HAOTING ZHOU

+86 13602676186 ◇ htizhou@gmail.com

EDUCATION

Guangzhou University Sept. 2022 – Jun. 2026 (Expected)
Bachelor of Science in Information and Computing Science

- **Core Curriculum** : Mathematical Analysis(97), Advanced Algebra(90), Ordinary Differential Equation(96), Data Structure(93), Programming Language(90), Object-Oriented Programming(90), Database Principles And Applications(98), Probability And Mathematical Statistics(98), Function of Complex Variable(93), Function of Real Variable(88), Numerical Calculation, Mathematical Model, Software Engineering, Functional Analysis.
- **GPA** : **90.33/100.00** | **Rank** : **7/84 (Top 8.3%)**

PUBLICATIONS & MANUSCRIPTS

[1] **H. Zhou**, C. Fang, R. Liu, J. Peng, and Q. Fu. A Bio-plausible Neural Network Integrating Motion and Disparity Pathways for Looming Perception. *Revised manuscript submitted to* ***Acta Electronica Sinica***.

[2] C. Fang, **H. Zhou**, R. Liu, and Q. Fu. A Neuromorphic Binocular Framework Fusing Directional and Depth Motion Cues Towards Precise Collision Prediction. *Accepted with minor revision in* ***Neurocomputing***.

HONORS & AWARDS

- **Provincial First Prize (Top 2%)**, Chinese Collegiate Computing Competition, May. 2025
  currently under review for **awards in the National Competition**
- **Honorable Mention**, Mathematical Contest in Modeling (MCM) Jan. 2025
- **National First Prize (Top 5%)**, Asia and Pacific Mathematical Contest in Modeling (APMCM) Nov. 2024
- **Provincial Third Prize**, Chinese Mathematical Competition (CMC). Nov. 2024
- **Silver Award for Innovation (Top 2 out of 1,167 teams)**, *"Greater Bay Area Cup"* Nov. 2024
  Guangdong-Hong Kong-Macao Financial Mathematics Modeling Contest
- **Second-Class Scholarship (Top 15%)**, Guangzhou University Nov. 2024
- **Regional Second Prize**, *"MathorCup"* Mathematical Application Challenge Apr. 2024
- **Third-Class Scholarship (Top 25%)**, Guangzhou University Nov. 2023

RESEARCH EXPERIENCE

Machine Life and Intelligence Research Center*, Guangzhou, China* Advisor: Prof. Qinbing Fu

- **Bio-Inspired LGMD Collision Detection Model Leveraging Optical Flow and Learning-Based Optimisation**, ***Provincial Key*** *College Students' Innovative Entrepreneurial Training Programme.*
  Project Leader Oct. 2023 – Present
  - Developed neuromorphic binocular models for precise collision prediction by combining directional and depth motion cues; optimised looming-selective neuron parameters using a **Genetic Algorithm**.
  - Collected and analysed a ***stereo RGB-D*** dataset covering diverse indoor and outdoor collision scenarios to support model training and evaluation.
  - Independently deployed the neural network model on the ***TurtleBot*** robot via **ROS** for real-time collision detection and avoidance during autonomous navigation, conducted both offline visual stimuli tests and online robotic experiments.
  - Led the entire process of writing and revising **two research manuscripts**, both currently under review.
- **Collision Perception Algorithm Inspired by LGMD Neuron and Probabilistic Neural Network.**
  Core Member Jan. 2025 – May. 2025
  - Constructed a Gaussian-based probabilistic neural network inspired by the locust lobula giant movement detector neuron, trained via **evolutionary learning** to enable robust collision perception.

- Designed and conducted closed-loop experiments on the ***Colias*** robot; performed comparative analysis of offline test results using a performance indicator called the **"distinct ratio"**.
- Reviewed relevant literature, contributed to writing the **final project report**, which received the **Provincial First Prize** in the 18th Chinese Collegiate Computing Competition.

- **Autonomous Exploration and Mapping System for TurtleBot Using Multimodal Fusion Techniques.**
  Project Leader Apr. 2025 – Present
  - Designed a **SLAM** and **A-Star Algorithm**-based submodule for real-time path planning and exploration within static (unmovable) obstacles.
  - Developed an interventional subsystem using **stereo disparity** and **grayscale values** for real-time collision avoidance during robot motion control when dynamic (movable) obstacles are detected.
  - Implemented the multimodal system integrating path planning, collision avoidance, and map marking on the ***TurtleBot*** platform, conducting closed-loop experiments both indoors and outdoors.

SKILLS & LANGUAGE

- **Language:** Chinese (Native) · English **(IELTS: 6.5** (L7.0, R7.5, W5.5, S6.5); **CET-6: 490)**
- **Programming:** C/C++ · Python · Matlab · ROS · Linux · OpenCv · LaTeX · Markdown · MS Visio/Office

EXTRACURRICULAR ACTIVITIES

- Member, Guangzhou Higher Education Mega Center Volunteer Association — volunteered regularly at local community centers, contributing over 42 hours of service from 2023 to 2024.
- Team Member, School of Mathematics and Information Science Basketball League (Fall 2023).
- Interests: Travel · Basketball · Music · Movie · Fitness