

# Xuanhao Luo

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🏠 <https://sites.google.com/view/xuanhaoluo/home-page>

## EDUCATION AND EMPLOYMENT

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- **North Carolina State University** **Raleigh, NC**  
Ph.D. student in Computer Science, Research Assistant  
*Aug. 2023 - Now*  
Generative AI, Intelligent Networks  
*Advised by Prof. Yuchen Liu*
- **Syracuse University** **Syracuse, NY**  
Research Intern  
*Apr. 2022 - Sept. 2022*  
Data mining, Natural Language Processing  
*Advised by Prof. Reza Zafarani and Dr. Xinyi Zhou*
- **University of Electronic Science and Technology of China** **Chengdu, China**  
Research Intern  
*Mar. 2021 - Aug. 2021*  
DRL for Resource Management  
*Advised by Prof. Du Xu*
- **Kunming University of Science and Technology** **Kunming, China**  
B.E. in Computer Science & Technology, Research Assistant  
*Sept. 2019 - July 2023*  
Internet of Vehicles, IoT  
*Advised by Prof. Yong Feng*

## SKILLS

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- **Programming:** Python(5 years) | Java | C/C++ | MATLAB | SQL | Bash | Assembly | HTML.
- **Tools:** Pytorch/TensorFlow(4 years)/Keras | Huggingface | Git | ns-3 | Wireshark | Wireless Insite | Hadoop.
- **Others:** STM32 & c51 | Embedded System Development | Raspberry Pi | Unigraphics NX | AutoCAD.

## PROJECTS

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**Generative AI** *2023 - Now*  
*During Ph.D*

- **Byte Transformer** for wireless **packet compression** with accurate next byte prediction | Evaluated the performance and **efficiency** of different model sizes across various devices.
- Radio map generation in mmWave and 5G networks using conditional **DDPM** and **cGANs**.

**Reinforcement Learning** *2019 - Now*  
*During Bachelor and Ph.D*

- **Actor-critic:** TD3-based active queue management for the vSwitch in Multi-tenant Data Center (MTDC) | **AC** based scheduling for **satellite networks**.
- **Multi-Armed Bandits:** MAB for context-aware **beam management**.
- **Double DQN:** UAV schedule scheme for wireless rechargeable **sensor networks** (WRSN).

**NLP (Hate Speech Detection)** *Summer 2022*  
*During summer intern in Syracuse University*

- Provided benchmarks on public datasets using **TextCNN**, **RNN** (LSTM and GRU), and **GCN**.
- **Multimodal** hate speech detection using **knowledge graph**, **NLP** and **image processing**.

**Embedded System and IoT** *2019 - 2023*  
*During Bachelor*

- **STM32:** Embedded image recognition system based on **CNN** | **Quadcopter** flight control system.
- **Raspberry Pi:** Machine Vision for **Object Detection** | Laser **SLAM**-based mapping | Mechanical Arm Control | Smart Vehicle **Path Planning** and Obstacle Avoidance.

## PUBLICATIONS

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[1] **Xuanhao Luo**, Zhizhen Li, Zhiyuan Peng, Mingzhe Chen, Yuchen Liu. “**Denoising Diffusion Probabilistic Model for Radio Map Estimation in Generative Wireless Networks**”, *IEEE Transactions on Cognitive Communications and Networking (ICCN)*. Submitted. June. 2024.

[2] Zhizhen Li, **Xuanhao Luo**, Yuchen Liu, Mingzhen Chen, Chenhan, Xu, Shiwen Mao. “Contextual Combinatorial Beam Management via Online Probing for Multiple Access mmWave Wireless Networks”, *IEEE Journal on Selected Areas in Communications (JSAC)*, Accepted with major revision, March. 2024.

[3] **Xuanhao Luo**, Zhizhen Li, Zhiyuan Peng, Dongkuan Xu, Yuchen Liu. “RM-Gen: Conditional Diffusion Model-Based Radio Map Generation for Wireless Networks”, *2024 IFIP Networking Conference (IFIP Networking)*. Apr. 2024.

[4] Zhizhen Li, **Xuanhao Luo**, Mingzhen Chen, Chenhan, Xu, Yuchen Liu. “Context-Aware Beam Management via Online Probing in Combinatorial Multi-Armed Bandits”, *IEEE International Conference on Communications (ICC 2024)*, Accepted, Jan. 2024.

[5] Huihui Ma, **Xuanhao Luo**, Du Xu. “Intelligent Queue Management of Open vSwitch in Multi-tenant Data Center”, *Future Generation Computer Systems*, Impact factor: 7.307, Jul. 2023.

[6] **Xuanhao Luo**, Yong Feng, Chengdong Wang. “A Clothoid Curve based Intersection Collision Warning Scheme in Internet of Vehicles”, *The Computer Journal*, CCF: B, Jul. 2022.

[7] Hui Li, Ruijin Zhou, Dongchong Shi, **Xuanhao Luo**, Xue Chen, Dan Liao. “A Lightweight Block Storage Security Scheme based on LT Coding for 6G Network”, *2021 IEEE 12th International Symposium on Parallel Architectures, Algorithms and Programming (PAAP)*. Dec. 2021.

[8] Cong Li, Jianlin Mao, Dayan Li, Zhao Ma, **Xuanhao Luo**. “Design of embedded image recognition system for lightweight convolutional neural network”, *Journal of Automation and Instrumentation (in Chinese)*. Jan. 2021.

## PATENTS

[1] “Computer monitor parameter adjustment method.”, *CN202111301980.5*.

[2] “A mobile wireless charging device.”, *CN202121232922.7*.

[3] “Handheld lighting terminal based on three axis acceleration sensors.”, *CN201820762072.3*.

## SERVICE

<b>Conference Reviewer</b>	
• TPC Member of <b>IEEE Globecom</b> Workshop.	Aug. 2024
• TPC Member of <b>IEEE ICC</b> Workshop.	Feb. 2024
<b>Teaching Experience</b> (NC State University)	
• Mentor, Summer Residential Camps: “Seeing through a Digital World”. ( <i>Lectures on ns-3</i> )	Aug. 2024.
• Teaching Assistant, CSC 226 - Discrete Mathematics for Computer Scientists.	2024 Spring.
• Teaching Assistant, CSC 246 - Concepts and Facilities of Operating Systems.	2024 Spring.
• Teaching Assistant, CSC 226 - Discrete Mathematics for Computer Scientists.	2023 Fall.

## AWARDS

NSF Travle Award	May. 2024
NC State graduate student Travle Award	Feb. 2024
Excellent Graduation Thesis	June. 2023
National Computer Design Competition ( <i>National Second-Class Award</i> )	Aug. 2021
National Engineering Training Competition for College Students ( <i>Provincial Gold Award</i> )	Apr. 2021
“Internet plus” Competition ( <i>Provincial Silver Award</i> )	July. 2021
Service Outsourcing Innovation Competition ( <i>Regional Third-Class Award</i> )	June. 2021
National College Students Electronic Design Competition ( <i>Provincial Third-Class Award</i> )	Nov. 2021
Innovation and Entrepreneurship scholarship of the university	Sept. 2021
Second-class scholarship of the university	Sept. 2020