Yixuan Huang

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Education

B.Sc. in Electronic Information Engineering | GPA: 91.24/100 Sep. 2022 – Present
Wuhan University of Technology (WHUT) *Wuhan, China*

Core Courses (Total score: 100):

- **Programming and Systems:** Introduction to C Programming (98), Computer Fundamentals & C Programming Lab (100)
- **High-Level Programming:** Python Programming (97.2), Java Programming (95.33)
- **High-Performance Computing:** CUDA High-Performance Scientific Computing (96)
- **Mathematical Foundations:** Probability and Mathematical Statistics (91.4)
- **Circuits and Systems:** Circuit Theory I & II (95.6, 97.4)

Research Interests

Learning-based robotics with an emphasis on robotic manipulation and physical interaction.
My interests include self-supervised and trial-and-error learning for perception and control from multi-modal sensory data, and I am currently working on algorithmic planning methods for robotic manipulation tasks.
I am also broadly interested in embodied intelligence and autonomous systems in dynamic environments.

Experience

Research Assistant, Shanghai Artificial Intelligence Research Institute (SAIRI) 2025
Research Focus: Robotics Perception, 3D Reconstruction, and Control

- Participated in a research project on agricultural intelligent robotics, focusing on perception, reconstruction, and control for plant phenotyping.
- Designed a robotic system integrating a manipulator arm with multi-modal data acquisition pipelines for plant appearance and surface geometry.
- Developed algorithms for 3D reconstruction at the leaf level, enabling detailed modeling of plant structures under real-world conditions.
- Conducted data analysis to extract key plant growth indicators and cultivation-related parameters, supporting downstream evaluation and decision-making.

China College Engineering Practice and Innovation Competition 2023
Provincial First Prize, Ranked 2nd Nationwide

- Led the development of a simulated intelligent connected vehicle system for autonomous perception and decision-making in dynamic traffic environments.
- Designed and implemented adaptive perception and planning algorithms, enabling real-time assessment of road conditions and driving behaviors.
- Integrated learning-based decision modules with traditional PID control strategies, achieving smoother and more human-like driving performance.
- Optimized lane-changing strategies beyond linear interpolation and fixed-length path generation, improving safety and trajectory smoothness.
- Enhanced decision-making through the integration of high-precision maps and dynamic traffic adaptation, outperforming static-map and traffic-light-based baselines.
- Achieved top performance in evaluation, scoring 30% higher than the next best team.

Projects

Handwritten Chinese Sentence Recognition using CNN-CTC 2025

- Designed an end-to-end handwritten Chinese text recognition system for variable-length sentence prediction

from grayscale stroke-based images.

- Implemented a CNN–BiLSTM–CTC architecture, enabling alignment-free sequence modeling and decoding.
- Processed raw `.dgrl` data from the CASIA-HWDB dataset, including stroke-to-image rendering and vocabulary construction for over 3,700 Chinese characters.
- Achieved 92.6% character-level accuracy and 78.4% sentence-level accuracy on the test set.

Pathology Slide Classification & LLM Distillation 2025

- Developed CNN- and ResNet18-based pipelines for automatic pathology slide classification, achieving balanced slide-level accuracy above 80%.
- Designed and executed a model distillation workflow by fine-tuning a large language model with slide-level metadata.
- Demonstrated effective transfer of contextual information from large models to lightweight classifiers for downstream tasks.

Pocket Frequency Meter 2025

- Developed a portable frequency meter based on the STC89C52RC microcontroller, integrating hardware design and embedded firmware for precise signal measurement.

Electronic Password Lock System 2025

- Designed and implemented an FPGA-based electronic password lock system for secure access control.
- Implemented control logic using finite-state machine design, supporting password reset and verification.

Digital Baseband Transmission System Simulation 2024

- Constructed a digital baseband transmission model using ideal low-pass and raised-cosine filters to satisfy zero ISI conditions.
- Analyzed system behavior in time and frequency domains and evaluated noise impact using eye diagrams under additive white Gaussian noise.
- Developed a complete simulation framework for signal processing visualization and performance analysis.

Frequency-Domain Analysis of Discrete-Time Signals and Systems 2024

- Implemented DFT and IDFT algorithms for frequency-domain analysis of discrete-time signals.
- Investigated the effects of sampling on spectral characteristics and system properties such as causality and stability.
- Built an offline analysis platform for signal processing and visualization.

Multi-Functional Quiz Buzzer System 2024

- Designed an 8-channel quiz buzzer system with countdown timing using digital logic circuits and state machine control.
- Successfully deployed the system in a classroom competition.

Electronic Music Box 2023

- Designed and fabricated an electronic music box with custom PCB layout using *Altium Designer*.
- Implemented music selection and light control circuits driven by periodic oscillation.

Electronic Keyboard 2023

- Designed and built a 21-key electronic keyboard with digitally synthesized tones spanning *C3* to *B5*.
- Implemented a digital oscillator with adjustable pitch control.

Technical Skills

Programming Languages: Python, C/C++, Java, MATLAB; Assembly Language, VHDL

Research & Computing Stack: Machine Learning, Deep Learning, Reinforcement Learning; Linux, Git, LaTeX; CUDA; TensorFlow, PyTorch

Robotics & Simulation: MuJoCo

Hardware & Embedded Systems: circuit design, microcontroller programming, soldering, PCB design

Services & Awards

Provincial First Prize – China College Engineering Practice and Innovation Competition (Ranked 2nd Nationwide in Provincial Selection, 2023)

University Scholarship – First Prize (2024); Second Prize (2023, 2025)

Excellent Student Award – Wuhan University of Technology (Top 1%) (2023–2025)

Student Union Officer 2022 – 2024
Wuhan University of Technology

Chief Student Affairs Representative 2022 – Present
School of Information Engineering, Wuhan University of Technology