RUNLONG YU

Email: ryu5@ua.edu

EDUCATION

Ph.D. │ *Major: Computer Science*	Jun. 2023
University of Science and Technology of China (USTC)	Hefei, China
B.E. │ *Major: Computer Science*	Jun. 2017
University of Science and Technology of China (USTC)	Hefei, China

PROFESSIONAL EXPERIENCES

Tenure-Track Assistant Professor	Aug. 2025 – present
Department of Computer Science, University of Alabama	Tuscaloosa, USA
Postdoctoral Associate	Sep. 2023 – Aug. 2025
Department of Computer Science, University of Pittsburgh	Pittsburgh, USA
Research Intern	Jul. 2019 – Jan. 2020
Data Application Center, Technology Engineering Group, Tencent	Shenzhen, China

HONORS AND AWARDS

IEEE ICDM Best BlueSky Paper Award (First Prize)	2025
Foundation: Computing Community Consortium (CCC) & IEEE	
IEEE ICDM Best Paper Award Candidate	2025
Foundation: IEEE	
Gold Medal of Anhui Province "Internet+" College Student Innovation Competition	2021
Foundation: Department of Education of Anhui Province	
Champion of the CCF BDCI Fighting Epidemics Big Data Charity Challenge	2021
Foundation: Beijing Municipal Bureau of Economy and Information Technology & CCF	
China National Scholarship	2019
Foundation: Ministry of Education of P.R.China	
KDD CUP 2019 Regular ML Track PaddlePaddle Special Award	2019
Foundation: ACM	
Third Runner-up of China Big Data and Artificial Intelligence Innovation Competition	2018
Foundation: Hefei Data Resources Bureau	
Suzhou Industrial Park Scholarship	2018
Foundation: Suzhou Industrial Park	
GDC Technology Scholarship	2018
Foundation: GDC Technology company	
First Prize of Chinese Physics Olympiad	2012
Foundation: Chinese Physical Society	

SELECTED PUBLICATIONS

Publications Since Joining UA (2025–Present)

Journal Articles

1. **Runlong Yu**, Yiqun Xie, Xiaowei Jia. Environmental Computing as a Branch of Science, *Communications of the ACM (CACM)*, v 68, n 7, pages 92-94, 2025. *Impact Factor: 22.7*

Conference Articles

1. Yiheng Chen, Lingyao Li, Zihui Ma, Qikai Hu, Yilun Zhu, Min Deng, **Runlong Yu**. Empowering LLM Agents with Geospatial Awareness: Toward Grounded Reasoning for Wildfire Response, *Submitted to ACL Rolling Review (ACL ARR)*, received a recommendation, 2026.

2. Naiyi Li, Zihui Ma, **Runlong Yu**, Lingyao Li. LSDTs: LLM-Augmented Semantic Digital Twins for Adaptive Knowledge-Intensive Infrastructure Planning, *AAAI Conference on Artificial Intelligence (AAAI)*, accepted, to be published, 2026. *AISI Track Acceptance Rate: 24.1%*

3. Shiyuan Luo, Chonghao Qiu, **Runlong Yu**, Yiqun Xie, Xiaowei Jia. GREAT: Generalizable Representation Enhancement via Auxiliary Transformations for Zero-Shot Environmental Prediction, *AAAI Conference on Artificial Intelligence (AAAI)*, accepted, to be published, 2026. *AISI Track Acceptance Rate: 24.1%*

4. **Runlong Yu**, Xiaowei Jia. Truth Without Comprehension: A BlueSky Agenda for Steering the Fourth Mathematical Crisis, *IEEE International Conference on Data Mining (ICDM), BlueSky Track*, pages 2476–2480, 2025. *Best BlueSky Paper Award (First Prize)*

5. Shiyuan Luo*, **Runlong Yu***, Chonghao Qiu, Rahul Ghosh, Robert Ladwig, Paul C. Hanson, Yiqun Xie, Xiaowei Jia. Learning to Retrieve for Environmental Knowledge Discovery: An Augmentation-Adaptive Self-Supervised Learning Framework, *IEEE International Conference on Data Mining (ICDM)*, pages 527–536, 2025. (*equal contribution) *Best Paper Award Candidate; Regular Paper Acceptance Rate: 13.5%*

6. Shiyuan Luo, **Runlong Yu**, Shengyu Chen, Yingda Fan, Yiqun Xie, Yanhua Li, Xiaowei Jia. Geo-Aware Models for Stream Temperature Prediction across Different Spatial Regions and Scales, *ACM International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL)*, pages 124–136, 2025. *Acceptance Rate: 26.0%*

7. Lingyao Li, Dawei Li, Zhenhui Ou, Xiaoran Xu, Jingxiao Liu, Zihui Ma, **Runlong Yu**, Min Deng. LLMs as World Models: Data-Driven and Human-Centered Pre-Event Simulation for Disaster Impact Assessment, *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, pages 3078–3096, 2025. *Main Conference Acceptance Rate: 22.1%*

Publications Prior to UA (Before 2025)

Journal Articles

1. **Runlong Yu**, Qi Liu, Yuyang Ye, Mingyue Cheng, Enhong Chen, Jianhui Ma. Collaborative List-and-Pairwise Filtering from Implicit Feedback, *IEEE Transactions on Knowledge and Data Engineering (IEEE TKDE)*, v 34, n 6, pages 2667-2680, 2022. *Impact Factor: 8.9*

2. **Runlong Yu**, Hongke Zhao, Zhong Wang, Yuyang Ye, Peining Zhang, Qi Liu, Enhong Chen. Negatively Correlated Search with Asymmetry for Real-Parameter Optimization Problems, *Journal of Computer Research and Development (J-CRAD)*, v 56, n 8, pages 1746-1757, 2019. *Class A by China Computer Federation*

3. Yin Gu, Kai Zhang, Qi Liu, Haojie Yuan, **Runlong Yu**. π-eLight: Programmatic Interpretable Reinforcement Learning for Effective Traffic Signal Control, *IEEE Transactions on Mobile Computing (IEEE TMC)*, Early Access, 2025. *Impact Factor: 7.7*

4. Xiaojie Li, **Runlong Yu**, Lei Chen, Shengjun Liu, Enhong Chen. Process Optimization of Multi-stage Continuous Production System Based on Feature Fusion Modeling, *IEEE Transactions on Automation Science and Engineering (IEEE T-ASE)*, Early Access, 2025. *Impact Factor: 5.4*

5. Kai Zhang, Hongbo Gang, Feng Hu, **Runlong Yu**, Qi Liu. Adaptive ensemble learning for efficient keyphrase extraction: Diagnosis, aggregation, and distillation, *Expert Systems with Applications (ESWA)*, v 278, Article 127236, 2025. *Impact Factor: 7.5*

6. Yuyang Ye, Hengshu Zhu, Tianyi Cui, **Runlong Yu**, Le Zhang, Hui Xiong. University Evaluation through Graduate Employment Prediction: An Influence based Graph Autoencoder Approach, *IEEE Transactions on Knowledge and Data Engineering (**IEEE TKDE**)*, v 36, n 11, pages 7255-7267, 2024. *Impact Factor: 8.9*

7. Yuyang Ye, Zheng Dong, Hengshu Zhu, Tong Xu, Xin Song, **Runlong Yu**, Hui Xiong. MANE: Organizational Network Embedding with Multiplex Attentive Neural Networks, *IEEE Transactions on Knowledge and Data Engineering (**IEEE TKDE**)*, v 35, n 4, pages 4047-4061, 2023. *Impact Factor: 8.9*

8. Huijie Liu, Han Wu, Le Zhang, **Runlong Yu**, Ye Liu, Chunli Liu, Minglei Li, Qi Liu, Enhong Chen. A Hierarchical Interactive Multi-channel Graph Neural Network for Technological Knowledge Flow Forecasting, *Knowledge and Information Systems (**KAIS**)*, v 64, n 7, pages 1723-1757, 2022. *Impact Factor: 2.5*

9. Qixiang Shao, **Runlong Yu**, Hongke Zhao, Chunli Liu, Mengyi Zhang, Hongmei Song, Qi Liu. Toward Intelligent Financial Advisors for Identifying Potential Clients: A Multitask Perspective, *Big Data Mining and Analytics (**BDMA**)*, v 5, n 1, pages 64-78, 2022. *Impact Factor: 11.8*

Conference Articles

1. **Runlong Yu***, Shengyu Chen*, Yiqun Xie, Xiaowei Jia. A Survey of Foundation Models for Environmental Science, *Pacific Asia Conference on Knowledge Discovery and Data Mining (**PAKDD**)*, pages 39-57, 2025. (*equal contribution) *Accepted to Data Science: Foundations and Applications (DSFA) Session*

2. **Runlong Yu**, Yiqun Xie, Xiaowei Jia. What We Talk About When We Talk About AI for Science, *SIAM International Conference on Data Mining (**SDM**)*, pages 439-442, 2025. *Invited Blue Sky Idea*

3. **Runlong Yu**, Chonghao Qiu, Robert Ladwig, Paul C. Hanson, Yiqun Xie, Xiaowei Jia. Physics-Guided Foundation Model for Scientific Discovery: An Application to Aquatic Science, *AAAI Conference on Artificial Intelligence (**AAAI**)*, v 39, n 27, pages 28548-28556, 2025. *AISI Track Acceptance Rate: 23.3%*

4. **Runlong Yu**, Chonghao Qiu, Robert Ladwig, Paul C. Hanson, Yiqun Xie, Yanhua Li, Xiaowei Jia. Adaptive Process-Guided Learning: An Application in Predicting Lake DO Concentrations, *IEEE International Conference on Data Mining (**ICDM**)*, pages 580-589, 2024. *Regular Paper Acceptance Rate: 10.9%*

5. **Runlong Yu**, Robert Ladwig, Xiang Xu, Peijun Zhu, Paul C. Hanson, Yiqun Xie, Xiaowei Jia. Evolution-based Feature Selection for Predicting Dissolved Oxygen Concentrations in Lakes, *International Conference on Parallel Problem Solving from Nature (**PPSN**)*, pages 398-415, 2024. *Acceptance Rate: 34.4%*

6. **Runlong Yu**, Xiang Xu, Yuyang Ye, Qi Liu, Enhong Chen. Cognitive Evolutionary Search to Select Feature Interactions for Click-Through Rate Prediction, *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**)*, pages 3151-3161, 2023. *Research Track Acceptance Rate: 22.1%*

7. **Runlong Yu**, Qi Liu, Yuyang Ye, Mingyue Cheng, Enhong Chen, Jianhui Ma. Collaborative List-and-Pairwise Filtering from Implicit Feedback (Extended Abstract), *IEEE International Conference on Data Engineering (**ICDE**)*, pages 3801-3802, 2023. *Invited Extended Abstract*

8. **Runlong Yu**, Yuyang Ye, Qi Liu, Zihan Wang, Chunfeng Yang, Yucheng Hu, Enhong Chen. XCrossNet: Feature Structure-Oriented Learning for Click-Through Rate Prediction, *Pacific Asia Conference on Knowledge Discovery and Data Mining (**PAKDD**)*, pages 436-447, 2021. *Acceptance Rate: 20.4%*

9. **Runlong Yu**, Yunzhou Zhang, Yuyang Ye, Le Wu, Chao Wang, Qi Liu, Enhong Chen. Multiple Pairwise Ranking with Implicit Feedback, *ACM Conference on Information and Knowledge Management (**CIKM**)*, pages 1727-1730, 2018. *Short Paper Acceptance Rate: 23.4%*

10. Yiming Sun, **Runlong Yu**, Runxue Bao, Yiqun Xie, Ye Ye, Xiaowei Jia. Domain-Adaptive Continual Meta-Learning for Modeling Dynamical Systems: An Application in Environmental Ecosystems, *SIAM International Conference on Data Mining (**SDM**)*, pages 297-306, 2025. *Acceptance Rate: 26.7%*

11. Yingda Fan, **Runlong Yu**, Janet Rice Barclay, Alison P. Appling, Yiming Sun, Yiqun Xie, Xiaowei Jia. Multi-Scale Graph Learning for Anti-Sparse Downscaling, *AAAI Conference on Artificial Intelligence (**AAAI**)*, v 39, n 27, pages 27969-27977, 2025. *AISI Track Acceptance Rate: 23.3%*

12. Yuyang Ye, Zhi Zheng, Yishan Shen, Tianshu Wang, Hengruo Zhang, Peijun Zhu, **Runlong Yu**, Kai Zhang, Hui Xiong. Harnessing Multimodal Large Language Models for Multimodal Sequential Recommendation, *AAAI Conference on Artificial Intelligence (**AAAI**)*, v 39, n 12, pages 13069-13077, 2025. *Acceptance Rate: 23.4%*

13. Xiang Xu, Hao Wang, Wei Guo, Luankang Zhang, Wanshan Yang, **Runlong Yu**, Yong Liu, Defu Lian, Enhong Chen. Multi-granularity Interest Retrieval and Refinement Network for Long-Term User Behavior Modeling in CTR Prediction, *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**)*, pages 2745-2755, 2025. *ADS Track Acceptance Rate: 22.0%*

14. Yin Gu, Kai Zhang, Qi Liu, **Runlong Yu**, Xin Lin, Xinjie Sun. ProCC: Programmatic Reinforcement Learning for Efficient and Transparent TCP Congestion Control, *ACM International Conference on Web Search and Data Mining (**WSDM**)*, pages 963-972, 2025. *Acceptance Rate: 23.4%*

15. Yuyang Ye, Lu-An Tang, Haoyu Wang, **Runlong Yu**, Wenchao Yu, Erhu He, Haifeng Chen, Hui Xiong. PAIL: Performance based Adversarial Imitation Learning Engine for Carbon Neutral Optimization, *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**)*, pages 6148-6157, 2024. *ADS Track Acceptance Rate: 20.0%*

16. Yujie Chen, **Runlong Yu**, Qi Liu, Enhong Chen, Zhenya Huang. Using Entropy for Group Sampling in Pairwise Ranking from Implicit Feedback, *International ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR**)*, pages 2496-2500, 2023. *Short Paper Acceptance Rate: 25.1%*

17. Xiaojie Li, **Runlong Yu**, Guiquan Liu, Lei Chen, Enhong Chen, Shengjun Liu. Research on Multi-objective Optimization Algorithm for Coal Blending, *China National Conference on Big Data and Social Computing (**BDSC**)*, pages 37-60, 2023. *Regular Paper Acceptance Rate: 16.3%*

18. Yang Yu, Qi Liu, Likang Wu, **Runlong Yu**, Lei Yu, Zaixi Zhang. Untargeted Attack against Federated Recommendation Systems via Poisonous Item Embeddings and the Defense, *AAAI Conference on Artificial Intelligence (**AAAI**)*, pages 4854-4863, 2023. *Acceptance Rate: 19.6%*

19. Zhikang Mo, Qixiang Shao, Likang Wu, **Runlong Yu**, Jiexin Xu, Hongmei Song, Enhong Chen. TGNN: A GNN-Based Method with Multi-entity Node for Personal Banking Time Prediction, *Intelligent Networked Things: 5th China Conference (**CINT**)*, pages 68-79, 2023. *Acceptance Rate: 34.6%*

20. Yuren Zhang, Enhong Chen, Binbin Jin, Hao Wang, Min Hou, Wei Huang, **Runlong Yu**. Clustering based Behavior Sampling with Long Sequential Data for CTR Prediction, *International ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR**)*, pages 2195-2200, 2022. *Short Paper Acceptance Rate: 24.7%*

21. Zheng Gong, Shiwei Tong, Han Wu, Qi Liu, Hanqing Tao, Wei Huang, **Runlong Yu**. Tipster: A Topic-Guided Language Model for Topic-Aware Text Segmentation, *International Conference on Database Systems for Advanced Applications (**DASFAA**)*, pages 213-221, 2022. *Acceptance Rate: 18.0%*

22. Huijie Liu, Han Wu, Le Zhang, **Runlong Yu**, Ye Liu, Chunli Liu, Qi Liu, Enhong Chen. Technological Knowledge Flow Forecasting through A Hierarchical Interactive Graph Neural Network, *IEEE International Conference on Data Mining (**ICDM**)*, pages 389-398, 2021. *Regular Paper Acceptance Rate: 9.9%*

23. Mingyue Cheng, Fajie Yuan, Qi Liu, Shenyang Ge, Zhi Li, **Runlong Yu**, Defu Lian, Senchao Yuan, Enhong Chen. Learning Recommender Systems with Implicit Feedback via Soft Target Enhancement, *International ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR**)*, pages 575-584, 2021. *Regular Paper Acceptance Rate: 21.0%*

24. Shiwei Tong, Qi Liu, **Runlong Yu**, Wei Huang, Zhenya Huang, Zachary A Pardos, Weijie Jiang. Item Response Ranking for Cognitive Diagnosis, *International Joint Conference on Artificial Intelligence (IJCAI)*, pages 1750-1756, 2021. *Acceptance Rate: 13.9%*

25. Yuyang Ye, Hengshu Zhu, Tong Xu, Fuzhen Zhuang, **Runlong Yu**, Hui Xiong. Identifying High Potential Talent: A Neural Network based Dynamic Social Profiling Approach, *IEEE International Conference on Data Mining (ICDM)*, pages 718-727, 2019. *Regular Paper Acceptance Rate: 9.1%*

26. Mingyue Cheng, **Runlong Yu**, Qi Liu, Vincent W. Zheng, Hongke Zhao, Hefu Zhang, Enhong Chen. Alpha-Beta Sampling for Pairwise Ranking in One-Class Collaborative Filtering, *IEEE International Conference on Data Mining (ICDM)*, pages 1000-1005, 2019. *Short Paper Acceptance Rate: 18.5%*

27. Han Wu, Kun Zhang, Guangyi Lv, **Runlong Yu**, Weihao Zhao, Enhong Chen, Jianhui Ma. Deep Technology Tracing for High-tech Companies, *IEEE International Conference on Data Mining (ICDM)*, pages 1396-1401, 2019. *Short Paper Acceptance Rate: 18.5%*

Books & Chapters

1. Tong Xu, **Runlong Yu**. Epidemic Prevention and Control Big Data Cloud Platform: Solutions for Major Public Health Emergencies, *Annual Report on Development of Big Data Applications in China No.4 (2020)* (***Blue Book of Big Data Applications***), Social Sciences Academic Press, ISBN 978-7-5201-7651-4, 2020.

TEACHING EXPERIENCES

1. **Instructor** Spring 2026
   Physics-Guided Machine Learning (Graduate Course)
   Department of Computer Science, University of Alabama

2. **Instructor** Spring 2025
   Principles of Data Mining (Graduate Course)
   Department of Computer Science, University of Pittsburgh

3. **Instructor** Fall 2024
   Introduction to Data Science (Undergraduate Course)
   Department of Computer Science, University of Pittsburgh

4. **Guest Teacher** Spring 2024
   Principles of Data Mining (Graduate Course)
   Department of Computer Science, University of Pittsburgh

5. **Teaching Assistant** Fall 2022 & Spring 2023
   Machine Learning and Data Mining (Graduate Course)
   School of Computer Science and Technology, USTC

6. **Teaching Assistant** Fall 2020 & Spring 2021
   Computer Science and Society (Undergraduate Course)
   School of Computer Science and Technology, USTC

7. **Teaching Assistant** Spring 2017
   Database Systems and Applications (Undergraduate Course)
   School of Computer Science and Technology, USTC

MENTORED STUDENTS

Underlined names represent students I mentored in publishing their first first-author papers.

University of Alabama:
— Graduate: Yilong Dai, Yiheng Chen

University of Pittsburgh:
- — Graduate: Shiyuan Luo, Chonghao Qiu, Xiaoting Li, Yingda Fan, Yiming Sun
- — Undergraduate: Mariia Sierova

University of Science and Technology of China:
- — Graduate: Qixiang Shao, Yujie Chen, Xiang Xu, Xiaojie Li, Zhikang Mo, Yang Yu, Huijie Liu, Mingyue Cheng, Yuren Zhang, Zheng Gong, Yin Gu
- — Undergraduate: Huibo Xu

INVITED TALKS

1. "Truth Without Comprehension: A BlueSky Agenda for Steering the Fourth Mathematical Crisis", in the ICDM 2025 conference, Washington, DC, USA, 2025.

2. "What We Talk About When We Talk About AI for Science", in the SDM 2025 conference, Alexandria, VA, USA, 2025.

3. "Adaptive Process-Guided Learning: An Application in Predicting Lake DO Concentrations", in the KGML 2024 workshop, Minneapolis, MN, USA, 2024.

4. "Cognitive Evolutionary Search to Select Feature Interactions for Click-Through Rate Prediction", in the KDD 2023 conference, Long Beach, CA, USA, 2023.

5. "XCrossNet: Feature Structure-Oriented Learning for Click-Through Rate Prediction", in the PAKDD 2021 conference, Delhi, India, 2021.

6. "Negatively Correlated Search with Asymmetry for Real-Parameter Optimization Problems", in the CCFAI 2019 conference, Xuzhou, China, 2019.

ACADEMIC SERVICES

Program Committee Member for the following conferences:
- — PAKDD2026, WWW2026, AAAI2026, WWW2025, AAAI2025, IJCAI2025, PAKDD2025, AAAI2024, IJCAI2024, AAAI2023, IJCAI2023, AAAI2022, IJCAI2022, AAAI2021, IJCAI2021, etc.

Reviewer for the following conferences:
- — AISTATS 2026, ICML2025, AISTATS 2025, ICLR2025, NeurIPS2024, ICLR2024, ICML2024, NeurIPS2023, ICML2023, NeurIPS2022, ICML2022, etc.

Reviewer for the following journals:
- — IEEE Trans. KDE, IEEE Trans. BigData, ACM Trans. KDD, ACM Trans. RecSys, IEEE Trans. SMC: Systems, Communications of the ACM, Advanced Science, etc.