

# Justin Li Ting

Ann Arbor, MI | [sigfyg@umich.edu](mailto:sigfyg@umich.edu) | <https://sigfyg.github.io>

## Education

**University of Michigan, Ann Arbor, MI**

Aug 2021 – Dec 2026

PhD Electrical Engineering | GPA: 3.806

**Georgia Institute of Technology, Atlanta, GA**

Aug 2016 – Dec 2020

Bachelor of Science in Electrical Engineering | GPA: 3.80

Minor in Computer Science

## Awards

**NSF Graduate Research Fellowship (GRFP)**

2021-2023

**Distinguished Leadership Award (UM College of Engineering)**

2025

## Publications

**J. Ting**, J.S. Li, "Inferring Neural Dynamics and Sensorimotor Tradeoffs from Closed-Loop Behaviors via Information Bottleneck" (*in preparation*)

**J. Ting**, J.S. Li, "Path Integral Bottleneck: An Algorithm-Agnostic Framework of Computation and Control" (*under review*)

M. J. Zhang, **J. Ting**, T. Y. Moore, "Justifying bio-inspired robotics research: A taxonomy of strategies" **Journal of Experimental Biology** 2026 (*under review*)

**J. Ting**, Y. Hassan, "The Six Narratives: An Incremental Guide to Virtue in Engineering" **Science and Engineering Ethics** 2026 (*in preparation*)

**J. Ting**, J. S. Li, "Two-Layer Attention Optimization for Bimanual Coordination" **American Control Conference** 2025

**J. Ting**, M. Kim, J. Zhang, H. Sheng, Z. Zhang, "HiPER: Hierarchically-Composed Processing for Efficient Robot Learning-Based Control" **International Symposium on Computer Architecture** 2025

**J. Ting**, Y. Fang, A.S. Lele, A. Raychowdhury, "Bio-inspired Gait Imitation of Hexapod Robot using Event-Based Vision Sensor and Spiking Neural Network" **IEEE World Congress on Computational Intelligence/International Joint Conference on Neural Networks, Glasgow** 2020

A. Amaravati, S.B. Nasir, **J. Ting**, I. Yoon, A. Raychowdhury, "A 55nm time-domain mixed-signal neuromorphic accelerator with stochastic synapses and embedded reinforcement learning for autonomous micro-robots" **IEEE Journal of Solid-State Circuits** 2019/**IEEE Solid-State Circuits Conference, San Francisco** 2018

A.S. Lele, Y. Fang, **J. Ting**, A. Raychowdhury, "Learning to Walk: Spike Based Reinforcement Learning for Hexapod Robot Central Pattern Generation" **IEEE Artificial Intelligence Circuits and Systems, Genoa** 2020

N. Cao, **J. Ting**, S. Sen, A. Raychowdhury, "Smart Sensing for HVAC Control: Collaborative Intelligence in Optical and IR Cameras" **IEEE Transactions on Industrial Electronics** 2018

## Research Experience

**Bio-Inspired Control Theory | Li Research Group | University of Michigan**

Jan 2024–Present

**Advisor: Jing Shuang (Lisa) Li**

- Proposed new theory for neural computation and control, combining optimization, information theory, and stochastic control methods to study how control behavior is affected by limited computation.
- Formulated a two-layer convex optimization model of attention in bimanual control. Wrote a custom interior-point solver that stabilized bimanual tasks and exposed principled tradeoffs between actuator coordination and attention allocation.
- Introduced the Path Integral Bottleneck, a framework for quantifying the computational effort of a closed-loop controller. Applied the framework to neural population models to relate control complexity to motor cortex activity.

**Advisor: Zhengya Zhang**

- Conducted research on domain-specific accelerators for emerging workloads in real-time robotic control, addressing many new workloads' inability to be deployed in power-constrained and time-sensitive applications.
- Designed a hierarchical, future-proof accelerator that efficiently and flexibly supports emerging workloads where neural-network and model predictive control computations are combined.
- Synthesized and evaluated accelerator prototype in Intel 16nm process, resulting in 10.75× speedup over the GTX 1080 GPU and 12.80× energy efficiency improvement over the Jetson Orin Nano GPU.

## Teaching

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**Graduate Student Instructor, EECS 314 (Electrical Circuits, Systems, and Applications), Univ. of Michigan**

Jan – Apr 2026

- Planned and taught weekly discussions, facilitated and graded labs, held office hours, supervised ~50 students

## Leadership

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**President of Tech for Social Good**

Aug 2022 – May 2024

## Reading Group Director

Aug 2025 – Present

- Organized campus-wide collaborations and designed workshops around technology's social impact
- Arranged collaborations with external nonprofits and volunteer organizations for pro bono software development

**President of GT Tekstyles**

Jan 2018 – Dec 2020

**President of GT Bahá'í's**

Jan 2018 – Dec 2020

## Prior Experience

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**Neuromorphic Robotics | Integrated Circuits and Systems Research Lab (ICSRL) | Georgia Tech**

May 2017 – May 2020

- Constructed a low-power neuromorphic learning pipeline with a custom spiking neural network (60 nJ per control cycle), enabling a hexapod robot to imitate motion from event-based vision.
- Implemented on-chip reinforcement learning for robotic control, reducing training time by 5× (15h to 3h) and improving performance by 60%. Demonstrated live system at International Solid-State Circuits Conference.

**Solid-State Drives (SSD) | Intel Corporation (Folsom)**

Jun 2018 – Dec 2018 | May 2019 – Aug 2019

- Wrote statistical models of SSDs and workload behavior (e.g. representing drives as probability distributions) to simulate multi-drive reliability and inform read/write policy evaluation.
- Strengthened SSD firmware validation by redesigning corruption and update tests for broader product coverage and automating recovery of failed drives.