YANQING LU

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RESEARCH INTERESTS

I am interested in **edge AI**, focusing on both efficient and adaptive on-device AI models, and learning-based optimization methods for multi-agent edge systems.

EDUCATION

University of Southern California — Los Angeles, CA
M.S. in Computer Science (GPA: 3.90/4) — Jan 2024 - Dec 2025

Southern University of Science and Technology — Shenzhen, China
B.S. in Mathematics and Applied Mathematics (GPA: 3.68/4) — Aug 2019 - Jun 2023

PUBLICATIONS

* *indicates equal contribution.*

PEARL: Peer-Enhanced Adaptive Radio via On-Device LLM [pdf][code][demo]
Ju-Hyung Lee*, Yanqing Lu*, Klaus Doppler
NeurIPS 2025 Workshop on AI and ML for Next-Generation Wireless Communications and Networking (**Oral Presentation**)

On-Device LLM for Context-Aware Wi-Fi Roaming [pdf][code][demo]
Ju-Hyung Lee, Yanqing Lu, Klaus Doppler
ICML 2025 Workshop on Machine Learning for Wireless Communication and Networks

Caching for Edge Inference at Scale: A Mean Field Multi-Agent Reinforcement Learning Approach [pdf][code]
Yanqing Lu, Meng Zhang, Ming Tang
IEEE Global Communications Conference (GLOBECOM) 2023

EXPERIENCES

Nokia — Sunnyvale, CA
Research Intern (Supervisor: Dr. Klaus Doppler; Mentor: Dr. Ju-Hyung Lee) — May 2025 - Aug 2025
- Proposed an LLM-based framework for adaptive device-to-device (D2D) communication.
- Optimized LLM post-training to enable **edge-efficient multi-task decision-making** for lower-layer wireless control.
- Developed an iOS demonstration app utilizing Apple's on-device LLM for real-time D2D optimization.

WiDeS Group, University of Southern California — Los Angeles, CA
Research Assistant (Supervisor: Prof. Andreas F. Molisch; Mentor: Dr. Ju-Hyung Lee) — Jan 2024 - May 2025
- Developed a deep reinforcement learning framework for autonomous base station deployment.
- Designed and implemented an on-device LLM framework for Wi-Fi roaming optimization with real-world demo.

Baixing AI — Shanghai, China
Software Engineer Intern — Sep 2023 - Dec 2023
- Developed a multi-agent chatbot system orchestrated via a **LLM-driven state machine**.
- Resolved recurring LLM service outages by redesigning the API key distribution system for improved scalability.
- Migrated the network protocol of the company's core product from HTTP to WebSocket.

Prof. Ming Tang's Group, Southern University of Science and Technology — Shenzhen, China
Student Researcher (Advisor: Prof. Ming Tang) — July 2022 - May 2023
- Proposed a cooperative mean-field **multi-agent reinforcement learning** (MARL) framework for scalable edge caching.
- Improved training efficiency and accelerated convergence compared to traditional cooperative MARL methods.

PROJECTS

Understanding SOAP from the Perspective of Gradient Whitening [pdf] — Mar 2025 - May 2025
- Analyzed three adaptive optimization algorithms, SOAP, Shampoo, and Adam through the lens of gradient whitening.
- **Theoretically proved** the equivalence of SOAP and Shampoo under the Kronecker product assumption.

Distilling Small Vision Language Models with Structured Reasoning [pdf][code] — Sep 2024 - Dec 2024
- Proposed a **knowledge distillation** framework for Visual Language Model (VLM), leveraging the structured reasoning capabilities of large VLMs to guide the training of small VLMs.

AutoBS: Autonomous Base Station Deployment with Reinforcement Learning [pdf][code] — Jan 2024 - Dec 2024
- Proposed an asynchronous base station (BS) deployment framework using deep reinforcement learning.
- Achieved over 90% of the optimal deployment performance while exponentially reducing computational cost.

SERVICES

Reviewer, *NeurIPS 2025 Workshop on AI and ML for Next-Generation Wireless Communications and Networking*

AWARDS

Student Travel Grant, *ICML 2025 Workshop on Machine Learning for Wireless Communication and Networks* 2025

Excellent Graduation Thesis, *Southern University of Science and Technology* 2023

Merit Student Scholarship, *Southern University of Science and Technology* 2020 & 2021

Excellent Freshman Scholarship, *Southern University of Science and Technology* 2019

TECHNICAL SKILLS

Programming Languages: Python, Java, C/C++, Swift, SQL, Matlab

Tools & Frameworks: PyTorch, Hugging Face, Ray, Git, Slurm, Docker, Redis, Spring Boot, FastAPI, LaTeX