Tony Tu

Personal Information

Office Location:	Coda S1214, Tech Square, Atlanta, GA 30308
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Education

Aug. 2023 – Present — **Georgia Institute of Technology**
Ph.D. in Machine Learning *(Advisor: Yunan Luo)*
Research focus: Machine Learning, Generative AI, Bioinformatics, Protein Design

Aug. 2021 – May 2023 — **Georgia Institute of Technology**
M.S. in Computer Science *(Advisors: Diyi Yang, Amirali Aghazadeh)*
Research focus: Machine Learning, Natural Language Processing, Bioinformatics

Aug. 2017 – May 2021 — **University of California, Berkeley**
B.S. in Electrical Engineering and Computer Science
Research focus: Machine Learning, Computer Vision, Natural Language Processing
Cumulative GPA: 3.602 (Dean's Honors List, Fall 2020 & Spring 2021)

Professional Skills

PyTorch, TensorFlow, Agentic AI, Diffusion Models, Transformers, LLMs, Protein Language Models, Protein Language Models, ESM, AlphaFold, Variational Autoencoders, Reinforcement Learning

Work Experience

May 2022 - Aug. 2022 — Software Engineering Intern at Meta Inc. (Menlo Park, California)
- Worked with Ads fairness equity team to design and train reinforcement learning models to address potential bias in current Meta ads delivery system
- Used policy gradient network to implement fine-grained RL controller to further improve ad delivery to users with different backgrounds including gender, age and ethnicity

Aug. 2023 - Present — Head GTA at Georgia Institute of Technology ECE Department, (Atlanta, Georgia)
- Head graduate teaching assistant for ECE 4180 - Embedded System Design
- Hold regular 10 weekly lab hours and help students with completing assignments and understanding of lab materials

Jan. 2022 - May 2023 — Head GTA at Georgia Institute of Technology College of Computing, (Atlanta, Georgia)
- Head graduate teaching assistant for CS 3001 - Computing, Society, and Professionalism
- Grade midterms, final exams, essays for a class of more than 200 students
- Hold two weekly discussions for 20 students to go over worksheets

Apr. 2018 - Apr. 2019 — Head uGSI at UC Berkeley EECS department, (Berkeley, California)
- Head uGSI for Engineering 98 for 3 semesters, created course contents, lecture recordings and autograders for 60+ students
- Made and maintained a fully functional course website for the Summer 2018 and Winter 2019 Semester: (hosted on Heroku): https://intro-to-cs-ruby.herokuapp.com/

Research Experience

April. 2024 - Present

PhD researcher at Luo Lab at Georgia Institute of Technology

Working under professor Yunan Luo on the application of generative AI in protein & drug design. My current research projects involve fine-tuning protein language models for protein function prediction and multi-property optimization

Dec. 2022 - Dec. 2023

PhD researcher at AMIR Lab at Georgia Institute of Technology

Working with professor Amirali Aghazadeh on the application of machine learning in computational biology. First authored paper *ProtiGeno: a prokaryotic short gene finder using protein language models* published to ICML 2023 Workshop for Computational Biology

Apr. 2019 - May 2021

Undergraduate NLP researcher at UC Berkeley Artificial Intelligence Research Lab

Conducted research on the intersection of NLP and education under professor Marti Hearst and Ph.D. student Katie Stasaski, Worked on project to combine neural keyword classification models with Question-Answer generation models for intelligent tutoring systems. Co-authored paper *Automatically Generating Cause-and-Effect Questions from Passages* accepted to BEA workshop 2021

May 2020 - Feb. 2021

Undergraduate CV researcher at UC Berkeley VIP Lab

Worked with Professor Avideh Zakhor @ Berkeley Aerial Robotics group on developing object detection algorithms for unmanned Ariel vehicles.

May 2021 - May 2022

Researcher at Berkeley Lab for Information and System Sciences

Worked with Professor kannan ramchandran on exploring how pretrained transformer models can generalize to other modalities with minimal finetuning, such as image classification, bit operations and protein sequence prediction

Publications

Tony Tu, Gautham Krishna, Amirali Aghazadeh. *ProtiGeno: a prokaryotic short gene finder using protein language models* ICML 2023 Workshop on Computational Biology. Status: Published

Tony Tu *Accurate Prokaryotic Gene Annotation Using Structure-Aware Protein Language Models* Status: Published

Rongzhe Wei, Peizhi Niu, Xinjie Shen, **Tony Tu**, Yifan Li, Ruihan Wu, Eli Chien, Olgica Milenkovic, Pan Li *A Wolf in Sheep's Clothing: Bypassing Commercial LLM Guardrails via Harmless Prompt Weaving and Adaptive Tree Search*

Amirali Aghazadeh, Nived Rajaraman, **Tony Tu**, Kannan Ramchandran. *Spectral Regularization Allows Data-frugal Learning over Combinatorial Spaces* submitted to the Transactions on Machine Learning Research (TMLR) Status: Published

Katie Stasaski, Manav Rathod, **Tony Tu**, Emily Xiao, Marti Hearst. *Automatically Generating Cause-and-Effect Questions from Passages* ACL conference BEA Workshop 2021 (16th Workshop on Innovative Use of NLP for Building Educational Applications). Status: Published

Manav Rathod, **Tony Tu**, Katie Stasaski. *Educational Multi-Question Generation for Reading Comprehension* ACL conference BEA Workshop 2022 (17th Workshop on Innovative Use of NLP for Building Educational Applications) Status: Published