Fahim Tajwar

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EDUCATION

Stanford University **Stanford, CA**
Bachelor of Science (BS) with Distinction, Mathematics **June 2022 (4.04/4.30)**
Master of Science (MS), Computer Science (AI/ML) **June 2023 (Expected)**

Relevant Coursework: Reinforcement Learning, Machine Learning, Statistical Inference, Convex Optimization, Real/Functional Analysis

SKILLS

Programming Languages/Framework: Python, C, C++, Java, Matlab, Unix, PyTorch, Caffe2, TensorFlow

EXPERIENCE

Graduate Teaching Assistant, Stanford University September 2022 – Current

- Helped with teaching and associated duties for Stanford's graduate level course --- CS 330, Deep Multi-Task and Meta Learning
- Led a tutorial on *PyTorch* to help students catch up to the course's pre-requisites

Software Engineer Intern, Meta Platforms, Inc. (formerly Facebook, Inc.) June 2022 – September 2022

- As part of the Ads Core ML Eng team, designed and implemented components for state-of-the-art ML recommendation systems in *Python*
- Designed and experimented with knowledge distillation modules to improve performance of computationally cheaper ML networks
- Calculated computational costs for new methods/networks to make sure they are scalable and works well with extremely large datasets

Research Intern, Stanford Artificial Intelligence Laboratory March 2020 – Current

- Worked on the problem of learning invariance to nuisance transformations in the context of imbalanced datasets
- Designed and implemented a generative model-based algorithm that can be combined with other state-of-the-art methods to give balanced test accuracy a boost of 1-2% on long-tailed versions of familiar datasets, e.g., CIFAR, GTSRB, etc. (*ICLR, 2022*)
- Designed and implemented a RL algorithm that works on environments with irreversibility (stuck states) and a variety of settings like episodic, autonomous, and continual learning (*NeurIPS, 2022*)

Computer Vision Research Intern, Stanford University March 2019 – June 2020

- Using convolutional neural networks (CNNs), built a system that detects environmental regulation violations in the form of brick kilns and produces their co-ordinates from satellite imagery in South Asia (*PNAS, 2022*)
- Detected nearly 10,000 brick kilns in Bangladesh which directly affect the lives of at least 1 million people using the trained CNN in *TensorFlow,* with the possibility of extending the project over to India (with 100,000 kilns) and other developing countries
- Designed a classifier to distinguish between environment-friendly and unfriendly type of brick kilns to help enforce regulatory compliance

AWARDS

Bronze Medal, 47th International Physics Olympiad, Switzerland Liechtenstein 2016
Bronze Medal, 48th International Physics Olympiad, Indonesia 2017

PUBLICATIONS (* Equal Contribution)

Surgical Fine-Tuning Improves Adaptation to Distribution Shifts 2022
Yoonho Lee*, Annie S Chen*, Fahim Tajwar, Ananya Kumar, Huaxiu Yao, Percy Liang, Chelsea Finn
Under Review in International Conference on Learning Representations (ICLR), 2023

When to Ask for Help: Proactive Interventions in Autonomous Reinforcement Learning 2022
Annie Xie*, Fahim Tajwar*, Archit Sharma*, Chelsea Finn
Neural Information Processing Systems (NeurIPS), 2022

Do Deep Networks Transfer Invariances Across Classes? 2022
Allan Zhou*, Fahim Tajwar*, Alexander Robey, Tom Knowles, George J. Pappas, Hamed Hassani, Chelsea Finn
International Conference on Learning Representations (ICLR), 2022

No True State-of-the-Art? OOD Detection Methods are Inconsistent across Datasets 2021
Fahim Tajwar, Ananya Kumar*, Sang Michael Xie*, Percy Liang
ICML Workshop on Uncertainty & Robustness in Deep Learning (UDL), 2021

Scalable deep learning to identify brick kilns and aid regulatory capacity 2021
Jihyeon Lee*, Nina R. Brooks*, Fahim Tajwar, Marshall Burke, Stefano Ermon, David B. Lobell, Debashish Biswas, Stephen P. Luby
Proceedings of the National Academy of Sciences, Apr 2021, 118 (17)