Zijian Zhao

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Education

Sun Yat-sen University 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)*

Experience

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

Tutor Dec. 2020 – Sep. 2021
Shanghai Zhangxiaomen Education Technology Co., Ltd. *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 revision, 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: Docker, Assembly, Verilog, as well as basic usage of web scraping, Flask, and QT
English Skills: IELTS 6.5, CET4: 605, CET6: 561
Interests: Writing Songs, Playing Instruments (including guitar, bass, piano, drum, ukulele, and hulusi)
Extracurricular Activities : Skilled in musical instruments,I have joined in the Guitar Association and the Original Music Club and have formed several bands since entering the university. I have written quite a few songs launched in the name of the bands of NEWS and Rights of Lethe and have organized and participated in some shows. Moreover, I also hold interest and participated in volunteering work.

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 substantial dataset on hand actions, which includes CSI, videos, and distances computed by FTM (Fine Time Measure).
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 first introduced Bart to music generation task by designing novel prertaining methods. Our model also shows the most advanced performance in many downstream tasks like composer classification.
Duty: I'm the host in this project and mainly response for model building and coding work.
(2) Improve Chord Recognition Algorithm by Knowledge Distilling (independently accomplish)
Description: Knowledge Distilling (KD) is first introduced 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 define a bionic robot rat with a flexible structure. And we designe some new RL methods in it including time cluster and a safer control method, which perform better than traditional methods like PPO.
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:
1. First-class Scholarship for Outstanding student of Sun Yat-sen University
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)

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