



## PERSONAL INFORMATION

Name: Xuan Huang  
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## EDUCATION

University of Electronic Science and Technology of China

Sep. 2022 – Present

School of Information and Communication Engineering

Communication Engineering

- GPA (weighted): 91.68/100 Major Ranking: 5/193 (Top 2.6%) CET-4: 664 CET-6: 625
- Key Courses: Digital Signal Processing (99), Circuit Analysis and Electronic Circuits (97), Digital Logic Circuits and Systems (96)
- Honors: National Scholarship (Top 1.5%), First-Class Scholarship for Excellent Students (Top 8%)

## PROJECTS & RESEARCH EXPERIENCE

### 1) Self-powered Multimodal Emotion Recognition System

Dec. 2023 – Aug. 2024

Supervisor: Prof. Ding Zheng, Prof. Chang Wu

- Developed a self-sustained, multimodal emotion recognition system integrating EEG, speech, and text signals, enabled by flexible OPV technology.
  - **Multimodal Fusion Model:** Combined a Task-aware Multimodal Binding Learning (TMBL) model with a Vision Transformer for dual-modality (audio-text) analysis, fusing the decision output with EEG signals.
  - **IoT System Development:** Developed full-stack system with ESP32-based EEG acquisition, Huawei Cloud IoT backend, and WeChat Mini Program frontend.
  - **WeChat Mini Program:** Designed visualization interface supporting emotion monitoring and mood diary features.
- **Achievements:**
  - First-author paper *Voice Recognition System for Speech-to-Text and GPT Communication Powered By Organic Photovoltaic* accepted by *ICDT 2025*.
  - National First Prize in Huawei IoT Design Competition (Top 3.6%).
  - Rated Excellent in National Innovation and Entrepreneurship Program.

### 2) Tunable Structural Color Based on Multilayer Films

Dec. 2023 – Aug. 2024

Supervisor: Prof. Zhijun Liu

- Designed temperature-driven dynamic structural color using Fabry–Pérot cavities and phase-change GST films, simulating tunable reflection spectra.
  - **Transfer Matrix Modeling:** Derived electromagnetic field transfer matrices for Fabry–Pérot multilayer cavities; established global transmission model using boundary conditions and tangential continuity equations.
  - **Reflectance Simulation and Optimization:** Developed MATLAB code for dynamic reflectance prediction; optimized layer thicknesses and dielectric constants to simulate tunable color performance.
- **Achievement:** Rated Excellent in National Innovation and Entrepreneurship Program.

### 3) Energy Efficiency Optimization for Mobile Antennas

Dec. 2024 – Present

Supervisor: Prof. Weidong Mei

- Explored dynamic energy efficiency optimization for motor-driven mobile antennas, modeling the relationship between EE and antenna motion.
  - **Model Construction:** Contributed to stepper motor energy model and global EE optimization framework.
  - **Theoretical Analysis:** Analyzed the positive impact of torque attenuation at high speeds on energy efficiency.

## COMPETITION AWARDS

1) Huawei Cup National IoT Design Competition	National First Prize	Aug. 2024
2) China Undergraduate Mathematical Contest in Modeling	National Second Prize	Dec. 2024
4) National English Competition for College Students (NECCS)	National Second Prize	May 2024
3) Mathematical Contest in Modeling (MCM)	Honorable Mention	May 2024

## EXTRA-CURRICULUM ACTIVITIES

- **Peer Guidance:** Certified Peer Counselor at UESTC (University-wide & School level) Mar. 2024 – Present
- **Student Work:** Class Study Committee Member (2022010906), Class awarded “Excellent Class” Sep. 2022 – Present
- **Social Practice:** Member of “One Department, One Class” Summer Program Jun. 2023 – Sep. 2023

## SKILLS

- **Programming:** Python, MATLAB, C; **Tools:** Multisim, Vivado; **Development:** WeChat Mini Program (JavaScript), Arduino (ESP32)