# XINYU CAO

● cao2xinyu@outlook.com ● https://www.linkedin.com/in/xinyu-cao-704727231/ ● https://github.com/krisplusmagger

## EDUCATION

**B.S.E. Telecommunication Engineering** <span style="float:right">September 2020 - June 2024(Expected)</span>

Shandong University of Science and Technology <span style="float:right">84.58/100 GPA</span>

College of Electronicsss and Information Engineering

Relevant coursework: Principles of Communication, Information Theory and Coding, Digital Signal Processing, Signals and Systems, Computer Network, Computer Systems

## TECHNICAL SKILLS

**Embedded Systems:** STM32,STC15, DDS9959,UART, IIC, SPI,
**Design and Modeling Tools:** MATLAB,Proteus, Multisim, Numpy, Pandas
**Programming:** Python, C, JAVA
**Technical skills:** Git, Unix
**English:** IELTS 6.5, CET-6 493, CET-4 532

## RESEARCH EXPERIENCE

**TI Cup National Undergraduate Electronics Design Contest, Jinan: Signal Separation Device** August 2023

- Designed and implemented a signal separation device incorporating FFT frequency domain measurement, Software Phase-Locked Loop, and Operational Amplifier Circuit Design.
- Developed a unity gain adder using OPA1612, encompassing schematic and PCB design. Conducted circuit simulations using Multisim, employed STM32F103ZE for ADC acquisition, FFT computation, and waveform identification. Achieved signal regeneration using AD9959 and AD9934. Employed a software phase-locked loop approach, incorporating AD620 and low-pass filters to maintain co-frequency and co-phase alignment between original and regenerated signals.

**Lichuang Cup SDUST Electronic Design Competition, Qingdao: Basic Oscilloscope and Signal Generator** April 2023

- Developed a basic oscilloscope using STM32 microcontroller, involving ADC, DAC, Direct Memory Access, and waveform recognition. Implemented sampling, quantization, and FFT for waveform analysis.

## ACADEMIC PROJECTS

**DTMF System Simulation and Implementation** <span style="float:right">May 2023 - June 2023</span>

Developed an innovative approach using ANN model for DTMF signal demodulation.

- Implemented a real-time DTMF system using Python, TensorFlow, and STM32 microcontrollers.
- Utilized two STM32 boards for building and testing the system's performance.
- Designed a Deep Neural Network (DNN) model with TensorFlow, showcasing exceptional performance, especially in challenging low signal-to-noise ratio conditions.

**Modulation Recognition using Conventional Neural Networks** <span style="float:right">Spring 2023</span>

Explored modulation recognition with deep learning aapproaches.

- Analyzed signal samples under low Signal-to-Noise Ratio (SNR) to classify modulation types (Python, Numpy).
- Developed and evaluated DNN, CNN, and CLDNN models on RadioML datasets.
- Demonstrated the effectiveness of blind Convolutional Networks in classifying time series radio signal data.

**Digital Speech Signal Analysis and Recognition** <span style="float:right">December 2022 - January 2023</span>

Applied audio processing techniques for MFCC-based speech signal analysis.

- Employed FSDD dataset and audio processing techniques (e.g., speech framing, Mel filters, MFCC, Gammatone cepstral coefficients, KNN) to extract feature vectors from 0 to 9-digit speech signals.
- Utilized MATLAB for data analysis and signal processing to achieve accurate recognition and classification.