Shixun Xu

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RESEARCH INTERESTS

My research primarily focuses on developing AI algorithms for the management, optimization, and resource allocation of wired and wireless networks. Additionally, I am passionate about constructing AI systems and enabling device-edge-cloud collaboration for AI model deployment.

EDUCATIONAL BACKGROUND

Master's Degree **Beijing University of Posts and Telecommunications** 09.2022-06.2025

Information and Communication Engineering **GPA:** 3.57/4.00 **Weighted Average:** 87.89/100

Bachelor's Degree **Shanxi University** 09.2018-07.2022

Science and Technology of Electronic and Information **GPA:** 4.07/4.50 **Weighted Average:** 91.38/100 **Rank:** 1/70

PUBLICATIONS

[1] Bing Shen, **Shixun Xu (equal contribution as co-first author)**, Xiaofeng Lu, et al., "**Research on Resource Allocation and Trajectory Optimization Based on C-DON in UAV**," *Journal of Test and Measurement Technology*, vol. 36, no.2, pp. 141-146, 2022. (Published in Chinese)

[2] **Shixun Xu**, Ao Zhang, Wenxuan Song, et al., "**Challenges and Crucial Technologies of Industrial Computing-First Network**," *Automation Panorama*, vol. 10, no. 2, pp. 50-54, 2023. (Published in Chinese)

[3] **Shixun Xu**, Fangmin Xu, Chenglin Zhao, et al., "**Routing Optimization and Wireless Resource Allocation in a Smart Production Network Enabled by Computing Power Network and Digital Twin**," *IEEE Transactions on Network and Service Management*. (Under Review)

Research Experience

Secure Communication Between a UAV and a Vehicle through a Physical Layer Method:

- Constructed a combinational optimization problem based on the safe rate of the UAV-to-Vehicle communication.
- Designed a curiosity-driven deep Q-learning algorithm to jointly plan the flying trajectory of the UAV and the ratio of the communication power to the interference power of the UAV.

An End-to-end Self-driving Strategy:

- Created a labeled manned-driving dataset through the CARLA platform and separated it uniformly into several parts to simulate distributed data.
- Trained an end-to-end self-driving model through a conditional imitation learning algorithm in a federated learning framework and tested the performance of the trained model in the CARLA platform.

A Node Detection Algorithm to Maintain the Member List in a Computer Network:

- Designed a node detection algorithm based on the process of rumor spreading.

Professional Tools or Skills

Language: CET4: 651, CET6: 585. (IELTS is under preparation)

IDE: Pycharm, MATLAB, Keil.

Programming Language: Python, C, Verilog, LaTeX.

Framework: TensorFlow 1.x, TensorFlow 2.x, PyTorch, Numpy, Pandas.

Mathematic Tools: Deep reinforcement learning, deep learning, heuristic algorithms, KKT condition, Kalman filter estimation, etc.