Zijian Zhao 赵子健

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Education

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 (i.e. 90/100, 93.6 in core courses)*
Change major from Electronic Information (Shenzhen Campus) to Computer Science (Guangzhou Campus) in 2021
Ranking First in : Computer Programming (100/100), Principles of Compilers (100/100), Distributed Systems (100/100), Embedded Systems (99/100), Complex Variables (99/100), Mathematical Analysis (99/100), Advanced Algebra (98/100), Data Structures and Algorithms (97/100), Probability and Statistics (96/100), Discrete Mathematics (93/100)

Experience

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

Zitao Zhang, Yuhong Huang, **Zijian Zhao**, Zhenshan Bing, Alois Knoll, Kai Huang*, "Adaptive Quadruped Locomotion of a Rat Robot Based on a Hierarchical Reinforcement Learning Framework", IEEE ROBIO (Accepted on October 3rd 2023)
Zitao Zhang*, Yuhong Huang, **Zijian Zhao**, Zhenshan Bing, Kai Huang, "Autonomous Locomotion of a Rat Robot Based on Reinforcement Learning", CCF CIRAC 2023 (Accepted on August 5th 2023)
Zijian Zhao, Weichao Zeng, Fupeng He, Yutong He, Yiyi Wang, Xiao Liang*, Chengying Gao*, "PianoBART: Symbolic Piano Music Understanding and Generating with Large-Scale Pre-Training" (under review, submitted on November 2023 to IEEE ICME)
Zijian Zhao, "KD-ACR: Knowledge Distilling for Automatic Chord Recognition Model" (under revision, first submitted on January 31st 2023 to IEEE Access)

Patents

Kai Huang, Zitao Zhang, **Zijian Zhao**, Ruoyi Tao, "A Motion Control Method for Small Bionic Rat Based on Reinforcement Learning" (under review, submitted on April 2023)

Skills and Interests

Programming Skills:
• Proficient in: C/C++ (CCF-CSP:320, Top 0.8%), Python, Matlab, Pytorch
• Familiar with: Java, MySQL, Git, Linux, TensorFlow
• Knowledgeable in: Assembly, Verilog, Web Scraping, Flask, QT, Docker, Raspberry Pi, and ESP32
English Skills:IELTS 6.5, CET4: 605, CET6: 561
Interests: Songwriting, Playing Instruments (including guitar, bass, piano, drums, ukulele, harmonica, and hulusi), Grade 10 in Electronic Keyboard (certified by the Central Conservatory of Music and Shanghai Conservatory of Music), Grade C in Music Theory (certified by Shanghai Conservatory of Music)
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. Wifi Sensing (Supervisor: Dr. Guangxu Zhu, 2023.08-2024.07):
(1) CSI-BERT: Recover Loss Wifi Chanel State Information by BERT (independently accomplish)
Description: I designed a CSI-BERT model capable of processing continuous CSI (Channel State Information) data to recover lost packages during communication. Additionally, I developed a new loss function to significantly improve the accuracy of CSI recovery. The recovered data enhances the performance of other models in tasks such as gesture and people recognition.
(2) Skeleton Estimation by Wifi CSI (under way)
Description: We collected and published a dataset on hand actions including CSI, distance computed by FTM (Fine Time Measure) by ESP32, and videos collected by a dual camera. We also proposed a benchmark algorithm for CSI skeleton estimation assisted by vision.
Duty: My main responsibilities include data collection and algorithm design.
(3) Realtime Wifi Sensing System (horizontal project)
Description: We developed a series of functions, including intrusion detection and real-time location tracking based on Wifi CSI.

Duty: I primarily focused on developing the system in ESP32. Other team members worked on similar systems using different devices, and we collaborated with each other.

2. Music AI (Supervisor: Prof. Chengying Gao & Prof. Ning Liu, 2021.12-2023.12):
(1) Piano Music Generation Based on BART (served as team leader)
Description: We introduced Bart to the music generation task by designing novel pretraining methods for the first time to generate high-quality and long-term consistent music. Our model also shows the most advanced performance in many downstream tasks like velocity prediction and emotion classification. Additionally, we proved that our model can efficiently improve pretraining speed and prevent information leakage which often occurs in the pretraining phase when using symbolic music.
Duty: I served as the team lead in this project and was mainly responsible for model building, experiment design, coding, and paper writing.
(2) Improve Chord Recognition Algorithm by Knowledge Distilling (independently accomplish)
Description: I first introduced Knowledge Distilling (KD) to Automatic Chord Recognition (ACR) problem to compress model for small devices. Currently, I'm trying some Reinforcement Learning (RL) methods for the optimization of KD.

3. Robot Reinforcement Learning: CyberRat - Flexible Spinal Rope-Driven Rat Robot (Supervisor: Prof. Kai Huang, 2022.09-2024.07):
Description: We defined a bionic robot rat with a flexible structure and we designed some new RL methods in it including time cluster and a safer control method, which perform better than traditional methods like PPO and ETG-RL.
Duty: I took responsibility of some coding and writing work in this project.

4. Others: :
(1) FinanceGPT: Inance Intelligent Robo-Advisor (Supervisor: Dr. Sihang Chen, 2023.05-2023.09)
(2) Implementation of a Compressed Sensing Algorithm Based on DSP (Supervisor: Prof. Xizhang Wei, 2021.01-2021.12)

Main Honors And Awards

A. Undergraduate Studies:
1. First-class Scholarship for Outstanding student of Sun Yat-sen University (received a bonus of 4,000 Chinese Yuan)
2. Meritorious Winner in the Mathematical Contest in Modeling (served as team leader)
3. Provincial First Prize in the Chinese Mathematics Competitions
4. Second Prize in Asia and Pacific Mathematical Contest in Modeling (served as team leader)
5. Provincial Second Prize in SPSS University Contest in Modeling (supervisor: Prof. Qi Liang, Prof. Ruyu Wang)
6. Provincial Third Prize in the Chinese Mathematics Competitions (served as team leader)
7. No.3 (out of 713 teams) in AI/ML for 5G-Energy Consumption Modelling by ITU AI/ML in 5G Challenge
8. Wining Prize (No.7 out of 287 teams) in The First Wi-Fi Sensing Contest by Huawei (reached the final, received a bonus of 20,000 Chinese Yuan)
9. Bronze Award in China College Algorithm Design & Program Challenge Contest
10. First Prize in Sun Yat-sen University Novice Programming Competition (served as team leader)
11. Wining Prize in Sun Yat-sen University Electronic Design Creative Competition (served as team leader)
12. Third Prize and Outstanding Resume Award in Sun Yat-sen University Future Job Hunting Competition (received a bonus of 300 Chinese Yuan)

B. High School Studies:
1. Second Prize & Provincial First Prize in the National High School Mathematics League