

# JASPER LEE

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## EDUCATION

**The University of Texas at Austin**, Austin, TX  
*Bachelor of Science in Computer Science, Turing Scholars Honors Program*  
*Bachelor of Science in Mathematics*

May 2025  
GPA: 3.99/4.00

## RESEARCH INTERESTS

My research interests lie at the intersection of **machine learning** and **formal methods**, including **AI for math**.

## RESEARCH EXPERIENCE

**Trustworthy Intelligent Systems Lab**, Austin, TX

August 2023 - Present

*Researcher*

- Advisor: Prof. Swarat Chaudhuri
- Do research in automated theorem proving, large language models, and reinforcement learning in UT Austin's Trustworthy Intelligent Systems (Trishul) Lab
- Currently working on an automated theorem prover that uses LLMs and computer algebra solvers to provide answers and formal proofs for competition math problems in Lean 4
- Helped create PutnamBench, an automated theorem proving benchmark of 640 problems from the Putnam Mathematical Competition, written in the proof assistants Lean 4, Isabelle, and Coq; the PutnamBench paper was accepted at NeurIPS 2024 and won the Best Paper Award at the AI for Math Workshop @ ICML 2024
- Worked on solving reinforcement learning problems with high reward by using pre-trained LLMs to choose actions

**Speech, Audio, and Language Technologies Lab**, Austin, TX

August 2022 - Present

*Researcher*

- Advisor: Prof. David Harwath
- Do research on improving the performance of self-supervised audio machine learning models (HuBERT) in UT Austin's Speech, Audio, and Language Technologies (SALT) Lab
- Worked on an individual project to improve the efficiency of HuBERT using various methods, including fast Fourier transforms, cross-attention, and knowledge distillation

**Computational Visualization Center**, Austin, TX

May 2023 - August 2023

*Researcher*

- Advisor: Prof. Chandrajit Bajaj
- Did research on visualizing training of reinforcement learning models using virtual reality in UT Austin's Computational Visualization Center (CVC) lab

**Applied Research Laboratories**, Austin, TX

June 2021 - August 2021, February 2022 - August 2022

*Apprentice, Student Technician*

- Achieved high accuracy at detecting and estimating properties of sonar signals using machine learning
- Implemented and tuned different machine learning algorithms (such as the object detection algorithm YOLOv5) to increase classification and regression accuracy
- Demonstrated the project through a technical report and a poster presentation

**Program Synthesis Final Project**

Spring 2024

- Final project of the Program Synthesis graduate class, in which I reproduced PROPEL, a program synthesis for RL method described in the NeurIPS 2019 paper "Imitation-Projected Programmatic Reinforcement Learning"

**Other Graduate Class Final Projects**

Fall 2023, Spring 2024

- Spoken Language Technologies final project was a group project using EnCodec units for general purpose audio embeddings, fed into downstream MobileNets
- Reinforcement Learning final project was a partner project comparing various knowledge distillation techniques applied to proximal policy optimization (PPO) in reinforcement learning

## TEACHING EXPERIENCE

**Machine Learning and Data Science Club Technical Officer**, Austin, TX

August 2022 - Present

- Prepare technical content for weekly meetings of the Machine Learning and Data Science (MLDS) Club at UT Austin, dedicated to teaching people both the theory and application of machine learning and data science, starting at an introductory level

- Create beginner-friendly presentations to introduce members to various machine learning concepts
- Help run competitions and hackathons for members to hone their skills
- Hosted a weekly reading group to read and discuss seminal machine learning papers spanning multiple fields
- Meetings and competitions have hosted up to 100 people of various backgrounds and majors

#### **Honors Discrete Mathematics Teaching Assistant, Austin, TX**

August 2022 - December 2022

- Led discussion sections, hosted office hours, and graded assignments for UT Austin's Honors Discrete Mathematics class (CS 311H)

#### **PUBLICATIONS**

George Tsoukalas, **Jasper Lee**, John Jennings, Jimmy Xin, Michelle Ding, Michael Jennings, Amitayush Thakur, and Swarat Chaudhuri. Putnambench: Evaluating neural theorem-provers on the putnam mathematical competition. In *The Thirty-eighth Conference on Neural Information Processing Systems Datasets and Benchmarks Track*, 2024a. URL <https://openreview.net/forum?id=ChKCF75Ocd>.

George Tsoukalas, **Jasper Lee**, John Jennings, Jimmy Xin, Michelle Ding, Michael Jennings, Amitayush Thakur, and Swarat Chaudhuri. Putnambench: A multilingual competition-mathematics benchmark for formal theorem-proving. In *AI for Math Workshop @ ICML 2024*, 2024b. URL <https://openreview.net/forum?id=vqW1VRFeVP>.

#### **HONORS AND AWARDS**

##### **Best Paper Award, AI for Math Workshop @ ICML 2024**

June 2024

- Best Paper Award at the AI for Math Workshop @ ICML 2024 for the paper "PutnamBench: A Multilingual Competition-Mathematics Benchmark for Formal Theorem-Proving"

##### **Turing Scholars Honors Program**

August 2021 - May 2025

- Research-oriented computer science honors program at UT Austin

##### **University Ladies Club Scholarship**

Fall 2024

- Merit-based scholarship, awarded \$2,500 for undergraduate education

##### **Texas Interscholastic League Foundation (TILF) Scholarship**

Fall 2021

- Merit-based scholarship, awarded \$1,000 for undergraduate education

##### **National Merit Scholarship**

Fall 2021

- Merit-based scholarship, awarded \$2,500 for undergraduate education

#### **PROFESSIONAL EXPERIENCE**

##### **Jane Street Capital Software Engineering Internship, New York, NY**

May 2024 - August 2024

- Implemented two software engineering projects in OCaml and Python, working with databases and data manipulation
- Presented both projects to my teams at the end

#### **SKILLS**

**Programming Languages:** Python, Java, C, C++, Rust, Go, OCaml, MATLAB, R, C#, Dart, x86/ARM assembly, Verilog, Coq, Lean 4

**Technical/Computer Skills:** PyTorch, TensorFlow, Jupyter Notebooks, Git, LaTeX, Linux, SQL, Unity, JUnit, Flutter

**Additional Skills:** Technical writing, Presentation