Zijian Zhao

https://github.com/RS2002
https://zijianzhao.netlify.app

Email: zhaozj28@mail2.sysu.edu.cn
Phone: (+86) 18345167686

Education

Sun Yat-sen University	Sep. 2020 – Present
BEng in Computer Science and Technology	*GPA: 90/100 (93.6 in core courses)*

Experience

Visiting Student	Aug. 2023 – Present
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

Adaptive Quadruped Locomotion of a Rat Robot Based on a Hierarchical Reinforcement Learning Framework, IEEE ROBIO (Accepted on October 13th 2023)

Zitao Zhang, Yuhong Huang, **Zijian Zhao**, Zhenshan Bing, Alois Knoll, Kai Huang*

Autonomous Locomotion of a Rat Robot Based on Reinforcement Learning, CCF CIRAC 2023 (Accepted on August 5th 2023)

Zitao Zhang, Yuhong Huang, **Zijian Zhao**, Zhenshan Bing, Kai Huang*

Patent: A Motion Control Method for Small Bionic Rat Based on Reinforcement Learning (under review, submitted on April 2023)

Kai Huang; Zitao Zhang; **Zijian Zhao**; Ruoyi Tao

KD-ACR: Knowledge Distilling for Automatic Chord Recognition Model (under revision, first submitted on January 31st 2023 to IEEE Access)

Zijian Zhao

PianoBART: Symbolic Piano Music Understanding and Generating with Large-Scale Pre-Training (in progress)

Zijian Zhao, Weichao Zeng, Fupeng He, Yutong He, Yiyi Wang, Xiao Liang, Chengying Gao*

Skills and Interests

PROGRAMMING SKILLS: C/C++, Python, Matlab, Java, MySQL, Git, Linux
English: IELTS 6.5, CET4: 605, CET6: 561
Interests: Writing Songs, Playing Instruments (including guitar, bass, piano, drum, ukulele, and hulusi)

Research Experience

1.Wifi Sensing (Supervisor: Dr. Guangxu Zhu):
(1)CSI-BERT: Recover Loss Wifi Chanel State Information by BERT (independently accomplish)
Description: A CSI-BERT model capable of processing continuous CSI data was designed to recover loss packages during communication. The recovered data improves the performance of other models in tasks like gesture and people recognition.
(2)Realtime Wifi Sensing System (horizontal project)
Duty: I'm mainly responsible for developing functional modules such as intrusion detection in ESP32 and a Wifi Router.

2.Music AI (Supervisor: Prof. Chengying Gao & Prof. Ning Liu):
(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 eight downstream tasks like music generation and style 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 (Supervisor: Prof. Kai Huang & Prof. Alois Knoll):
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: Implementation of a Compressed Sensing Algorithm Based on DSP (Supervisor: Prof. Xizhang Wei)

Honors And Awards

1. First-class Scholarship for Outstanding student of Sun Yat-sen University
2. Meritorious Winner in the Mathematical Contest in Modeling
3. Provincial First Prize in the Chinese Mathematics Competitions
4. Second Prize in Asia and Pacific Mathematical Contest in Modeling
5. Provincial Second Prize in SPSS University Contest in Modeling
6. Provincial Third Prize in the Chinese Mathematics Competitions

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Age: 21

Phone number: 18345167686

E-mail: zhaozj28@mail2.sysu.edu.cn

Location: Guangzhou, Guangdong, China

EDUCATIONAL BACKGROUND

2020.09-2024.07	Sun Yat-sen University	BEng in Computer Science and Technology

GPA: 3.9/4 (90/100)　　**Ranking: Top 10%(in major), Top 15%(in department)**　**IELTS: 6.5**　**CET-4: 605**　**CET-6: 561**　**CCF-CSP: 320**

Rank first in: Computer Programming, Data Structures and Algorithms, Embedded Systems, Distributed Systems, Complex Variables, Mathematical Analysis, Advanced Algebra, Probability and Statistics, Discrete Mathematics, Principles of Compilers

Experience:　　　2023.08-2024.08:　**Visiting Student**　　　　　Shenzhen Research Institute of Big Data
　　　　　　　　　　2022.03-2024.07:　**National Basic Subject Talent Training Plan**　　Sun Yat-sen University

Interest: NLP & MIR & Multi-modal, ISAC & Federated Learning, Robot Sensing & Reinforcement Learning
I am also interested in exploring new areas with a strong interest in computer science, AI, and mathematics.

CAMPUS EXPERIENCE

A. Research Experience (sorted by time)

1. **Wifi Sensing (Supervisor: Dr. Guangxu Zhu)** (under way)

(1) CSI-BERT: Recover Loss Wifi Chanel State Information by BERT (independently accomplish)

Description: A CSI-BERT model capable of processing continuous CSI data was designed to recover loss packages during communication. The recovered data improves the performance of other models in tasks like gesture and people recognition.

(2) Realtime Wifi Sensing System (horizontal project)

Duty: I'm mainly responsible for developing functional modules such as intrusion detection in ESP32 and a Wifi Router.

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Description: We first introduced Bart to music generation task by designing novel prertaining methods. Our model also shows the most advanced performance in eight downstream tasks like music generation and style classification.

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Research Production: *Paper: 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 (in progress)*

(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.

Research Production: *Paper: Zijian Zhao: KD-ACR: Knowledge Distilling for Automatic Chord Recognition Model (under revision, first submitted on January 31st 2023 to IEEE Access)*

3. **Robot Reinforcement Learning (Supervisor: Prof. Kai Huang & Prof. Alois Knoll)**

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.

Research Production: *Patent: 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)*

Paper: 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 13th 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

4. **Others: Implementation of a Compressed Sensing Algorithm Based on DSP (Supervisor: Prof. Xizhang Wei)**

Duty: As a member, I mainly learned relevant knowledge in the project and did some information searching work.

B. Extracurricular Activities

Skilled in musical instruments,I 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.

MAIN CERTIFICATE

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 (served as team leader)
6. Provincial Third Prize in the Chinese Mathematics Competitions (served as team leader)

PROFESSIONAL SKILLS

I'm familiar with C/C++, Python, and Matlab.
Besides, I also have a general idea of Java, MySQL, Git, and Linux.