

## Education

- **Xidian University** Xi'an, China  
*School of Telecommunication Engineering* 2020 - present
  - Weighted average score in major courses: 90.21
  - GPA: 3.9/4.0 IELTS: 6.5

## Project Experience

- **Knowledge-driven Wireless Source Allocation** UNIC Lab, Xidian University  
*Supervisor: Nan Cheng and Ruijin Sun* Sep 2022 - present  
Specifically, we incorporate communication topology and permutation invariance into neural networks for computation offloading.  
Key Involvement:
  - Engaged in extensive literature review on permutation invariance and cybertwin, gaining profound insights into these domains.
  - Developed the reinforcement learning environment and applied QMIX and VDN algorithms to train agents and evaluate their performance in the experiments.
  - Introduced graph convolutional networks (GCN) into QMIX algorithm, and simulation results demonstrated the performance improvement brought by permutation invariance.Currently, I have completed the writing of my thesis and submitted it to VTC 2023 Fall.
- **Intelligent Auscultation System** Innovation Training Program  
*leader, cooperated with the First Affiliated of Xi'an Jiaotong University* Dec 2021 - May 2023  
We have successfully built an AIoT smart auscultation framework, including the hardware, the database, display interface, and auscultation algorithm.  
Key Involvement:
  - Manually extracted MFCC and Mel spectrogram features from heart and lung sounds, classify using machine learning classifier.
  - Transformed raw data into Mel spectrograms, curated dataset, and employed a pre-trained VGG-16 model for accurate classification.Currently, we are collecting COPD symptom data and build specific database to facilitate the practical implementation of the project.
- **Visual Media Communications**  
*Course Design* Mar 2023 - Jun 2023  
I independently develop an end-to-end visual communication system using C++.
  - Reimplemented classic JPEG image compression algorithm, achieving efficient image compression using C++ programming and various techniques.
  - Implemented an image codec using ffmpeg with H.265 (HEVC) compression.
  - Implemented network transmission of compressed video using TCP and UDP protocols.

## Awards

- **The 13th Higher Mathematics Competition for College Students in Shaanxi Universities:** Second prize

- **Chinese Collegiate Computing Competition:** Advancing to the National Competition
- **Social Scholarship from OurPalm** (only 5 candidates)
- **The 14th Mathematics Competition of Chinese College Students:** First prize of Shaanxi Province
- **The 24th National Collegiate Robotics and Artificial Intelligence Competition:** First prize of Shaanxi Province
- **Outstanding Students & First-class Scholarship**

## Publication

R. Sun, X. Yang, N. Cheng, X. Wang, C. Li, "Knowledge-Driven Multi-Agent Reinforcement Learning for Computation Offloading in Cybertwin-Enabled Internet of Vehicles," arXiv preprint arXiv:2308.02603, 2023. [\[PDF\]](#)

## Other

- **Internship:** Shaanxi Zhice Xinkong Medical Technology Co., Ltd (2023.06)  
Major responsibility: Integration of AI with electrocardiogram signals to achieve intelligent diagnosis.
- **Service:**
  - Executive chairman of the youth league committee of the school of telecommunication engineering. (2022.09 - 2023.06)
  - Epidemic volunteer. (2022.01)
  - Student teaching assistants ( Advanced Mathematics A(II), Functions of Complex Variables, Communication Electronics System Design Practice ).
- **Software Skills:** Python, Latex, Office, C++