Rajesh Kumar

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PROFESSIONAL PROFILE

拉杰什·库马尔(Rajesh Kumar)博士是电子科技大学的杰出校友。他于 2016 至 2019 年攻读研究生期间荣获学业优秀奖,并被授予"优秀研究生"称号。2017-2019 年间,他与张小松教授合作参与两项国家级科研项目,包括 2019 年国家自然科学基金项目"基于 Android 的物联网恶意软件智能识别方法研究"。



2019 年,他主导了电子科技大学人才专项基金项目"基于区块链的安全数据共享",并于 2023 年牵头开展 PET-CT 影像联邦区块链研究。在学术成果方面,他在顶级期刊和会议上发表论文 70 余篇,其中基于 CT 影像的 COVID-19 检测研究获得学界高度关注。迄今已承担多项政府及校级重点科研项目,展现卓越的科研领导力。

 70+
 18
 6
 6+

 发表研究论文
 已申请专利
 主要研究项目
 年经验

→ 专业领域

专注于网络安全、深度学习、大语言模型、计算机视觉与区块链技术研 究。致力于通过创新性解决方案应对网络安全与数据隐私领域的核心挑 战。以推动人工智能系统发展为己任,聚焦可扩展的实用安全技术开发, 研究涵盖物联网恶意软件检测、医疗联邦学习及区块链安全数据共享等方 向。











★ 教育背景

计算机科学与技术博士

2016-2019

☆ 电子科技大学

论文: 基于机器学习的Android恶意软件检测

- ✓ 开发了一种新颖的机器学习框架,以更高的准确率检测和分类 Android 恶意软件
- ✓ 与行业合作伙伴合作, 为物联网设备创建安全的数据共享协议
- ✓ 为网络安全和基于人工智能的恶意软件检测的国家研究项目做出了贡献

计算机科学硕士

2014-2016

童 信徳大学 (贾姆肖罗)

对网络安全和数据库管理系统进行了研究,发表了关于分布式环境下安全费用支付系统的论文。

计算机科学学士

2010-2013

童 信徳大学 (贾姆肖罗)

专门从事软件工程和数据库系统,使用 Android 技术开发自动考勤系统的最终项目。

島 工作经历



🗑 副研究员

(July 2021- Current)

电子科技大学长三角研究院(湖州)

科研职责:

- ✓ 主持区块链、深度学习与计算机视觉领域科研项目,主导技术攻关与成果转化。
- ✓ 在国际期刊及学术会议发表多篇论文,推动领域前沿研究。

- ✓ 获批医疗领域基于区块链的协同学习系统研究项目资助。
- ✓ 指导团队开展基于联邦区块链技术的 PET-CT 影像分析研究。
- ✓ 开发网络安全与人工智能领域的新型数据集及工具集,支撑技术创新。.

教学职责:

- ✓ 讲授本科及研究生课程,包括 Java 编程、数据结构、C++、机器学习、区块链技术与科研方法论。
- ✓ 结合行业动态持续更新课程内容,设计前沿技术教学模块。

- ✓ 指导硕士研究生完成课题研究与学位论文撰写。
- ✓ 组织联邦学习与安全数据共享等新兴技术专题研讨会与工作坊。
- ✓ 参与人工智能相关课程的培养方案设计与课程体系开发。

Postdoctoral Fellow 博士后研究员

(June 2019- June 2021)

电子科技大学

合作导师: 王文勇 教授

- ✓ 参与国家级科研项目,包括物联网恶意软件检测与区块链安全数据共享研究。
- ✓ 完成大规模数据集采集与处理工作,支撑2篇高水平期刊论文发表。
- ✓ 参与 AI 驱动安全系统的研究方法设计与开发,优化算法框架。

软件与 Web 应用开发工程师(实习)

(June2014- June 2015)

巴基斯坦信德大学贾姆肖罗校区

- ✓ 开发校级管理系统的 Web 应用与内部软件解决方案,提升管理效率。
- ✓ 优化考试成绩查询系统与招生管理系统功能模块,改善用户体验与系统稳定性.

■期刊论文列表

S#	论文标题	作者顺 序	期刊名称		论文 标题	作者顺序
1	Blockchain and homomorphic encryption-based privacy- preserving model aggregation for medical images	1	Computerized Medical Imaging and Graphics	10/20/2022	23	Open
2	Blockchain-federated-learning and deep learning models for covid-19 detection using ct imaging.	1	IEEE Sensors Journal	7/15/2021	420	Open
3	An integration of blockchain and ai for secure data sharing and detection of CT images for the hospitals	1	Computerized Medical Imaging and Graphics	1/1/2021	140	Open
4	Privacy-preserving blockchain-based federated learning for brain tumor segmentation	1	Computers in Biology and Medicine	5/21/2024	1	<u>Open</u>
5	A multimodal malware detection technique for android IoTdevices using various features	1	IEEE Access	5/23/2019	156	Open
6	Research on data mining of permission-induced risk for android IoT devices.	1	Applied Sciences-Basel	1/2/2019	39	Open
7	Secure large-scale E-voting system based on blockchain contract using a hybrid consensus model combined with sharding	2	ETRI Journal	1/4/2021	87	Open
8	A federated learning approach for privacy protection in context-aware recommender systems	2	Computer Journal (Oxford Press)	4/30/2021	38	Open
9	Making assembly line in supply chain robust and secure using UHF RFID	2	Scientific Reports	10/9/2021	25	Open
10	An online semantic-enhanced graphical model for evolving short text stream clustering	4	IEEE Transactions on Cybernetics	9/30/2021	8	Open
11	An efficient and provably secure ECC-based conditional privacy-preserving authentication for vehicle-to-vehicle communication in vanets	4	IEEE Transactions on Vehicular Technology	1/13/2021	101	Open
12	Visual features with spatio-temporal-based fusion model for cross-dataset vehicle re-identification	5	Applied Sciences-Basel	1/8/2020	13	Open
13	Adaptive wavelet based MRI brain image de-noising	3	Frontiers in Neuroscience	8/22/2020	34	Open

14	Efficient hybrid clustering scheme for data delivery using internet of things enabled vehicular ad hoc networks in smart city traffic congestion.	6 Journal of Internet 1, Technology		1/12/2020	11	Open
15	Efficient and deep vehicle re-identification using multi- level feature extraction	6	Applied Sciences-Basel	3/27/2019	29	Open
16	An adaptive multi-layer botnet detection technique using machine learning classifiers	3	Applied Sciences-Basel	11/6/2019	161	Open
17	Context-aware bidirectional neural model for sindhi named entity recognition	4	Applied Sciences-Basel	9/28/2021	1	Open
18	Trends in vehicle re-identification past, present, and future: a comprehensive review	5	Mathematics	11/27/2021	28	Open
19	Multi scale and direction target detecting in remote sensing images via modified YOLO-v4			1/6/2022	39	Open
20	Robust mobile robot navigation in cluttered environments based on hybrid adaptive neuro-fuzzy inference and sensor fusion	6	Journal of King Saud University - Computer and Information Sciences	3/9/2022	9	<u>Open</u>
21	MCNN: a multi-level CNN model for the classification of brain tumors in IoT-healthcare system	3	Journal of Ambient Intelligence and Humanized Computing	7/30/2022	7	Open
22	Probabilistic approach to covid-19 data analysis and forecasting future outbreaks Using a Multi-Layer Perceptron Neural Network	4	Diagnostics	12/10/2022	5	<u>Open</u>
23	Addressee Detection Using Facial and Audio Features in Mixed Human–Human and Human–Robot Settings: A Deep Learning Framework	9	IEEE Systems Man and Cybernetics Magazine	12/1/2022	1	<u>Open</u>
24	Phased array antenna diagnosis from amplitude-only data using parallel deep learning models	5	Journal of Applied Remote Sensing	9/9/2023	3	<u>Open</u>
25	Stock market index prediction using machine learning and deep learning techniques	6	Intelligent automation & soft computing	2/24/2023	1	<u>Open</u>
26	View-aware attribute-guided network for vehicle reidentification	3	Multimedia Systems	12/3/2023	6	<u>Open</u>
27	Bio-inspired circular polarized UHF RFID tag design using characteristic mode analysis	2	IEEE Sensors Journal	3/26/2023	3	<u>Open</u>
28	A Context-enhanced Dirichlet Model for Online Clustering in Short Text Streams	3	Expert Systems With Applications	4/23/2023	1	<u>Open</u>
29	LSS: A locality-based structure system to evaluate the spreader's importance in social complex networks	6	Expert Systems With Applications	4/29/2023	8	<u>Open</u>
30	Online Semi-supervised Classification on Multi-label Evolving High-Dimensional Text Streams	3	IEEE Transactions on Systems, Man, and Cybernetics	5/6/2023	1	<u>Open</u>
31	Responsible Recommendation Services with Blockchain Empowered Asynchronous Federated Learning	2	Transactions on Intelligent Systems and Technology	11/23/2023	2	<u>Open</u>
32	Application of no-light fault prediction of PON based on deep learning method	4	Computer Communications	9/6/2023	2	<u>Open</u>
33	Nature-Inspired spider web shaped uhf rfid reader antenna for IOT and healthcare	2	Scientific Reports	8/28/2023		<u>Open</u>
34	Autonomous ship navigation with an enhanced safety collision avoidance technique	4	ISA Transactions	10/16/2023	1	<u>Open</u>
35	An Assisted Diagnosis of Alzheimer's Disease Incorporating Attention Mechanisms Med-3D Transfer Modeling	6	CMC-Computers, Materials & Continua	1/1/2024	1	<u>Open</u>
36	Effective time-series Data Augmentation with Analytic Wavelets for bearing fault diagnosis	5	Expert Systems with Applications	1/9/2024	4	<u>Open</u>
37	An intelligent neural network model to detect red blood cells for various blood structure classification in microscopic medical images	6	Heliyon	2/13/2024	1	<u>Open</u>
38	Blockchain-Based Trusted Tracking Smart Sensing Network to Prevent the Spread of Infectious Diseases	2	IRBM	2/07/2024	4	<u>Open</u>
39	3DFFL: privacy-preserving Federated Few-Shot Learning for 3D point clouds in autonomous vehicles	5	Scientific Reports	28/08/2024	1	<u>Open</u>

#■ 书籍章节列表

S#	论文标题	作者顺序	期刊名称	链接
1	A survey of intelligent techniques for android malware detection	1	Malware Analysis Using Artificial Intelligence and Deep Learning (Spinger)	Open

期刊 EI 列表

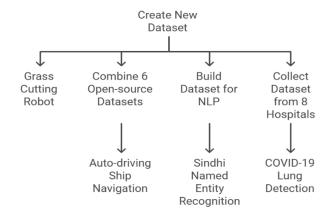
S#	论文标题	作者 顺序	期刊名称	日期 (M/D/Y)	Cited	链接
1	Simple and efficient computational intelligence strategies for effective collaborative decisions	2	Future Internet	1/21/2019	1	Open
2	Analysis of resnet and googlenet models for malware detection	3	Journal of Computer Virology and Hacking Techniques		220	Open
3	Optimizing a deep learning model in order to have a robust neural network topology	2	International Journal of Modeling and Optimization	1/6/2018	1	Open
4	Modelling choice selection system of a public sector general university in pakistan	1	Sindh University Research Journal-SURJ (2016)	1/8/2016	2	Open

▲ 教学经历

- ✓ 授课科目: <u>Java</u>, <u>Database</u>, Data structure, C++, <u>Deep Learning</u>, <u>Research Methodology</u>, Machine Learning and Blockchain.
- ✓ 指导硕士研究生完成科研项目设计与学位论文撰写,提升学术研究能力
- ✓ 开发并实施本科生与研究生课程体系,涵盖理论讲座、实践指导、实验课程及项目制学习模块
- ✓ 深度参与计算机视觉课题研究,相关成果形成期刊论文发表并成功获取科研项目资助

Dataset Creation Experience

- ✓ Create new dataset for the Grass Cutting Robot (Private Project: <u>Link1</u>, <u>YouTube Video</u>).
- ✓ Combine 6 opensource dataset and generate new dataset for Auto driving Ship Navigation.
- ✓ Build a dataset for Natural Language Processing (Sindhi named entity recognition) [published paper: Link1].
- ✓ Collect Dataset form 8 Hospital of COVID-19 lung detection. [published paper Link 1, Link 2, YouTube Video].











PROJECT FUNDING

使用聯合區塊鏈進行 PET-CT 成像分析的協作學習 項目編號 結束日期

2025年6月

5,000 元

U0723003

項目編號 結束日期 H01240121 12月31, 2026 500,000 元

基於私有大型語言模型的智慧圖像生成軟體

高性能輕量級工業區塊鏈技術與應用

項目編號 結束日期 U03210049 8月3, 2026

400,000 元

S#	Project Name	Date	Project Number	Project Source
1	Research on Blockchain Sharding Consensus	2019/07202 1/07	Y03019023601016201	China Postdoctoral Science Foundation
2	Al pattern recognition and COVID-19 blockchain security data sharing	2020/07 2021/07	Y12519028554016524	University of Electronic Science and Technology of China
3	Research on Airline Passenger Luggage Tracing Technology Based on Electronic Tag	2021/01 2024/12	<u>U2033212</u>	National Natural Science Foundation of China
4	Research on Intelligent Identification Method of IoT Malware Based on Android	2017/01201 9/07	61572115	National Natural Science Foundation of China

5	Collaborative learning with federated blockchain to improve PET-CT imaging analysis.	2023/01 2024/12	U0723003	Huzhou Hospital
6	Blockchain-based multi-agent heterogeneous federated learning	2021/06 2024-06	U03210049	Yangzi Delta River Institute Funding

会议列表

S#	论文标题	作者顺序	期刊名称		论文 标题	作者 顺序
1	A survey of blockchain based on e-voting systems	2	Proceedings of the 2019 2nd International Conference on Blockchain Technology and Applications	9/12/2019	40	Open
2	Malicious code detection based on image processing using deep learning	1	International Conference on Computing and Artificial Intelligence (ICCAI 2018)"	12/3/2018	69	Open
3	Effective and explainable detection of android malware based on machine learning algorithms	1	International Conference on Computing and Artificial Intelligence (ICCAI 2018)	12/3/2018	28	Open
4	Malicious URL detection using multi-layer filtering model	1	The 14th International Computer Conference on Wavelet Active Media Technology and Information Processing (2017)	12/2/2018	25	Open
5	Evaluating the performance of deep neural networks for health decision making	3	8th International Congress of Information and Communication Technology (ICICT-2018)	1/27/2018	12	Open
6	Probabilistic time context framework for big data collaborative recommendation	4	International Conference on Computing and Artificial Intelligence (ICCAI 2018)		6	Open
7	Evaluating the performance of resnet model based on image recognition	3	International Conference on Computing and Artificial Intelligence (ICCAI 2018)	12/3/2018	69	Open
8	Analysis of resnet model for malicious code detection	3	The 14th International Computer Conference on Wavelet Active Media Technology and Information Processing (2017)	2/7/2017	4	Open
9	Internet of things—smart traffic management system for smart cities using big data analytics	3	The 14th International Computer Conference on Wavelet Active Media Technology and Information Processing (2017)	2/7/2017	71	Open
10	A hybrid technique to detect botnets, based on p2p traffic similarity	2	2019 Cybersecurity and Cyberforensics Conference (CCC)	7/5/2019	29	Open
11	An improved convolutional neural network model for intrusion detection in networks	4	2019 Cybersecurity and Cyberforensics Conference (CCC)	7/5/2019	99	Open
12	Elimination of irrelevant features and heart disease recognition by employing machine learning algorithms using clinical data	5	The 17th International Computer Conference on Wavelet Active Media Technology and Information Processing (2020)	12/18/2020	3	Open
13	H3DNN: 3d deep learning based detection of covid- 19 virus using lungs computed tomography	3	The 17th International Computer Conference on Wavelet Active Media Technology and Information Processing (2020)	12/18/2020	27	Open
14	A Non-Parametric Multi-Lingual Clustering Model for Temporal Short Text	2	The 17th International Computer Conference on Wavelet Active Media Technology and Information Processing (2020)	12/18/2020	6	Open
15	Neural Joint Model for Part-of-Speech Tagging and Entity Extraction	2	13th International Conference on Machine Learning and Computing (2021)	2/26/2021	3	Open
16	Blockchain Based Monitoring on Trustless Supply Chain Processes	3	6th International Conference on Cloud Computing and Big Data Analytics (2021)	4/24/2021	4	Open
17	Analyzing and battling the emerging variants of covid-19 using artificial neural network and blockchain	6	The 18th International Computer Conference on Wavelet Active Media Technology and Information Processing (2021)		3	Open
18	Intelligent collaborative control of multi-source heterogeneous data streams for low-power IoT: a flow machine learning approach			1/8/2023	1	<u>Open</u>
19	An Ultra-wideband Tapered Slot Antenna for Medical Microwave Imaging Applications	5	Progress In Electromagnetics Research Symposium (2024)	9/1/2024	1	<u>Open</u>



Real Time Project Development



Python Development:

Next-Gen Medical Collaboration Integrating

Blockchain for Image Sharing

- ✓ Blockchain based federated learning model for secure data sharing (Code): Developed a federated learning model to securely share sensitive data across distributed environments. This model enhanced data privacy and received industry recognition for its innovative blockchain integration.
- ✓ Federated learning for medical images (Code): Implemented federated learning techniques to improve medical image analysis, leading to better diagnostic accuracy for healthcare institutions.
- ✓ Design a federated learning model for secure data sharing (Code).
- ✓ Android malware detection (Code): Designed a machine learning model to detect and prevent malware attacks on Android systems, significantly reducing security breaches.
- ✓ Cancer detection (Code): Developed a deep learning model to detect cancerous cells in medical imaging, contributing to early diagnosis and improved patient outcomes.



Web Development:

- ✓ University of Sindh Examination and Admission Systems: (Code) (Website), : Built and optimized. the university's examination results and admission portals, improving user experience and handling large volumes of data efficiently. (Code) (Website).
- ✓ **Book Board Website:** Developed a content management system for the Sindh Textbook Board, enhancing accessibility for educational resources. (Website).
- ✓ **Time Table Management System:** Created a dynamic time-table scheduling system for university departments, streamlining academic scheduling and administrative processes. (Website).
- ✓ School Management System: Designed and implemented a comprehensive management system. for a private school, automating administration and student data management.



Android Development:

- ✓ SMS and Call Tracking System: Developed an Android app for tracking calls and SMS, enhancing user safety and monitoring. (Code).
- ✓ Online Banking System: Created a secure mobile banking application with real-time transaction tracking and multi-factor authentication. (Code).
- ✓ **Result Information System via SMS:** Built a system allowing users to access university results via SMS, increasing accessibility for students in rural areas.
- ✓ Excel SMS Sender (Bulk SMS Sender): Developed a tool to send bulk SMS from Excel, improving communication capabilities for businesses.
- Puzzle Game & Annoying Alarm System: Designed interactive games and alarm systems, demonstrating creativity in mobile app development. (Code).



Java Development

- ✓ RFID-Based Attendance Management System: Developed an automated attendance tracking system using RFID, significantly reducing manual attendance errors
- ✓ School Management System: Built a school management system for The Guardian School, improving operational efficiency. (Code)
- ✓ Laboratory Management System: Created a custom lab management system for Advance Lab Hyderabad, automating equipment tracking and report generation. (Code)



.Net Development

- ✓ **Hospital Management System**: Developed an **end-to-end solution** for hospital administration, streamlining patient management and medical record-keeping.
- ✓ **Shop Management System:** Built a system to manage inventory, sales, and billing for retail shops.



Arduino Development

✓ Factory Control Using Ethernet (Internet Technology): Implemented an IoT-based control system for factory automation, reducing manual labor and increasing production efficiency.

Note: All projects source code available this link: https://github.com/raja21068/



PROFESSIONAL ACTIVITIES

Journal External Reviewer:

- ✓ IEEE Transactions on Information Forensics and Security.
- ✓ IEEE Internet of Things.
- ✓ Elsevier Computers & Security.
- ✓ IEEE ACCESS.

Conference External Reviewer:

- ✓ The 14th International Computer Conference on Wavelet Active Media Technology and Information Processing.
- ✓ The 15th International Computer Conference on Wavelet Active Media Technology and Information Processing.
- ✓ 2st Workshop on Cloud Security and Privacy.



TALKS

- ✓ Key Note Speaker: Challenges and Implications of blockchain with federated learning, "in Gundong 2019".
- ✓ **Presenter:** Malicious Code Detection: Image Processing Using Deep Learning: International Conference on Computing and Artificial Intelligence (ICAAI), Chengdu, China, March 2018.
- ✓ **Presenter:** Artificial Intelligence challenges and implantation to the current trends, AI Seminar in UESTC, 2019.
- ✓ **Presenter:** Latex and other research tools: Invited talk at Sichuan University.

量 专利列表

S#	论文标题	作者顺 序	专利号	论文标题	作者顺序
1	Blockchain based multi agent Heterogenous federated learning	1	2023104444528	4/24/2023	China
2	Blockchain-Enhanced Cyclic Distillation-guided Channel Decoupling for Personalized Federated Learning	1	2023107524401	6/26/2023	China
3	Autonomous Navigation and Obstacle Avoidance System Based on Deep Learning	1	2023104317236	4/21/2023	China

4	Online semi-supervised classification algorithm based on multi- label evolving high-dimensional text streams	1	2023107524401	6/26/2023	China
5	Trusted tracking system based on multi-layer blockchain	2	2023104669004	4/27/2023	China
6	Context-enhanced dirichlet model for online clustering in short text streams	1	2022115045851	11/20/2022	China
7	RFID tag design with platform tolerant features using multi- resonant surfaces	1	2022113882264	10/15/2022	China
8	A method for ranking the importance of high-order structures in high-order networks	2	2022114545198	11/21/2022	China
9	A deep learning framework for addressee detection using audio and facial inputs	9	2022110197167	1/11/2022	China
10	A potential-based method for identifying influential nodes in complex social networks	3	2022115441904	4/12/2022	China
11	A potential-based method for identifying influential nodes in complex social networks	3	2022115441904	04/12/2022	China
12	Blockchain-Based Distributed Demand-Side Scheduling for Community Microgrids in Smart Cities	3	2023112034968		China
13	Developing a Multi-Agent Sensory Framework for Efficient Decision- Making using Hippocampal Replay and Deep Reinforcement Learning	3	2023106365380	01/06/2023	China
14	Trusted tracking system based on multi-layer Blockchain	4	2023104669004	27/04/2023	China
15	A Blockchain-based data management system framework	2	2023114293789	31/10/2023	China
16	A multi-layer response system for botnets based on complex social networks	4	2023116348381	01/12/2023	China
17	Blockchain Based Miniature Energy Meter	4	6321761	26/10/2023	UK
18	Al-Based Device For Detecting Malware	5	6302131	07/08/2023	UK