

# Zijian Zhao

<https://github.com/RS2002>  
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## Education

### The Hong Kong University of Science and Technology

PhD in Civil Engineering (Scientific Computation)

Sep. 2024 – Present

### Sun Yat-sen University

BEng in Computer Science and Technology

Sep. 2020 – Jul. 2024

GPA: 90/100 (93.6 in core courses)

## Experience

### Visiting Student

Shenzhen Research Institute of Big Data

Aug. 2023 – Jul. 2024

Associated with Chinese University of Hong Kong (Shenzhen)

### Tutor

Shanghai Zhangxiaomen Education Technology Co., Ltd.

Dec. 2020 – Sep. 2021

Online

## Publications

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, 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, 2023.08~2024.07):

(1) CSI-BERT: Recover Loss Wifi Channel 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) Skeleton Estimation by Wifi CSI

(3) 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, 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 pretraining 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, 2022.09~2024.07):

Description: We define a bionic robot rat with a flexible structure. And we design 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, 2021.01~2021.12)

## Honors And Awards

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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