Zijian (Longino) ZHAO 赵子健

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Education

The Hong Kong University of Science and Technology (Clearwater Bay Campus, Hong Kong) Sep. 2024 – Present
Ph.D. in Civil Engineering (Scientific Computation) *GPA: None*

Sun Yat-sen University (Guangzhou Campus) Sep. 2020 – Jul. 2024
B.Eng. in Computer Science and Technology (National Basic Subject Talent Training Plan) *GPA: 4.0/5.0, Rank: Top 10%*
Change major from Electronic Information (Shenzhen Campus) to Computer Science (Guangzhou Campus) in 2021.
Ranking First in: *Computer Programming, Principles of Compilers, Distributed Systems, Embedded Systems, Complex Variables, Mathematical Analysis, Advanced Algebra, Data Structures and Algorithms, Probability and Statistics, Discrete Mathematics*
Course Projects : https://gitee.com/zzj_rs/undergraduate-programs

Experience

Industry-University-Research Student Feb. 2024 – Present
Likelihood Lab *Part-time, Online*

Writing Consultant & Graduate Application Mentor Nov. 2023 – Present
FLY Education; Compass Education *Part-time, Online*

Visiting Student Aug. 2023 – Aug. 2024
Shenzhen Research Institute of Big Data *Associated with Chinese University of Hong Kong (Shenzhen)*

Tutor Dec. 2020 – Sep. 2021
Zhangmen Education; Yousi Education *Part-time, Online*

Publications

[1] Zitao Zhang, Yuhong Huang, **Zijian Zhao**, Zhenshan Bing, Chenglin Cai, Alois Knoll and Kai Huang*, "Autonomous Locomotion of a Rat Robot Based on Model-free Reinforcement Learning", 2024 IEEE International Conference on Advanced Robotics and Mechatronics (ICARM), 2024

[2] Xiao Liang (supervisor), **Zijian Zhao**, Weichao Zeng, Yutong He, Fupeng He, Yiyi Wang, Chengying Gao*, "PianoBART: Symbolic Piano Music Understanding and Generating with Large-Scale Pre-Training", 2024 IEEE Conference on Multimedia Expo (ICME), 2024 (**oral**)

[3] **Zijian Zhao**, Tingwei Chen, Fanyi Meng, Hang Li, XiaoYang Li, Guangxu Zhu*, "Finding the Missing Data: A BERT-inspired Approach Against Package Loss in Wireless Sensing", 2024 IEEE International Conference on Computer Communications (INFOCOM) DeepWireless Workshop, 2024

[4] Zitao Zhang, Yuhong Huang, **Zijian Zhao**, Zhenshan Bing, Alois Knoll and Kai Huang*, "A Hierarchical Reinforcement Learning Approach for Adaptive Quadruped Locomotion of a Rat Robot," 2023 IEEE International Conference on Robotics and Biomimetics (ROBIO), 2023 (**Best Paper Finalist**)

[5] Zitao Zhang*, Yuhong Huang, **Zijian Zhao**, Zhenshan Bing, Kai Huang, "Autonomous Locomotion of a Rat Robot Based on Reinforcement Learning", 2023 China Intelligent Robotics Annual Conference (CCF CIRAC), 2023

[6] Tingwei Chen, Yantao Wang, Hanzhi Chen, **Zijian Zhao**, Xinhao Li, Nicola Piovesan, Guangxu Zhu*, Qingjiang Shi, "Modelling the 5G Energy Consumption using Real-world Data: Energy Fingerprint is All You Need" (under review, submitted to IEEE Globecom 2024)

[7] **Zijian Zhao**, Tingwei Chen, Zhijie Cai, Hang Li, XiaoYang Li, Guangxu Zhu*, "CSi-Net: A Siamese Network for Cross-Domain Wi-Fi Sensing" (under way, to be submitted to IEEE TMC)

[8] Haolong Chen, Hanzhi Chen, **Zijian Zhao**, Kaifeng Han*, Guangxu Zhu*, Yichen Zhao, Ying Du "Domain-Specific Foundation-Model Customization: Theoretical Foundation and Key Technology", (under way, to be submitted to FITEE)

[9] **Zijian Zhao**, Zitao Zhang, Kai Huang*, "ARS-Bezier: A Trajectory-based Reinforcement Learning Approach for Autonomous Locomotion of a Rat Robot" (under way)

[10] **Zijian Zhao**, Zhijie Cai, Tingwei Chen, XiaoYang Li, Hang Li, Guangxu Zhu*, "KNN-MMD: Cross Domain Wi-Fi Sensing Based on Local Distribution Alignment" (under way)

[11] **Zijian Zhao**, Tingwei Chen, Fanyi Meng, Hang Li, XiaoYang Li, Guangxu Zhu*, "CSI-BERT2: A Universal Model for CSI Time Series Application in ISAC", (under way)

Patents

[1] **Zijian Zhao**, Kaifeng Han, Qimei Chen, Guangxu Zhu, XiaoYang Li, Hang Li, "Channel State Information Recovery Method and Apparatus, Equipment, Storage Medium" (Shenzhen Big Data Research Institute, Application date: 2024.04.02, Application number: 202410232125.0)

[2] Kai Huang (supervisor), Zitao Zhang (supervisor), **Zijian Zhao**, Ruoyi Tao, "A Motion Control Method for Small Bionic Rat Based on Reinforcement Learning" (Artificial Intelligence and Digital Economy Guangdong Provincial Laboratory (Guangzhou) & Sun Yat-sen University, Application date: 2024.12.04, Application number: 202311649978.6)

[3] **Zijian Zhao**, Guangxu Zhu, Shen Chao, Shi Qingjiang, Han Kaifeng, "Personnel detection method, device, electronic equipment, and storage medium" (under review)

[4] **Zijian Zhao**, Guangxu Zhu, XiaoYang Li, Hang Li, "A Cross-domain Wi-Fi Gesture Recognition Technique Based on Few-shot and One-shot Learning" (under review)

[5] **Zhao Zijian**, Zhu Guangxu, Zhu Guangxu, Li Xiaoyang, Li Hang, "A Wi-Fi-based Rogue Person Detection Technique" (under review)

[6] Yiyi Wang, Chengying Gao, Xiao Liang, **Zijian Zhao**, Weichao Zeng, Yutong He, Fupeng He, "A Symbolic Piano Music Generation Method Based on Pre-trained Model" (under review)

Professional Activities

1. Society Membership: CCF Student Membership (granted for free)
2. TPC Membership: IEEE PIMRC 2024, IEEE WCNC 2024
3. Technical Reviewer: IEEE PIMRC, IEEE WCNC, IEEE ICASSP, ICME, IEEE SMC, IEEE MTAP

Skills and Interests

1. Programming Skills:
• Proficient in: C/C++ (CCF-CSP:320, Top 0.8%), Python, Matlab, Pytorch
• Familiar with: MySQL, Git, Linux, ESP32
• Knowledgeable in: TensorFlow, Java, Assembly, Verilog, Web Scraping, Flask, QT, Lingo, Docker, Raspberry Pi, LLM API
2. Language:
• English (IELTS:6.5, CET-4:605, CET-6: 561)
• Chinese (mother tongue)
3. Interests:
• Proficient in: Electric Guitar, Acoustic Guitar, Keyboard (Grade 10)
• Familiar with: Songwriting, Extreme Vocals, Hulusi, Ukulele, Music Theory (Grade C)
• Knowledgeable in: Electric Bass, Piano, Drums, Harmonica
4. Extracurricular Activities:
Proficient in playing musical instruments, I have actively participated in the Guitar Association and the Original Music Club, and have formed several bands since entering university. I have written and performed numerous songs under the band names NEWS (lead singer, guitarist), Rights of Lethe (backing vocals, guitarist, bassist), and Remote Sensing (guitarist, keyboardist). I have also organized and participated in various shows. Additionally, I have a keen interest in volunteering work and actively participate in such activities.

Research Experience

1. SRIBD - Data-driven Intelligent Information System Laboratory - AI-RAN Lab (Supervisor: Dr. Guangxu Zhu (Deputy Director), 2023.08-2024.08):
Topic I: Wi-Fi Sensing
• CSI-BERT1 & CSI-BERT2: A BERT-based Method for Time Sequence Recovery – recover lost packages of CSI and predict future CSI series (presented proposal in IMT-2030 6G Promotion Group meeting)
• CSi-Net: A Siamese-based Method for Cross-Domain Wireless Sensing – a common method for full-shot, few-shot, and zero-shot scenarios
• KNN-MMD: A Few-shot Domain Adaptation Method – analyze the problems of traditional DA methods and address them practically
• Realtime Wi-Fi Sensing System – a realtime system for fall detection, intrusion detection, breath detection, etc., based on ESP32-S3
• Wi-Fi Sensing Dataset: WiGesture & WiFall & WiCount – collected by ESP32-S3
• Exploration of LLM and Cross-modal Knowledge Distilling in Wireless Sensing
Topic II: Network Optimization
• 5G-Energy Consumption Modelling: A Mask-learning and Lightwise Attention Method for Energy Consumption – solve the low generalization capacity of traditional energy consumption prediction methods
• NetOPT: A Spectrum Efficiency Prediction Model Based on ALBERT – a large pre-trained model to solve the low generalization capacity of traditional SE prediction methods
• VAR-Radiomap: A Radiomap Construction Model Based on VAR

2. SYSU - Intelligent and Multimedia Science Laboratory (Supervisor: Prof. Chengying Gao & Prof. Ning Liu (Director of Cybersecurity Department) & Dr. Xiao Liang, 2021.12-2024.08):
Topic I: Music Generation
• PianoBART1 & PianoBART2: A Piano Music Generation Model based on BART – address information leakage problems and enhance music generation capabilities through task understanding (Served as team leader, Research Funding: 6,000 CNY, Final Grade: Excellent)
Topic II: Music Understanding
• Adversarial-MidiBERT: A Midi Understanding Model based on BERT – mitigate bias issues in pre-trained language models

• KD-ACR: A Knowledge Distilling Method for Automatic Chord Recognition – reduce model size to enable practical deployment on small devices

3. SYSU - Robotic and Intelligence Computing Lab (Supervisor: Prof. Kai Huang (Director of Artificial Intelligence and Unmanned Systems Research Institute), Dr. Zitao Zhang, 2022.09-2024.08):
Topic I: Robot Reinforcement Learning (based on robot rat NeRmo)
• ARS-Bezier: A Lightweight Trajectory-based Reinforcement Learning Approach – address the inadaptability of traditional RL methods due to limited resources in small robots
• An RL-based Action Generator for Quadruped Locomotion – a simple method with high safety and fast convergence speed
• A Time Cluster Method for Robot RL – a highly efficient RL method for complex terrains

4. Others: :
Project I: Deep Learning Algorithms for Imbalanced Label Problem in High-Frequency Trading (Likelihood Lab, 2024.02-Present)
Project II: FinanceGPT: Inance Intelligent Robo-Advisor (Supervisor: Dr. Sihang Chen, 2023.05-2023.09)
Project III: Implementation of a Compressed Sensing Algorithm Based on DSP (Supervisor: Prof. Xizhang Wei, 2021.01-2021.12, Research Funding: 6,000 CNY, Final Grade: Good)

Main Honors And Awards

A. Undergraduate Studies:

a. International Award:
1. Meritorious Winner in the Mathematical Contest in Modeling (served as team leader and supervisor)
2. Second Prize in Asia and Pacific Mathematical Contest in Modeling (served as team leader)
3. Runner Up Prize (No.2 out of 776 teams from 83 countries) in AI/ML for 5G-Energy Consumption Modelling by ITU AI/ML in 5G Challenge (reached the final, received a bonus of 3,000 CHF, Supervisor: Dr. Guangxu Zhu)
4. Best Paper Award in Biomimetics Finalist in IEEE International Conference on Robotics and Biomimetics (ROBIO) 2023

b. National Award:
1. Third Prize (No.6 out of 287 teams) in The First Wi-Fi Sensing Contest by Huawei (reached the final, received a bonus of 20,000 CNY, Supervisor: Dr. Guangxu Zhu, Dr. Xiaoyang Li, Dr. Hang Li)
2. Bronze Award in China College Algorithm Design & Program Challenge Contest
3. Third Prize in the National College Students' IT Skills Competition of Chuanzhi Cup

c. Provincial Award:
1. Provincial First Prize in the Chinese Mathematics Competitions
2. Provincial Second Prize in SPSS University Contest in Modeling (supervisor: Prof. Qi Liang, Prof. Ruyu Wang)
3. Provincial Third Prize in the Chinese Mathematics Competitions (served as team leader)
4. Provincial Third Prize in the National College Students' Mathematics Competition of Huaqiao Cup

d. School Award:
1. First-class Scholarship for Outstanding student of Sun Yat-sen University (received a bonus of 4,000 CNY)
2. First Prize in Sun Yat-sen University Novice Programming Competition (served as team leader)
3. Wining Prize in Sun Yat-sen University Electronic Design Creative Competition (served as team leader)
4. Third Prize and Outstanding Resume Award in Sun Yat-sen University Future Job Hunting Competition (received a bonus of 300 CNY)

B. High School Studies:

a. National & Provisional Award:
1. Second Prize & Provincial First Prize in the National High School Mathematics League

b. School Award:
1. Bronze Award in the Mathematics Competition by Harbin No.3 High School
2. Third Prize in the Physics Competition by Harbin No.3 High School
3. Merit Student from Elementary School to High School