

Haolin He

Email: harlandzcc@gmail.com | Tel: +86 17828088944

Address: B403, Jockey Club Postgraduate Hall 1, The Chinese University of Hong Kong

<https://harlandzcc.github.io/>

EDUCATION

The Chinese University of Hong Kong, Department of Electrical Engineering

Degree: *Doctor of Philosophy* (Major: Electrical Engineering) 08/2024-07/2028
Supervisor: Qiuqiang Kong
Research topic: Audio Processing and Artificial Intelligence

University of Electronic Science and Technology of China, School of Information and Communication Engineering

Degree: *Bachelor of Engineering* (Honors, Major: Communication Engineering) 09/2020-07/2024
GPA: 3.95/4.0
Core Courses: Principle of Communication (99/100), Digital Signal Processing (96/100), Digital Logic Circuit and System (95/100), Stochastic Signal Analysis (94/100), Signals and Systems (93/100), Computer Communication Network (90/100), High-Level Language Programming (89/100), etc.
Scholarships: National Scholarship (2022-2023 Academic Year; Rank 2/217)
Scholarship for Outstanding Students (2022-2023 Academic Year)
Scholarship for Outstanding Students (2021-2022 Academic Year)
Scholarship for Outstanding Students (2020-2021 Academic Year)

National University of Singapore

05/2021-01/2022
Online Study Project
Major: Computer Science
Subject: Structure and Interpretation of Computer Programs (90/100)

Nanyang Technological University, Singapore

01/2022-02/2023
Online Research Project
Department: Business AI Lab

PROJECT EXPERIENCES

Musimple: A Simplified Music Generation System with Diffusion Transformer 09/2024-11/2024

Research Project | Supervisor: Qiuqiang KONG

- Proposed a streamlined framework for text-to-music generation using mel spectrograms and a 2D Diffusion Transformer (DiT), avoiding the complexity of Variational Autoencoders (VAEs)
- Designed an efficient text-conditioning mechanism leveraging Sentence Transformer, reducing computational overhead while maintaining semantic relevance
- Developed a fine-tuning strategy with reinitialized positional embeddings to improve model performance for generating coherent long-duration music
- Co-authored (2nd) the paper “Musimple: A Simplified Music Generation System with Diffusion Transformer,” accepted by *ICASSP 2025 Workshop SALMA (Speech and Audio Language Models)*

The Application of Deep Learning in Amygdala Parcellation Based on Diffusion Weighted Imaging (DWI) 06/2023-07/2024

Research Project | Supervisor: Fan ZHANG

- Purely used DWI to avoid T1-assisted segmentation and manual segmentation
- Re-clustered fiber of interest and used fiber dilation convolution and Gaussian smoothing filters to improve data quality
- Designed a K-means-friendly dense autoencoder with a tailored training framework to divide the amygdala into nine subregions
- Completed the paper “[A Novel Deep Clustering Framework for Fine-scale Parcellation of Amygdala Using dMRI Tractography](#)” which has been accepted by the *2024 International Symposium on Biomedical Imaging (ISBI2024)*
- Selected as one of the 50 [Student Travel Grant Winners](#) worldwide in *ISBI2024*

Scalable Diffusion Weighted Imaging (DWI) Dataset for Autism Spectrum Disorder (ASD) Research

03/2023-07/2024

Research Project | Supervisor: Fan ZHANG

- Collect DWI data from multiple institutions and websites, organize them in a unified format, and then use data harmonization methods to create a large autism DWI dataset
- Designed a pipeline for DWI preprocessing which automatically extracted the amygdala and its associated fiber bundles from the brain and constructed the dataset
- Cooperated with organizations, such as Chinese PLA General Hospital, Harvard Medical School, etc., to develop the dataset and co-authored the paper of “Amygdala’s role in preschool children with autism”, which has been under review by *Journal of Neuroscience Research*

Developing a New Discrete-Time Zeroing Neural Network (ZNN) Model

06/2022-05/2023

Research Project | Supervisor: Yang SHI

- Started from the optimization problem of time-varying functions (signals), derived Continuous-Time Zeroing Neural Networks (CTZNN) and Discrete-Time Zeroing Neural Networks (DTZNN) to solve time-varying challenges in the field of automation
- The ZNN was brought greater flexibility through the introduction of the fourth-moment discretization formula in the Second-Order Derivative Elimination (SODE) method
- Completed the paper “A Zeroing Neural Network for Solving Discrete Time-Varying Minimization with Different Adjustable Parameter”, which was accepted by the *7th International Conference on Mechatronics and Intelligent Robotics (ICMIR2023)*

EXTRACURRICULAR ACTIVITIES

The Mathematical Contest in Modeling / The Interdisciplinary Contest in Modeling (MCM/ICM)

02/2023

- Collaborated with a group to develop a novel index for assessing and preventing the risks of light pollution
- Innovatively integrated the EM algorithm from machine learning with the Gaussian mixture model (GMM) and optical flow estimation algorithm from computer vision, achieving impressive results in light pollution assessment during the competition
- Achieved the finalist designation (F award, top 2% approximately) in the competition with over 25,000 teams worldwide

ADDITIONAL INFORMATION

Software and Tools: MATLAB, Python, Verilog, C, Latex

Language Proficiency: Chinese (Native), English (IELTS: Overall 7.5)

Awards: F Award in the MCM/ICM (Top 2%; International-Level)

2nd Place in the 2022 University Students Competition- Five-Minute Research Presentation (State-Level)

3rd Place in the 2021 National English Competition for College Students (State-Level)

Outstanding Graduate of Sichuan Province (Provincial-Level)

Outstanding Graduate of the University of Electronic Science and Technology of China (University-Level)

Honors Bachelor, Honors Courses, Honors Research (University-level)

Outstanding Individual in Social Practices (University-level)