

Simon Yu

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Education

Doctor of Philosophy in Electrical and Computer Engineering May 2026

- University of Illinois Urbana-Champaign, GPA: 3.97 / 4.00

Master of Science in Electrical and Computer Engineering May 2025

- University of Illinois Urbana-Champaign, GPA: 3.97 / 4.00

Skills

Programming Languages: C/C++, Python, Bash, LaTeX, Java, MATLAB, JavaScript, HTML, CSS

Development Frameworks: Git, CMake, Qt, FreeRTOS, PyTorch, KiCad, FreeCAD, Apollo/CyberRT, ROS

Hardware Platforms: ESP32, Arduino, Raspberry Pi, NVIDIA Jetson TX1/TX2/Xavier/Orin

Select Research Projects

Neural Probabilistic Circuit (NPC) for Robust and Interpretable Perception Nov 2022 - Jul 2026

- Developed PyTorch attribute recognition and probabilistic circuit (PC) models with LearnSPN Java integration
- Built PyQt labeling and interpretation GUIs and trained 200+ models on four datasets with results published [1]

Biped Embedded Hardware-Software Platform for Robotics and Autonomy Dec 2021 - Jun 2026

- Co-designed in KiCad and assembled self-balancing robotic platform and deployed 15+ units in CS 431 course
- Developed C++/FreeRTOS embedded firmware and Qt desktop ground station GUI with results published [2]

Unmanned Aerial Vehicle (UAV) Geofencing Trajectory Estimation Jun 2018 - Jan 2020

- Developed models and algorithms for trajectory estimation and evasive maneuvers under realistic constraints
- Implemented in C/C++ within uavAP autopilot, with published results [3] validated in X-Plane and real flights

Select Personal Projects

Termlink: Fallout Terminal and Tandy Radio Shack TRS-80 Microcomputers Jul 2024 - Oct 2024

- Recreated Fallout in-game terminal in C/C++/ncurses, reproducing password-hacking gameplay and mechanics
- Built audio engine for game sounds and serial interface for streaming program UI to physical TRS-80 computer

config-utils: Cross-Platform Configuration Synchronization Utility Aug 2022 - Oct 2024

- Implemented entirely in Bash for managing and syncing system configuration files across UNIX-based systems
- Supported targeted configuration files configurable based on OS/host/user using Git and rsync as backends

Entrepreneurship

Co-Founder, Multipled LLC May 2023 - Present

- Showcased new prototype controlling Quanser helicopter chassis live in 2025 NASA ULI on-site demo event
- Authored documentation and conference publications detailing system design and experimental results [2]

Select Publications

[1] Neural Probabilistic Circuits: Enabling Compositional and Interpretable Predictions Jul 2026

*Simon Yu**, Weixin Chen*, Huajie Shao, Lui Sha, Han Zhao (**Co-first authors with equal contributions*)

Springer Nature Machine Learning Journal (MLJ)

[2] Biped: A Unified Embedded Hardware-Software Platform for Urban Air Mobility Jun 2026

Simon Yu, Steven Zhu, Lui Sha, Or D. Dantsker

American Institute of Aeronautics and Astronautics (AIAA) Aviation Forum

[3] Trajectory Estimation for Geo-Fencing Applications on Small-Size Fixed-Wing UAVs Jan 2020

*Simon Yu**, Mirco Theile*, Or D. Dantsker, Marco Caccamo (**Co-first authors with equal contributions*)

IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)