

Thomas Lu

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EDUCATION

University of California, Berkeley

Aug. 2022 – Present

Bachelor of Arts in Computer Science and Physics (GPA 4.0/4.0)

Expected May 2026

Honors in Electrical Engineering and Computer Science

EXPERIENCE

Song Group, Berkeley EECS

Starting January 2025

Advised by Dr. Jingxuan He

- Course project for CS 194-280 Advanced LLM Agents taught by Prof. Dawn Song, subsequently developed into a conference paper.
- Formalized a notion for the "usefulness" of a mathematical theorem suitable for use as a reward signal, allowing conjecturing models to generate more useful conjectures as evaluated by LLM-as-a-judge

Ranade Group, Berkeley EECS

Starting August 2024

Advised by Prof. Gireeja Ranade

- Contributed to formalization of EECS 127 (linear algebra and optimization) problems and the Singular Value Decomposition (SVD) with MathLib and Lean 4. In-progress contribution of SVD to MathLib.
- Contributed to LeanTutor, an end-to-end automated tutoring system incorporating formal verification via Lean 4 to avoid hallucinations and ensure logical soundness, compared to existing LLM-only approaches

Rivian Automotive, Inc.

May 2024 – August 2024

Software Engineering Intern, Camera Systems

- Developed an in-house automated tool for computing image quality metrics specific to downstream ADAS applications with Python and OpenCV, supplanting leading commercial tools (i.e. Imatest, DXOMARK).
- Contributed to ISP tuning for in-house camera drivers on the NVIDIA Jetson Orin platform, delivering improvements on metrics such as sharpness, white balance, noise, and LED flicker.

Speech and Computation Lab at UC Berkeley

Starting August 2022

Advised by Prof. Gasper Begus

- Developed models of human speech using Generative Adversarial Networks (GANs), incorporating articulatory (EMA-to-speech) mapping to create realistic models that learn articulatory movements via imitation.

Multi Physics and Circuit Lab at San Jose State University

May 2021 – December 2022

Advised by Prof. Hiu-Yung Wong

- Designed deep learning tools for modeling semiconductor device physics, for feature extraction, predicting physical device characteristics, and enabling inverse design.

PUBLICATIONS

Timothe Kasriel, Thomas Lu, Qinghua Ding, Jingxuan He, and Dawn Song. UseFor: Usefulness-driven learning of formal mathematics. *Under review at the 14th International Conference on Learning Representations (ICLR 2026)*, 2026.

Manooshree Patel, Rayna Bhattacharyya, Thomas Lu, Arnav Mehta, Niels Voss, Narges Norouzi, and Gireeja Ranade. LeanTutor: A formally-verified AI tutor for mathematical proofs. *The 16th Symposium on Educational Advances in Artificial Intelligence (EAAI-26)*, 2026. URL <https://arxiv.org/abs/2506.08321>.

Gasper Beguš, Thomas Lu, and Zili Wang. Basic syntax from speech: Spontaneous concatenation in unsupervised deep neural networks. *Journal of Memory and Language*, 2025a. *Under revision (second round)*.

Gasper Beguš, Thomas Lu, Alan Zhou, Peter Wu, and Gopala Anumanchipalli. CiwaGAN: Informative imitation with articulatory learning. *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, 2025b. *Under revision*.

Thomas Lu, Albert Lu, and Hiu Yung Wong. Device Image-IV mapping using variational autoencoder for inverse design and forward prediction. In *2023 International Conference on Simulation of Semiconductor Processes and Devices (SISPAD)*, pages 161–164, 2023.

Thomas Lu, Varada Kanchi, Kashyap Mehta, Sagar Oza, Tin Ho, and Hiu Yung Wong. Rapid MOSFET contact resistance extraction from circuit using SPICE-augmented machine learning without feature extraction. *IEEE Transactions on Electron Devices*, 68(12):6026–6032, 2021.

PRESENTATIONS AND WORKSHOPS

Timothe Kasriel, Thomas Lu, Qinghua Ding, Jingxuan He, and Dawn Song. Usefulness-driven learning of formal mathematics. *Poster at MATH-AI: The 5th Workshop on Mathematical Reasoning and AI (NeurIPS 2025)*, December 2025.

Manooshree Patel, Rayna Bhattacharyya, Thomas Lu, Arnav Mehta, Niels Voss, Narges Norouzi, and Gireeja Ranade. LeanTutor: A Lean-verified tutor for mathematical proofs. *Poster at the 2nd AI for Math Workshop @ ICML 2025*, July 2025. URL <https://icml.cc/virtual/2025/52431>.

Gašper Beguš, Thomas Lu, Alan Zhou, Peter Wu, and Gopala Anumanchipalli. CiwaGAN: Informative imitation with articulatory learning. In *Proceedings of the Annual Meeting of the Linguistic Society of America (LSA 2025)*, January 2025. Poster presentation.

Gašper Beguš, Thomas Lu, and Zili Wang. Basic syntax from speech: Spontaneous concatenation in unsupervised deep neural networks. In *Proceedings of the Annual Meeting of the Cognitive Science Society (CogSci 2024)*, July 2024. Poster presentation.

Russell A Poldrack, Thomas Lu, and Gašper Beguš. AI-assisted coding: Experiments with GPT-4, 2023. URL <https://arxiv.org/abs/2304.13187>.

Vasu Eranki, Thomas Lu, and Hiu Yung Wong. Comparison of manifold learning algorithms for rapid circuit defect extraction in SPICE-augmented machine learning. In *2022 IEEE 19th Annual Workshop on Microelectronics and Electron Devices (WMED)*, 2022.

TEACHING EXPERIENCE

CS 170 (Efficient Algorithms and Intractable Problems) <i>Undergraduate Student Instructor</i>	Fall 2025 <i>UC Berkeley EECS</i>
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- Led discussion sections of 20-30 students, hosted office hours, contributed to exam/homework development and coordinated grading activity.

CS 170 (Efficient Algorithms and Intractable Problems) <i>Tutor</i>	Spring 2024 - Spring 2025 <i>UC Berkeley EECS</i>
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- Hosted office hours, proctored exams, and graded exams and homework.

AWARDS AND HONORS

Renaissance Philanthropy AI For Math Fund <i>Grant awarded to the LeanTutor project (PI: Gireeja Ranade)</i>	September 2025
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UC Berkeley Electrical Engineering and Computer Sciences <i>Evergreen Undergraduate Research Award</i>	June 2025
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UC Berkeley Institute for Cognitive and Brain Sciences <i>Summer Undergraduate Research Award</i>	May 2023
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United States Physics Olympiad <i>Silver Medal</i>	May 2022
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