Michele Zhu

Location: Milan | e-mail: michele.zhu@polimi.it | phone: +39-334 760 66 47

LinkedIn: michele-zhu-a17818224 | GitHub: github.com/Michele-Zhu

Summary

PhD candidate in Information Technology with strong analytical and technical foundations in computer science, AI/ML, wireless, and networked systems. Experienced in full-stack development, VR application design, game development, and deep learning systems. Proven ability to lead student teams, supervise projects, mentor Master's students, and bridge research with practical, real-world applications

Willing to relocate. Fluent in Italian and English; able to communicate in Chinese

Technical and Professional Skills

Core Skills:

- *Programming and Development*: Python, C++, SQL, Shell/Bash scripting
- *Frameworks, Libraries and Tools*: PyTorch, NumPy, Pandas, Git, Docker, NS3, SimAI (full end-to-end AI workload simulation)
- *AI and Machine Learning*: deep learning, model optimization, feature extraction, signal processing, pipeline construction, dataset preparation
- *Applied Systems*: design and development of AR/VR and digital twin systems
- *Networking and Systems* (learning/expanding): software-defined networking, congestion control, network traffic engineering, L3 load balancing

Education

Politecnico di Milano, PhD in Information Technology — Expected in Sept. 2026

Politecnico di Milano, Master in Computer Science and Engineering — July 2023
Extensive curricula covering AI/ML, data analysis, database, distributed systems, software engineering, and applied mathematics

Università degli Studi di Padova, Bachelor in Information Engineering — March 2020
Cross-disciplinary curricula with solid grounding in the physical-mathematical subjects fundamental to information engineering fields: automation, computer science, electronics, and telecommunications

Work Experience

Politecnico di Milano, PhD in Information Technology — Sept. 2023 - Present

Teaching Assistant, Politecnico di Milano - Associazione IRENE — Jan 2025 - July 2025
Supervised and guided a team in developing a VR application for elder care assistant training in collaboration with Associazione IRENE; continuing as advisor as the team transitions into a startup

Teaching Assistant, Politecnico di Milano — Feb 2024 - Dec 2024
Led the design and development of a full-stack web application for internal workflows, served as the primary liaison between stakeholders and the development team, ensuring accurate requirements were delivered

Teaching Assistant, Politecnico di Milano — Feb 2023 - July 2023
Educator in multimedia technologies for primary and secondary education teachers; delivered lectures for students on multimedia tools

Projects

Routing in Datacenter, Politecnico di Milano - NDA April 2025 - Present
Research on network communication load balancing schemes to improve end-to-end training performance of AI/LLM workloads

PN Relay, Politecnico di Milano - Alta Scuola Politecnica Oct 2024 - May 2025
Advised master's students, including participants from Alta Scuola Politecnica (joint honors program of Politecnico di Milano and Politecnico di Torino), in optimizing deep learning models for signal analysis, achieving a 99% reduction in trainable parameters while maintaining comparable accuracy; the project aims to develop a novel implantable peripheral nerve interface

Electromagnetic Digital Twin, Politecnico di Milano - Huawei Jan 2024 - June 2025
Engineered an Electromagnetic Digital Twin for V2X communications in partnership with Huawei, integrating RayTracing with SUMO mobility simulations. Optimized deep learning models for wireless communication, achieving 16x speedup, and implemented continual learning to ensure robustness in non-stationary environments

Semantic Communication via Feature Identification March 2024 - Present
This research project aims to go beyond traditional bit-wise syntatic communication toward semantic communication, a new paradigm that leverages deep learning to convey the meaning behind the messages

Semantic Communication for Video Conferencing May 2022 - Dec 2023
Developed a system to extract headpose representation in video-conferencing scenario, enabling significant bandwidth reduction compared to traditional video encoding 20x. Enhanced robustness to noise by integrating a Kalman filter during the communication of the representation

Personal projects Before 2023

- **3D Game,** 15 minutes demo puzzle and storytelling 3D videogame built with Unity. Objects, story, music, interfaces, and puzzles were all fully custom-made
- **Data Intelligence Applications,** optimization of online advertising with stochastic multi-armed bandits
- **Deep Learning**, models for leaf classification, ensemble models for time series forecasting
- **Self-Balancing Robot**, a fully built two-wheeled self-balancing robot, with Arduino Uno, PID control, and Kalman filter

Publications

Journal papers:

- M. Zhu, F. Linsalata, S. Mura, L. Cazzella, D. Badini and U. Spagnolini, "Exploiting Age of Information in Network Digital Twins for AI-driven Real-Time Link Blockage Detection", in submission.
- M. Zhu, L. Cazzella, F. Linsalata, M. Magarini, M. Matteucci and U. Spagnolini, "Toward Real-Time Digital Twins of EM Environments: Computational Benchmark for Ray Launching Software," in IEEE Open Journal of the Communications Society, vol. 5, pp. 6291-6302, 2024, doi: 10.1109/OJCOMS.2024.3463963

Conference papers:

- M. Zhu, F. Linsalata, S. Mura, L. Cazzella, D. Badini and U. Spagnolini, "AI-empowered Real-Time Line-of-Sight Identification via Network Digital Twins", IEEE INFOCOM 2025 - IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS), London, United Kingdom, 2025, pp. 1-6, doi: 10.1109/INFOCOMWKSHPS65812.2025.11152858.
- F. F. L. Mariani, M. Zhu and M. Magarini, "Semantic Communications via Feature Identification", ICC 2025 - 2025 IEEE International Conference on Communications, Montreal, Canada, 2025, pp. 4135-4141, doi: 10.1109/ICC52391.2025.11161742.
- A.B. Gokdag, S. Mura, A. Coviello, M. Zhu, M. Magarini and U. Spagnolini, "Low-Complexity CNN-Based Classification of Electronurographic Signals", 2025 19° International Symposium on Medical Information and Communication Technology (ISMICT), Florence, Italy, 2025. **Best Paper Award**
- M. Zhu, L. Cazzella, F. Linsalata, M. Magarini, M. Matteucci and U. Spagnolini, "On the Digitization of the EM Environment: A Comparison of Ray Launching Solutions," 2024 IEEE International Mediterranean Conference on Communications and Networking (MeditCom), Madrid, Spain, 2024, pp. 85-90, doi: 10.1109/MeditCom61057.2024.10621310