Le (Leonard) Zhang

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Department of Computer Science and Engineering
University of California San Diego
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Education

2025 (Expected) **M.S.** in Computer Science, University of California San Diego.
Advisor: Prof. Tajana Šimunić Rosing

2022 **B.A.** in Computer Science, University of North Carolina at Chapel Hill.
Computer Science (Major), Mathematics (Minor). GPA: 3.78/4.0
Advisor: Prof. Shahriar Nirjon

Research Interests

- Energy-efficient and sustainable embedded machine learning
- Energy-harvesting embedded systems
- Intermittent computing and wireless communication
- Intelligent acoustic and speech applications and systems

Grants & Awards

2019—2022 **Dean's List**: University of North Carolina at Chapel Hill
2019 **Honorable Mentioned Award**: ICPC Mid-Atlantic Regional

Peer-Reviewed Publications

[C2] **Le Zhang**, Onat Gungor, Flavio Ponzina, Tajana Rosing. 2025. E-QUARTIC: Energy Efficient Edge Ensemble of Convolutional Neural Networks for Resource-Optimized Learning. *ASP-DAC 2025: 30th Asia and South Pacific Design Automation Conference.* (To Appear)
https://arxiv.org/abs/2409.08369

[C1] Yubo Luo, **Le Zhang**, Zhenyu Wang, Shahriar Nirjon. 2024. Antler: Exploiting Task Affinity for Efficient Multitask Learning on Low-Resource Systems. *EWSN 2024: The 21st International Conference on Embedded Wireless Systems and Networks.* (To Appear)
https://arxiv.org/abs/2302.13155

[D1] **Le Zhang**, Yubo Luo, Shahriar Nirjon. 2022. Demo Abstract: Capuchin: A Neural Network Model Generator for 16-bit Microcontrollers. In Proceedings of *IPSN 2022: The 21st ACM/IEEE Conference on Information Processing in Sensor Networks.*
https://ieeexplore.ieee.org/document/9825945

Parchments

[P1] **Le Zhang***, Quanling Zhao*, Onat Gungor, Flavio Ponzina, Tajana Rosing. 2024. Batteryless Collaborative Machine Listening for Environmental Sound Recognition on LPWANs.

Research Experience

2024 Research Assistant.
Batteryless Collaborative Machine Listening for Environmental Sound Recognition on LPWANs
Advisor: Flavio Ponzina, Onat Gungor, and Tajana Rosing, Systems Energy Efficiency Lab (SeeLab), Department of Computer Science and Engineering, University of California San Diego.

2023—2024 Research Assistant.
Energy Efficient Ensemble Learning on Energy-Harvesting Systems
Advisor: Flavio Ponzina, Onat Gungor, and Tajana Rosing, Systems Energy Efficiency Lab (SeeLab), Department of Computer Science and Engineering, University of California San Diego.

- Developed an energy-adaptive ensemble learning framework for efficient inference and training on STM32 microcontroller.
- Improved the reliability of energy-harvesting machine learning system in low-energy conditions up to 40%.
- Accepted by *ASP-DAC 2025*.

2021—2023 Undergraduate Research Assistant.
Exploiting Task Affinity for Efficient Multitask Learning on Low-Resource Systems.
Advisor: Shahriar Nirjon, Department of Computer Science, University of North Carolina at Chapel Hill.

- Developed and evaluated an efficient multitasks learning framework and memory management algorithm to optimize the orders of multitask executions on low-resource embedded systems.
- Accepted by *EWSN 2024.*

2021—2022 Undergraduate Research Assistant.
Efficient Neural Network Implementations on 16-bit Microcontrollers.
Advisor: Shahriar Nirjon, Department of Computer Science, University of North Carolina at Chapel Hill.

- Developed a neural network model generator for 16-bit TI MSP430 series microcontrollers. Improved developer's workflow from minutes to several seconds.
- Reduced more than 50% inference time and energy consumption using hardware accelerator compared to the state of the arts.

- Published in *IPSN 2022*.

2021 Mentored Research.
Remote Collaborative Physics Simulation for High School Physics Education.
Advisor: Prasun Dewan, Department of Computer Science, University of North Carolina at Chapel Hill.
- Developed a remote user interface coupling platform for physics simulations in high school physics education using RPCs and IPCs to synchronize physical animations remotely.

Teaching & Mentoring

2024 **TinyML & Hyperdimensional Computing on Embedded Systems**
Mentee: Run Wang, 2nd year undergraduate student in ECE at UCSD

2021 **COMP 301: Foundations of Programming,** Undergraduate Teaching Assistant.
Primary Instructor: Prasun Dewan
Summer 2021, University of North Carolina at Chapel Hill