smart systems;response time;big data networks;performance speed techniques;malicious nodes;security attack;process completion object time;adaptive trust management;data process time optimization;real-time Spark big data systems;trust management;adaptive failure-compensation;trusted streaming adaptive failure-compensation;TSAF					15
common remote sensing image datasets;data enhancement method;data-enhancing feature;existing self-supervised algorithms;fusion feature sample mining;fusion strategy;human annotation;human labeled information;natural images;network maps features;poor interpretability;prototype assignment;prototype clustering;prototypes;remote sensing image scene classification;remote sensing images;rich samples;scene information-rich characteristic;self-supervised learning;self-supervised method;self-supervised visual representation learning;unconvincing results		4			47
AI;artificial intelligence;decision-making trial and evaluation laboratory;DEMATEL approach;differentiation initiatives;disruptive role;dynamic analysis system;multiple-criteria decision analysis approach;municipality;smart city strategic planning;smart tasks;support decision-making processes;transformative role		5			77
deep data context;data quality;deep data-driven approach;relevant employee attrition model;key employee features;feature selection algorithms;attrition prediction approach;ensemble learning models;medium-sized simulated human resources datasets;employees;employee attrition prediction;data science;big data analytics;organizations;human resources managers;attracting retaining talent;big risk;people analytics approach		15			40
current consecutive limited frames;current SOTA models;data mining problem;existing state-of-the-art video salient object detection models;input video sequence;long-term approach;long-term methodology;long-term way;novel long-term iterative mining scheme;novel VSOD approach;salient object proposals;salient objects;sequential VSOD;short-term approaches;short-term methodology;spatial saliency fusion;temporal saliency fusion		4			88
business process managements;disparate services;rapidly developed Service-oriented Architecture;service discovery;service interoperation;service workflow modelling;service workflows;workflow applications;workflow architecture;workflow modeling		6			128
endmember repetition-based solution selection strategy;evolutionary algorithms;GL-EA;hyperspectral EE task;hyperspectral endmember extraction task;large-scale search space;local evolutionary algorithm;perturbation-based local search;SAD;sparse large-scale problem;spectral angle distance-based solution repair					61
community detection;text mining;unsupervised learning tasks;convex SD-MMV based NMF;smoothed group sparsity regularizer;multiple measurement vector;convex NMF formulation;tractable algorithm design;Frank-Wolfe approach;self-dictionary separable nonnegative matrix factorization;memory-efficient convex optimization;linear memory complexity algorithmic framework;noisy SD-MMV problem;Frank-Wolfe algorithm;memory cost;convex programming;greedy pursuit;separability-based NMF		2			55
fog computing;Energy-efficient Data Offloading;industrial sensor networks;Things applications;large-scale IoT applications;emergency response time;novel Energy-aware Data Offloading technique;industrial environment;emergency information;incoming tasks;EaDO strategy schedules;emergency tasks;multilevel feedback queuing policy;scheduled tasks;active computing devices;distributed fog devices;energy consumption rate		10			24
2 HNN;hyperspectral image classification;feature fusion hypergraph convolution neural network;convolution neural networks;representation learning;convolutional neural networks;HSI classification problem;existing graph convolution network-based methods;single modal feature;mature CNN method;feature fusion hypergraph neural network;multimodal features;extracted hypergraph;hypergraph convolutional neural network;fusion strategies;spectral feature fusion;spatial features;original spectral features;CNN features		2			49
intelligent video surveillance;video monitoring;FL-YOLO cooperation;surveillance video real-time analysis system;coal mine;computational cost;object detection model FL-YOLO;edge models;cloud-edge data interaction;local monitoring video;nonreal-time;edge computing;cloud computing;cloud-edge cooperation framework;memory size 16.1 MByte		15			45
utility game driven QoS optimization;cloud services market;service providers;low-cost services;booming cloud service market;service transactions;user satisfaction;provider profit;service applications					42
dynamic analysis;dynamic features;efficient operation condition division method;incremental learning method;industrial cyber-physical systems;industrial insight;industrial process;industrial roasting process;joint static analysis;operating condition;operation condition changing points;operation condition division task;operation condition information;operation condition model;operation conditions;raw data;static features		4			40

fast convergence;robustness;nonorthogonal multiple access-enabled;Markov decision process;blockchain mining tasks;data processing tasks;NOMA-enabled cooperative computation offloading;league learning;stability;scatter network;multiagent DRL framework;unstable performance;deep reinforcement learning-based algorithms;computation offloading problem;linear programming;mobile-edge computing;data process tasks;blockchain verification;computation-intensive tasks;IoT;blockchain technologies;learning approach;blockchain-empowered Internet			38		38
global dictionary;common spectral information;sequential frames;local dictionary;specific spectral information;newly added frame;representation performance;dictionary-based tasks;sequential satellite images;multiframe satellite image representation;current dictionary learning strategies;single-frame image;incremental information acquisition;global optimization;incremental dictionary learning method;multiframe satellite images representation;sparse representation;frame-by-frame gradual optimization process			1		75
MTGA-multiple GRU encoder-decoder pairs;root mean square error metrics;mean absolute error;grain policy development;grain LWR prediction;robust feature representation;grain chain;stage features;robust feature learning;reconstructed features;reconstructed loss task;grain management institutes;multitask multigated recurrent unit autoencoder;grain losses and waste rate prediction;agricultural planning			9		36
ODS:skyline query processing;cloud environment;skyline operator;cyclic dominance;Cloud-based Incomplete Data Skyline algorithm;data flow;data center;partially complete database;domination test;data incompleteness;transitivity property					47
opportunistic mobile service computing;pervasive mobile computational resources;quality-of-service;reliability-aware scheduling;Krill-Herd-based algorithm;completion time;mobile communication;time-invariant availability;mobile opportunistic networks;mobile nodes;cyber-physical environments;business processes;deadline-constrained mobile service composition method;service composition schedule;service composition templates;wireless communication technologies;real-world opportunistic contact data set			13		68
weighted aggregating stochastic gradient descent;parallel deep learning;stochastic optimization problem;scalable parallel algorithms;deep learning tasks;objective function;neural network models;parallel computing strategy;decentralized weighted aggregating scheme;local workers;weight evaluation function;state-of-the-art deep neural network classifier training techniques;WASGD scheme			6		43
critical dimensions;R&D environment;Delphi study;validation techniques;organizational structure;project success dimensions;schedule management factors					149
private sampling strategy;privacy leakage;noise injection;robust stochastic optimization;local privacy;PRESTIGE;gradual curriculum learning;label noise;robust learning process;privacy-preservation stochastic gradual learning;large-scale sensitive data handling			1		58
accurate bounding boxes;Bboxes;classless instances;discriminative features;discriminative person search framework;discriminative Re-ID features;efficient person search framework>false positive detection results;fine-grain Re-ID mode;high-quality positive samples;instance similarity loss;instance-sensitive feature learning;joint sample enhancement;jointly trained person detection stage;omni-scale Re-ID backbone;person Re-ID stage;person search datasets;sample enhancement combination;sample-specificity					52
attention mechanism;channel dependencies;channel relations;cross-modality discrepancy;cross-modality feature aggregation;cross-modality near neighbor set;discriminative local features;FAM;feature alignment;image retrieval task;intra-class variations;neighbor cross-modality loss;NNCLoss;spatial dependencies;spatial relations;target pedestrian;thermal modalities;visible modalities;visible-thermal person re-identification;VT-ReID					33
enhanced source feature-rich problem generator;open-source feature-rich problem generator;user-defined problem instances;multiobjective optimization algorithms;visualizable test problem generator;search behavior;distance-based many-objective optimization test problems;disconnected Pareto sets;dominance resistant regions			3		53
pairwise feature distances;personalized loss functions;intra-class distance reduction;one-shot person re-identification;person re-ID;unlabeled data;accurate pseudolabels;labeled pedestrian samples;multiple clustering;distribution densities;batch distance loss;global center loss;Market-1501;DukeMTMC-reID;hierarchical pseudolabeling strategy;embranchment learning framework			3		25
COVID-19 patients;advanced binary multiobjective chimp optimization method;hybridization;FS task;Harris hawk optimization;original ChOA;ChOA optimizer;HHO-based population;hybrid entities;ChOA-based individuals;real-world COVID-19 datasets;health condition;feature selection method;COVID-19 patient health prediction;enhanced binary multiobjective hybrid filter-wrapper chimp optimization;ChOA tools					72
alpha-mixing coefficients;asymptotically consistent test;beta-mixing coefficients;goodness-of-fit hypothesis tests;mixing properties;stationary ergodic process;strongly consistent estimators					18
argument extraction;user decisions;review mining;app marketplaces;app developers;machine-based annotator;app review datasets;app update planning;feature configurations;nonfunctional requirement attributes;functional requirement attribute;human assessment			6		56
actual monitoring activities;actual position;cumulative position deviation;drone monitoring failure;drone scheduling problem;DSP;dynamic dispatching strategy;emission monitoring dispatching;lightweight RL strategy;original feasible monitoring scheme;port management;position information;reinforcement learning;sea waves;vessel power;vessel speed fluctuation			2		42
suggested poisoning attack strategies;data experiments;ranking list;toxic data;pairwise comparisons;sports competitions;information retrieval;strong motivation;incentives;malicious comparisons;training data;target ranking algorithms;regression;classification tasks;pairwise ranking algorithms;dynamic games;static games;underlying integer programming problems;distributionally robust optimization problems;efficient poisoning attack algorithms	Algorithms		3		79
task selection strategy;task sets;authentic distortions;optimization-based meta-learning;generalized NR-IQA model;unseen distortions;NR-IQA metric outperforms;no-reference image quality assessment;deep meta-learning;convolutional neural networks;big training data;CNN-based NR-IQA models;meta-knowledge;diversified distortions			14		60
ABC classes;ABC classification problem;automatic classification;automatic organization;black-box processes;built classes help decision-makers;class levels;classification process;constrained clustering process;different managerial levels;existing ABC classification methods;explainable artificial intelligence;interpretable multicriteria ABC analysis;inventory classes;inventory items;item managerial classes;multicriteria ABC classification;multicriteria nature;Pareto distributed items;rapid organization;semisupervised clustering;semisupervised explainable approach;semisupervised technique					50
newer employees;assigned tasks;task assignment;nonproductive employees;constrained attribute-based access control systems;employee replacement problem;ABAC;workforce optimization;ERP			4		45
object tracking;least spatiotemporal;suspectious carurban safety management;spatiotemporal searches;massive camera records;intermediate searching;heuristic moments;heuristic indicator;predicted appearing probabilities;search hit;searching strategies;IHMs strategy;intermediate moments			3		26
automotive distributed computing applications;automotive industry;autonomous driving;ECS;electronic control systems;harsh temperature conditions;IC chips;increasing power density;multiple-core processing architecture;peak operating temperature;peak temperature;periodic applications;periodic distributed automotive application;safety guarantee;system-level reliability issues;system-wide MTTF computation;thermal aware system-wide reliability optimization;thermal gradient condition					59
computing resources;CPU computation frequency;greedy offloading algorithm;intelligent transportation services;Joint C-V2X Based Offloading;multitier computing system;multitier VEC system;multitier vehicular edge computing system;normalized transmission rate;offloading decision;offloading ratio matrix;offloading strategy subproblem;PCS-GO algorithm;resource allocation subproblem;resource requirements;roads;successful transmission probability;system performance;Uu interface;vehicular edge computing servers			1		46
NOMA-based wireless-powered networks;multiple fog servers;multifog server-assisted nonorthogonal multiple access-based wireless-powered network;energy-limited wireless device;power transmitter;multiple helping FSs;computing task;WD's performance limit;optimization problem;power allocation;computation frequency;multiple system constraints;2-optimal solution;transmit power vector;fixed-time assignment;golden section search-based algorithm;optimal time assignment;sufficiently strong computation capability;higher computation rate;achievable computation rate increases;WD's computation rate;orthogonal multiple access-based scheme;nonlinear energy harvesting model			2		53
Sentiment analysis task;Rasa open-source toolkit;valuable Natural Language Understanding infrastructure;conversational agents;different NLU-related text classification tasks;widely used datasets;movie reviews;Movie Review;Stanford Sentiment Treebank;simple configurations;NLU pipeline lead;accuracy rates;state-of-the-art architectures;Entity Transformer architecture;pre-trained word embeddings;sentiment analysis field;SST2 datasets;DIET architecture;Rasa conversational toolkit			2		73
Backend-as-a-Service;FaaS functions;cold start problem;neural Temporal Point Processes;model function invocations;probabilistic models;cold starts;function-server assignment;python-based tool;TppFaaS;OpenWhisk open-source serverless platform;neural TPPs LogNormMix;log-normal mixture distribution;multiple FaaS compositions;correctly predicted function classes;serverless computing;cloud computing paradigm;business logic;cloud service providers;resource management tasks;serverless applications;complex business processes;fine-grained function-as-a-service;serverless functions invocations modeling			4		66
information freshness-aware task offloading;air-ground integrated multiaccess edge computing system;infrastructure provider;business agreement;third-party service provider;subscribed mobile users;computing resources;stochastic games;single-agent Markov decision process;online deep reinforcement learning;computing services;Nash equilibrium;deep Q-networks;Q-factor			18		60
blockchain storage;cooperative mobile-edge computing;Internet-of-Things devices;Proof-of-Work mining process;public blockchains;mobile-edge computing-aided blockchain network;computation-intensive PoW mining tasks;base stations;block data;cloud service provider;joint computation offloading;block storage;resource service pricing problem;three-stage Stackelberg game;subgame optimization problem;iterative algorithm;Nash equilibrium;MEC-aided blockchain network;backward induction-based			20		44
multiple data sources;different learning tactics;higher education programming course;learning management system;programming automated assessment tool;multichannel sequence mining;programming assignments;complex multichannel data;learning analytics study;programming education;learning analytics research;management systems;support learning programming;programming process;understanding students			8		47

deep learning;detection speed;generalization ability;hyperparametric search;inference speed;license plate data augmentation;license plate detection;license plate test sets;lightweight recognition network;LP detection;LP images;MPNet;multiscale features;real-world driving recorders;recognition speed;traffic scenarios;two-stage ALPR framework;ultra-fast automatic license plate recognition;unconstrained scenarios;Yolov3-tiny			1		52
rare alarms predictions;Predictive Maintenance technologies;Industrial Equipment producers;customized maintenance plans;standard Predictive Maintenance approaches;sensor measurements;adding sensors;sensor readings;Alarm Forecasting problem;multilabel classification task;deep learning-based approach;MULTILabel setting;FORMULA leverages Transformer;popular Neural Network architecture;Natural Language Processing;alarm imbalance;packaging industry;alarm logs;alarm forecasting algorithm;approach leverages methodologies;real-world industrial datasets			1		45
aspiration point;Pareto optimal front;DM;preference-based EMO algorithm;reservation point;preference-based evolutionary multiobjective optimization algorithms;decision maker			1		31
back-propagation;base learners;BP;deep learning;fault detection and diagnosis;FDD;industrial machinery;meta-learner;parallel ensemble learning;parallel processing platform;particle swarm optimization;PSO					47
SIGNORA;blockchain-based framework;dataflow integrity provisioning;untrusted data pipeline;processed data;blockchain receipt;nonrepudiation guarantee;data pipeline processing;open environment;untrusted environment;off-chain processing;data payload size;off-chain solutions;reputation system;cryptographic algorithms					33
high-dimensional datasets;data volume;data mining;memory limitation;computational cost;low accuracy performance;minimum volume;improved binary version;BEO;features selection problem;EO;initialization stage;search space;local search algorithm;wrapper approaches;neighbor classifier;support vector machine classifiers;k-fold cross-validation;testing data;grey wolf optimization;grasshopper optimization;particle swarm optimization;whale optimization;sap swarm algorithms;commonly datasets;statistical analysis studies;improved equilibrium optimizer algorithm;digital devices;data representation			12		88
joint user association;power optimization;integrated satellite-aerial-terrestrial network;connected devices;IoT applications;connected cars;connected factories;network performance indicators;pervasive connectivity;I-SAT network;multiple unmanned aerial vehicles;aerial stations;terrestrial base station;satellite-receiver communication;smart vehicles;nonconvex optimization problem;transmitter-vehicle association optimization;UAV trajectory control;complete UAV flight trajectory;network service period;time segment;network simulations			8		36
accurate land cover information;attention enhancement network;attention-based;complementary information properties;composite attention module;cross-attention;cross-modal information enhancement;feature representations;fusion module;HSI;hyperspectral image;interesting research topic;LIDAR data;light detection;MSLAENet;multimodal data;multimodal remote sensing datasets;multiscale learning module;state-of-the-art fusion model			1		46
system dynamics;development task schedule;development task duration;development task activities;development error;concept development;product development process;requirement change			1		45
disjoint group;attribute values;reliable sources;diversified sources;hotspot research topic;truth discovery methods attempt;reliable data sources;truth discovery task;sufficient information;trustworthy information;related entities;constrained truth discovery problem;constrained optimization problem			7		36
critical latent features;different missing patterns;error accumulation issues;existing traffic speed prediction models;graph-based spatio-temporal autoencoder;imputation model;intelligent transportation systems;investigated missing scenarios;missing data;model training process;multitask learning approach;parallel tasks;practical missing rate range;prediction horizons;prediction model;rare missing values;raw data;real-world traffic data;real-world traffic datasets;spatio-temporal traffic speed prediction;state-of-the-art traffic prediction;temporal learning;values methods;wide rate range					52
adversarial attack algorithms;adversarial attacks;AI applications;clean data;combinatorial optimization problems;deep learning models;fundamental building blocks;Label Flipping Attack problem;LFA;malicious attacks;model complexity;novel minimax problem;optimization problem;poisonous attack setting;sample masking;sample selection operation;sample selection process;security properties;severe security concerns;single thresholding parameter;surrogate model;training algorithm called Sample Thresholding;training data;victim model					59
dual-branch decoder;collaborative probability loss;FA branch;semantic refinement branch;benchmark HRS imagery segmentation datasets;FactSeg;large-scale remote sensing imagery;high-resolution remote sensing imagery;large-scale coverage areas;foreground activation-driven small object semantic segmentation framework;structure design;FA object representation framework;key object extraction;large-scale background suppression;small object mining-based network optimization;SOM			16		57
B5G;back-end cloud base stations;BC environment;beyond 5G wireless networks;computational complexity;data parallelism technique;DDPG;deep-deterministic policy gradient;discrete action space-based methods;distributed training approach;suites;edge-cloud system;function approximation;gated recurrent unit;heuristic-based priority experience replay method;INPER;integrated EC environment;intelligent resource management techniques;Internet-of-Things;IoT traffic;local term temporal information;machine learning-based approaches;MFA problem;multiresource allocation;optimization problems;real-time traffics;temporal feature learning attentional network model;TFLAN agent;wireless resources					59
complex data processing pipelines;remote high throughput ML task execution;ML algorithms;mainstream developers;ML-based AI;self-explanatory code;advanced artificial intelligence applications;machine-learning application frameworks;unprecedented scale;scalable machine learning;Algorithm-agnostic architectures;underlying algorithms;execution details;multiclient ML tasks;task scheduling;ASML architecture;end-to-end ML pipelines;abstraction framework;high throughput applications;novel system architecture;production ML use cases			1		56
universal feature space;data streams mining;data instance;Generative Learning With Streaming Capricious data;GLSC data;generative graphical model			12		48
greedy optimization method;scientific articles;PubMed datasets;variable neighborhood search;ROUGE scores;minimum document frequency parameter tuning;TFIDF vectorization;greedy extractive summarization algorithm;extractive text summarization quality;arXiv datasets;complex neural network architectures;serious computational resources;statistical inference			1		38
multichannel diffusion graph convolutional network;liquid steel;MCDGON;element concentrations;unique K-hop diffusion method;converter steelmaking process;comprehensive process model;graph deep learning;prediction performance;endpoint composition prediction;hot metal smelting;quality index;production optimization;correlation mining			12		41
biobjective robust incentive mechanism design;large-scale data collection;multiobjective problem;single objective problem;crowdsensed data;system robustness;auction-based biobjective robust mobile crowdsensing system;independent objective functions;robust user selection problem;designed incentive mechanisms;tightened RUS problem;multiobjective robust mobile crowdsensing systems;biobjective mobile crowdsensing systems			5		46
Stanford Sentiment Treebank;feature selection model;evolutionary multiobjective feature selection;prominent research areas;data mining;knowledge discovery;public opinion;big data era;utilizing sentiment analysis;accurate sentiment analysis;irrelevant data;redundant data;hybrid feature selection algorithm;sentiment analysis tasks;sentiment analysis approach;feature selection techniques;evolutionary algorithm			6		71
auxiliary aggregation;benchmark techniques;data mining tasks;DATM;improved effectiveness;Latent Dirichlet Allocation;LDA-style techniques;neural topic models;novel data agnostic topic modeling technique;novel data transformation approach;seminal topic modelling techniques;topic discovery;traditional topic modelling techniques;word co-occurrence					62
adaptive domain adaptation method;complex working conditions;cross-domain invariance;deep feature extraction network;deep learning;deep transfer learning;depth feature extraction network;depth features;domain adversarial neural network;fault diagnosis model;fault state discrimination;used extraction;global statistical feature matrix;global time-frequency features;gradient inversion adversarial strategy;high-dimensional spatial distribution difference evaluation;insufficient valid data samples;intelligent fault diagnosis methods;local time-frequency features;multiscale time-frequency feature map;optimization method;residual network;ResNet;rolling bearings;SAM networks;self-attention mechanism;time-frequency analysis;variable working condition transfer fault diagnosis tasks;variable working conditions			3		51
hybrid feature selection methods;English text classification;text mining;modified hybridized metaheuristic algorithms;text FS problems;metaheuristic-based FS methods;hybrid-based FS approach;wrapper method;TC;research questions;complex optimization problems			5		66
Chinese manufacturing firms;individual service-oriented cognition;information technology tools;joint effects;organizational information processing theory;organizational IT;service-oriented corporate culture;services supporting clients;services supporting products;servitization-customer loyalty link;servitized firms;social media;SSC-SM-culture interaction;SSP-OIT-culture interaction			2		97
data mining;data point;feature weighted;feature weights;fundamental problem;graph structure;high-dimensional data;intrinsic structure;manifold learning;noise features;projected adaptive neighbors;projection matrix;spectral analysis;unsupervised feature selection model;unsupervised methods			4		39
predefined aspect categories;relevant entities;previous deep learning;large-scale pre-trained language models;complete computed attention weights;attention assignment;original attention mechanism;ABSA;sentiment polarity;attention weight threshold;attention scores;lower score parts;MultiAspect MultiSentiment;state-of-the-art pre-trained language models;simple self-attention;unrestricted attention;need-masked attention mechanism focuses better relevant parts;Aspect-Based Sentiment Analysis;highly challenging tasks;natural language processing;fine-grained sentiment information;user-generated reviews			7		56

multisampled vision transformer MPSTT;average DSC;Synapse dataset;progressive sampling module;MRI images;CT images;treatment planning;disease diagnosis;multiple organs;medical image segmentation;magnetic resonance images;clinical Computed Tomography images;multiple progressive sampling hybrid model multiorgan segmentation;previous CNN-Transformer hybrid model	Humans;Tomography, X-Ray Computed;Abdominal Cavity;Diagnosis, Computer-Assisted;Heart;Kidney			36
microservice architectures;microservice-based application;deployment parameters;microservice deployment alternatives		11		49
multiset membership lookup;data item;canonical membership lookup;high-accuracy lookup;lookup algorithm design;compact data structures;lookup algorithms;high lookup accuracy;supporting interactive query processing;subset ID;balanced data structure				25
fixed context;Deformable Self-Attention;predefined fixed sizes;contextual information;natural language processing;text classification;irrelevant features;word-specific contextual features;different context;DLAWG module;MultiRange Feature Integration module;Deformable Local Attention Weight Generation module		5		54
budget allocation problem;different edge servers;edge computing service;IoT blockchain;IoT devices;pricing		4		33
attention-based network architectures;expert-designed deep neural network architectures;image classification;lightweight reID model;NAS approaches;neural architecture search;person reID backbone;person reidentification;reID architectures;reID task;reID-based search space;reID-NAS;three-person reID datasets	Humans;Biometric Identification;Neural Networks, Computer;Image Processing, Computer-Assisted;Pedestrians	2		73
response time minimization;caching-assisted vehicular edge computing;computational resources;latency-sensitive requirements;communication models;application-oriented caching;infinite time-slotted horizon;long-term energy consumption constraint;caching-assisted VEC system;Lyapunov optimization technology;greedy heuristics;drift-plus-penalty-based algorithm		12		29
ImageNet pre-training methods;remote sensing images;self-supervised semantic-aware;remote sensing imageries;deep learning-based methods;large-scale labeled data;novel self-supervised semantic segmentation framework;image inpainting;pixel-level pretext task;conventional random inpainting strategy;novel adversarial training scheme;instructor network;painting network;Remote Sensing Potsdam dataset;state-of-the-art self-supervised methods		1		19
wave energy site selection;Australia;published numerical data;data envelopment analysis;Fuzzy BWM;feasible locations;analytic hierarchy process;weighting criteria;multiple criteria decision-making problems;simulation-based optimization integrated multiple criteria decision-making framework;feasible conditions;linguistic judgments of experts;fuzzy best-worst method;simulation-based fuzzy multicriteria interactive decision-making method;simulation-based fuzzy TODIM;location selection;multicriteria evaluation;DEA/AHP		9		68
CNN-transformer network;multiscale context aggregation;fine-grained cropland change detection;nonagriculturalization incidents;local agricultural ecosystem;global food security;sensing change detection;in-time detection;high-resolution images;long-range context information;computational complexity;deep layers;MSCANet;CNN-based feature extractor;transformer-based MSCA;CNN classifiers;change maps;cropland change detection dataset;high-resolution semantic CD dataset;cropland CD;size 0.5 m to 2.0 m		28		51
very high spatial resolution images;multispectral data fusion;multilevel heterogeneous feature fusion module;multispectral images;random forest;feature selection method;MSQSCD datasets;MSBC datasets;multisource OSCD datasets;multisource built-up change datasets;optical RGB feature extraction;complex background information;multisource CD UNet++;deep learning framework;VHR images;refined spatial features;natural landscape changes;complex background information;CD models;high spatial resolution remote sensing data;SAR;area change detection;MSCDUNet;VHR data fusion		3		68
communication scheduling;computation constraints;computing resource;edge computing system;first-order Gauss-Markov process;mix-integer nonconvex problem;multiaccess edge computing service;novel UAV-aided vehicular edge computing network;on-board UAV/short-packet transmission;signal-to-noise ratio;Things devices;time-varying channel;UAV-aided vehicular short-packet communication				38
time-consuming task;residential customers;power consumption time series;leveraging power consumption data;efficient phase identification;accurate phase identification;based data mining method;distribution management system type operation;future grid planning;hard time-consuming task;network topology;power grid;locally controlled element;most dynamic element;observable element;machine learning-enabled distribution network phase identification		23		30
adaptive weights splitting;auto-weighted tensor nuclear norm minimization;clustering-friendly affinity matrix;comprehensive subspace representation;data features;implicit weights splitting;intrinsic multiattribute features;intrinsic multiattribute information;low-rank tensor approximation;MASC;multiattribute representations;multiple subspace representations;nonconvex AWTNN;novel multiattribute subspace clustering model;one-attribute self-representation;original data feature;self-expressiveness based subspace clustering methods;single self-representation;unsupervised learning tasks				72
SA-MDP;data utility;data privacy;minable data publication problem;optimized sanitization approach;data-driven tasks		1		32
analysis learning management systems;software product information security risk assessment;risk assessment model;fuzzy expert system				24
link blockage;mmWave radio propagation;system-centric performance;system resource utilization;multiconnectivity benefits;ongoing session drop probability;radio resources;guard capacity reserves;multiple pre-established spatially-diverse links;guard capacity mechanisms;5G New Radio technology;human-body blockage;millimeter wave links;millimeter-wave 5G NR systems;improved session continuity		10		39
action instance;action prototypes;compact feature representations;compact representation;corresponding labels;feature learning module;intra-action variation;localization-by-classification pipeline;noisy classification learning;point-level weakly-supervised action localization;point-level weakly-supervised temporal action localization;probabilistic pseudolabel mining module;pseudosamples;reliable classification learning;single point label;sparse frame-level annotations;temporal extents;unreliable pseudotraining samples				82
multiple tuning methods;Celta system;derivative-free optimization-based tuning techniques;optimal Hadoop parameters;noninvasive MapReduce performance tuning;190 configuration parameters;MapReduce job;self-tuning system;automated manner		2		44
low frequency information;high frequency information;bit-depth recovery tasks;bit-depth enhancement;low bit-depth image;residual-optimized BDE algorithms;convolutional neural networks;BDE residual recovery;image frequency characteristics;iterative residual feature optimization strategy;iterative residual feature refinement network;high bit-depth image restoration;HBD;LBD;CNN;implicit error correction mechanism;JRFNN				33
ADASYN;COVID patients;Bayesian optimization;COVID-19 detection;inpatient facility data;pandemic situation;virus;COVID-19 patients;machine learning;classifier;adaptive synthetic algorithm;shapely adaptive explanations analysis;ADASYN algorithm;extreme gradient boosting;clinical operable decision tree;decision support system;recommender system		39		64
microgrid-based educational building;google trends;COVID-19 pandemic;electricity demand;building operators;accurate electricity consumption prediction models;internet data;microgrid-based buildings;operational planning efficacy;google mobility;social restriction policies;extreme gradient boosting;support vector regression;autoregressive integrated moving average with explanatory variable models;SVR models;Bandung;ARIMAX models;Indonesia;XGBoost models;West Java		1		54
aesthetic score distribution prediction;comment-guided semantics-aware image aesthetics assessment method;corresponding comments;image aesthetics prediction;image features;layerwise feature fusion method;multitask learning framework;rich semantic information;rich semantics;semantic features;state-of-the-art image aesthetics assessment methods;topic feature prediction task;topic features;visual features				39
ASV;automatic speaker verification;domain-invariant representations;domain-invariant speaker verification;gradient-based metaoptimization;metageneralized speaker verification;metalearning;metric-based distribution optimization;MGSV;simulated speaker verification sampling strategies;single-domain strategies;single-single strategies;speaker-related knowledge;speaking styles		2		63
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multimodality MRI image synthesis;magnetic resonance imaging;multimodality MRI images;task-specific scan parameters;existing modality images;missing modality image;novel confidence-guided aggregation;cross-modality refinement network;multiple modalities;high-quality target-modality images;complementary modality-specific characteristics;confidence-guided aggregation module;multiple target-modality images;multiple source-modality images;aggregated target-modality image;cross-modality refinement module;sharp target-modality	Humans;Image Processing, Computer-Assisted;Magnetic Resonance Imaging	1		42
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virtual mobile devices;multipersona mobility;joint cost-effective;resource-aware mobile-edge computation offloading;multipersona mobile computing;personal devices;mobile edge computing;mobile terminals;intelligent computations offloading services;resource scarcity;mobile edge-based services;persons resources;cost-effective MEC-based solution;two-level multiobjective optimization;intelligent offloading decision model;augmenting virtual mobile instances performance;physical devices;minimal offloading service fees;redesigned smart genetic-based method;offloading strategy			12	38
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polytropic working conditions;data distribution;domain adaptation framework;multiscale mixed domain feature;cross-domain intelligent fault diagnosis;mixed domain feature extraction;manifold embedded distribution alignment method;cross-domain diagnosis;rolling bearing datasets;transfer diagnosis;variational mode decomposition;DA-MMDF;VMD;extreme gradient promotion;sensitive feature selection;state information mining;vibration signal;mechanical equipment;transfer learning			31	58
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binmargin loss;classification performance;current prototypical network;different granularities;expensive manually-annotating cost;few-shot RC tasks;granularity-aware area prototypical network;granularity-aware measurement;inter-relation dispersion;intra-relation compactness;long-tail problem;prototypical networks;shot relation Classification			2	50
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weighted heterogeneous information;student historical data;data preprocessing;heterogeneous educational information;freshmen appropriate recommendations;isomorphic information;correct choices;traditional higher education;unprecedented challenges;global explosion;COVID-19 storm;personalized freshmen recommendation;weighted heterogeneous educational network embedding			3	45

unannotated code;semantics;normalized pointwise mutual information;test dataset;current dataset;semantically coherent clusters;14 university professors;learned concepts;external dataset;latent Dirichlet allocation techniques;nonnegative matrix factorization;code structure information;representative text documents;Computer Science 1 teacher-provided code solutions;computer science teachers;topic modeling techniques;unsupervised semantic models;recommendation engines;mastery level assessment;virtual learning environment;challenging time-consuming process;topic modeling methods;introductory Computer Science exercises			1		66
EEG decoding;accurate electroencephalogram patterns;specific mental tasks;brain-computer interface;considerably low signal-to-noise ratio;brain scalp;machine learning;EEG patterns;underlying data structures;sample distribution;suboptimal decoding accuracy;intrinsic distribution structure;EEG data;clustering-based multitask feature learning algorithm;improved EEG pattern decoding;affinity propagation-based;encoded label matrix;novel multitask learning algorithm;subclass relationship;pattern features;uncovered subclasses;linear support vector machine;optimized features;data sets	Brain-Computer Interfaces;Cluster Analysis;Electroencephalography;Machine Learning;Neural Networks, Computer		10		77
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adenocarcinoma subtypes;b-mode ultrasound;dynamic contrast-enhanced ultrasound;encoded clinical information;high-level BUS semantic feature maps;histologic subtypes;histological subtypes;initiating timely therapy;metastatic cervical lymphadenopathy;metastatic CLA;modality heterogeneity features;modality information;modality interaction;modality-specific characteristics;multimodal fusion methods;multimodal ultrasound fusion framework;primary lesion;self-supervised feature orthogonalization loss;static imaging feature vector;three-step process;ultrasound based Multistep Modality Fusion Network	Humans;Ultrasonography;Elasticity Imaging Techniques;Adenocarcinoma;Lymphadenopathy;Semantics			38
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IEEE	6 Apr 2022			IEEE	IEEE Journals
IEEE	22 Mar 2022			IEEE	IEEE Journals
IEEE	28 Nov 2022			IEEE	IEEE Journals
IEEE	28 Jun 2021			IEEE	IEEE Journals
CCBY	16 May 2023			IEEE	IEEE Journals
IEEE	17 Jun 2021			IEEE	IEEE Journals
IEEE	22 Sep 2020			IEEE	IEEE Journals
CCBY	22 Dec 2020			IEEE	IEEE Journals
IEEE	12 Jul 2022			IEEE	IEEE Journals
CCBY	23 Mar 2021			IEEE	IEEE Journals
CCBYNCND	2 Mar 2023			IEEE	IEEE Journals
IEEE	10 Mar 2022			IEEE	IEEE Journals
CCBYNCND	6 Mar 2023			IEEE	IEEE Journals
IEEE	10 Jun 2021			IEEE	IEEE Journals
IEEE	3 Mar 2021			IEEE	IEEE Journals
CCBY	26 Aug 2022			IEEE	IEEE Journals
CCBYNCND	10 Jun 2022			IEEE	IEEE Journals
IEEE	7 Jun 2022			IEEE	IEEE Journals
IEEE	21 Mar 2022			IEEE	IEEE Journals
IEEE	5 Dec 2022			IEEE	IEEE Journals
CCBY	17 Dec 2020			IEEE	IEEE Journals

IEEE	29 Apr 2022			IEEE	IEEE Journals
IEEE	24 Mar 2021			IEEE	IEEE Journals
CCBYNCND	15 Feb 2023			IEEE	IEEE Journals
CCBY	7 Dec 2022			IEEE	IEEE Journals
IEEE	20 Jul 2022			IEEE	IEEE Journals
CCBYNCND	11 Jan 2021			IEEE	IEEE Journals
CCBY	14 Jun 2023			IEEE	IEEE Journals
CCBY	5 Apr 2023			IEEE	IEEE Journals
IEEE	1 Feb 2019			IEEE	IEEE Journals
CCBYNCND	22 May 2023			IEEE	IEEE Journals
CCBY	15 Dec 2022			IEEE	IEEE Journals
CCBY	5 Apr 2021			IEEE	IEEE Journals
CCBYNCND	9 Feb 2022			IEEE	IEEE Journals
IEEE	17 Aug 2022			IEEE	IEEE Journals
CCBY	8 Sep 2021			IEEE	IEEE Journals
CCBYNCND	1 May 2023			IEEE	IEEE Journals
IEEE	3 Mar 2022			IEEE	IEEE Journals
IEEE	19 Feb 2021			IEEE	IEEE Journals
CCBY	21 May 2021			IEEE	IEEE Journals
IEEE	21 Oct 2020			IEEE	IEEE Journals
IEEE	7 Aug 2020			IEEE	IEEE Journals
CCBY	15 Feb 2022			IEEE	IEEE Journals
CCBY	16 Mar 2022			IEEE	IEEE Journals
	9 Sep 2022			BIAI	BIAI Journals
IEEE	5 Jun 2020			IEEE	IEEE Journals
IEEE	3 Mar 2022			IEEE	IEEE Journals
IEEE	8 Dec 2022			IEEE	IEEE Journals
IEEE	25 Jul 2022			IEEE	IEEE Journals

IEEE	14 Mar 2022			IEEE	IEEE Journals
IEEE	14 Sep 2021			IEEE	IEEE Journals
IEEE	5 Aug 2020			IEEE	IEEE Journals
CCBY	26 Jul 2021			IEEE	IEEE Journals
IEEE	24 Feb 2021			IEEE	IEEE Journals
IEEE	5 Oct 2022			IEEE	IEEE Journals
CCBYNCND	6 Dec 2021			IEEE	IEEE Journals
IEEE	2 Aug 2022			IEEE	IEEE Journals
CCBY	18 Jan 2023			IEEE	IEEE Journals
IEEE	9 Feb 2023			IEEE	IEEE Journals
IEEE	6 Apr 2021			IEEE	IEEE Journals
CCBY	1 Aug 2022			IEEE	IEEE Journals
IEEE	21 Oct 2022			IEEE	IEEE Journals
IEEE	3 May 2021			IEEE	IEEE Journals
IEEE	25 Aug 2021			IEEE	IEEE Journals
IEEE	4 Oct 2022			IEEE	IEEE Journals
IEEE	11 Oct 2021			IEEE	IEEE Journals
CCBY	3 Mar 2022			IEEE	IEEE Journals
CCBY	21 Oct 2021			IEEE	IEEE Journals
CCBY	10 Aug 2022			IEEE	IEEE Journals
CCBYNCND	10 Apr 2023			IEEE	IEEE Journals
IEEE	31 Dec 2020			IEEE	IEEE Journals
CCBYNCND	28 Feb 2023			IEEE	IEEE Journals