Yixuan Huang

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Education

3rd Year undergraduate – Electronic Information Engineering Sep. 2022 – Present
Wuhan University of Technology *Wuhan, China*

- GPA: 91.24/100
- **Coursework:** Electrical Engineering and Electronics, Analog Electronic Circuit, Digital Electronic Circuit, Microcontroller Applications, Machine Learning

Selected Courses with High Grades:

- Introduction to C Programming – 98
- Computer Fundamentals & C Programming Lab – 100
- Python Programming – 97.2
- Java Programming – 95.33
- CUDA High-Performance Scientific Computing – 96
- Probability and Mathematical Statistics - 91.4
- Circuit Theory I & II – 95.6 & 97.4

Experience

Research Assistant, SAIRI 2025

Participated in the development of an agricultural intelligent robot. Contributed to the design of a robotic system equipped with a manipulator arm, along with algorithms for data acquisition, 3D reconstruction, robot control, and data analysis. Developed methods for capturing plant appearance and surface data, reconstructing detailed leaf-level models, and analyzing key plant growth indicators and cultivation parameters.

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

- Led the development of a simulated intelligent connected vehicle, enabling autonomous road condition assessment and decision-making.
- Designed and implemented adaptive algorithms for dynamic environment perception and real-time driving adjustments, which, when integrated with traditional PID-based control strategies, demonstrated improved alignment with human-like driving behavior.
- Optimized lane-changing strategies, improving smoothness and safety over linear interpolation and fixed-length path generation methods.
- Enhanced decision-making models, integrating high-precision mapping and dynamic traffic adaptation, outperforming static map detection and basic traffic light-based approaches.
- Achieved top performance, scoring 30% higher than the next best team in evaluations.

Projects

Pocket Frequency Meter 2025

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

Enterprise Network Virtual Model 2025

- Built a virtual enterprise network and completed the configuration of network segments, devices, and routing.

Handwritten Chinese Sentence Recognition using CNN-CTC 2025

- Designed and implemented an end-to-end handwritten Chinese text recognition system capable of identifying full sentences of variable lengths from grayscale stroke-based images.

- Built a CNN architecture integrating convolutional layers for spatial feature extraction and bidirectional LSTMs for sequential modeling, followed by a CTC decoding layer to enable alignment-free sequence prediction.
- Processed raw `.dgrl` handwritten data files from the CASIA-HWDB dataset, implemented stroke-to-image rendering and vocabulary construction for over 3,700 Chinese characters.
- Achieved strong performance on the test set with 92.6% character accuracy and 78.4% sentence accuracy, demonstrating the effectiveness of the proposed pipeline.

Pathology Slide Classification & LLM Distillation 2025

- Developed a CNN and ResNet18 pipeline to perform automatic classification of pathology slides, achieving balanced slide-level accuracy above 80% on multiple tasks.
- Designed and executed a model distillation workflow: fine-tuned a large language model using slide-level metadata, achieving efficient transfer of contextual slide features to downstream classification tasks.

Electronic Password Lock System 2025

- Designed and implemented an electronic password lock system using FPGA for secure access control.
- Employed multi-state federation for management and control logic.
- Can reset the password and unlock the door with the password. This project can be applied to smart door locks, etc.

Digital Baseband Transmission System Simulation 2024

- Designed an ideal low-pass and raised cosine filtering system to construct a baseband transmission model that satisfies zero inter-symbol interference (ISI) conditions.
- Analyzed and visualized the system response in both time and frequency domains to validate filtering properties.
- Introduced Gaussian white noise and used eye diagrams to evaluate its impact on signal quality at the receiver.
- Developed a complete digital baseband communication simulation platform supporting signal processing visualization and noise analysis.

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

- Implemented Discrete Fourier Transform (DFT) and Inverse DFT (IDFT) algorithms to perform frequency-domain analysis of discrete signals.
- Sampled continuous signals and investigated how sampling periods influence spectral characteristics.
- Explored system causality and stability through frequency-domain perspectives, deepening theoretical understanding.
- Built an offline analysis platform for frequency-domain signal processing and visualization.

Multi-Functional Quiz Buzzer System 2024

- Designed and implemented an 8-channel quiz buzzer system with a countdown timer using digital circuits, including logic gates and flip-flops.
- Utilized state machine planning to control decision-making and prioritization.
- Successfully deployed the system in a classroom quiz competition.

Electronic Music Box 2023

- Designed and fabricated an electronic music box mimicking a vinyl record player, featuring music and light circuits, with a custom PCB layout created using *Altium Designer*.
- Used periodic oscillation circuit to excite the light.
- Implemented a system allowing users to freely select songs stored on a memory chip.

Electronic Keyboard 2023

- Designed and built a 21-key electronic keyboard, each generating tones from *C3* to *B5* in Scientific Pitch Notation.
- Designed and implemented a digital oscillator circuit for tone synthesis, which allows pitch adjustment of each corresponding key via a tuning knob.
- Played multiple musical pieces using the electronic keyboard.

Selected Skills

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

Tools/Technologies: Git, Linux, LaTeX, CUDA, PCB Design Software, Machine Learning, Deep Learning, Reinforcement Learning, TensorFlow, PyTorch, MuJoco

Hardware: circuit design, soldering, microcontroller programming

Soft Skills: communication, adaptability, detail-orientation, collaboration

Services & Awards

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

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

Excellent Student – Wuhan University of Technology Excellent Student (top 1%) (2023, 2024, 2025)

Student Union Officer – Wuhan University of Technology 2022 – 2024

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

Objective

Passionate about enabling robots to learn task skills from physical interactions and human cooperation, improving their robustness and safety in real-world scenarios. Current research interests include:
1. Robotic manipulation and interaction: enabling skill acquisition through trial-and-error and self-supervised learning without human demonstrations.
2. Embodied intelligence and physical understanding: generalization from few-shot data and cross-environment skill transfer.
3. Intelligent navigation and autonomous driving: safe planning and decision-making in dynamic, unstructured environments.