Kulin Shah

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EDUCATION

University of Texas at Austin — *August 2021 -*
Ph.D. in Computer Science
Advisors: Prof. Adam Klivans & Prof. Qiang Liu

International Institute of Information Technology, Hyderabad — *August 2015 - July 2019*
B. Tech (Honors) in Computer Science and Engineering
Advisor: Prof. Naresh Manwani

PUBLICATIONS (($\alpha - \beta$) indicates the alphabetical ordering and * indicates equal contribution)

Simple Mechanisms for Representing, Indexing and Manipulating Concepts [pdf]
($\alpha - \beta$) Yuanzhi Li, Raghu Meka, Rina Panigrahy, **Kulin Shah**
Under Review

Learning Mixtures of Gaussians Using the DDPM Objective [pdf]
Kulin Shah, Sitan Chen, Adam Klivans
Neural Information Processing Systems (**NeurIPS**), 2023

Ambient Diffusion: Learning Clean Distributions from Corrupted Data [pdf]
Giannis Daras, **Kulin Shah**, Yuval Dagan, Aravind Gollakota, Alexandros G. Dimakis, Adam Klivans
Neural Information Processing Systems (**NeurIPS**), 2023

Debiased Dynamic Stochastic Gradient Aggregation for Learning with Multiple Objectives
Mao Ye*, **Kulin Shah***, Qiang Liu
Under Review

Learning and Generalization in Overparameterized Normalizing Flows [pdf]
Kulin Shah, Amit Deshpande, Navin Goyal
International Conference on Artificial Intelligence and Statistics (**AISTATS**), 2022.
Workshop on the Theory of Overparameterized Machine Learning (**TOPML**), 2021.

RISAN: Robust Instance Specific Deep Abstention Network [pdf]
Bhavya Kalra, **Kulin Shah**, Naresh Manwani
Conference on Uncertainty in Artificial Intelligence (**UAI**), 2021 (**Oral**).

Rawlsian Fair Adaptation of Deep Learning Classifiers [pdf]
Kulin Shah, Pooja Gupta, Amit Deshpande, Chiranjib Bhattacharyya
AAAI/ACM Conference on AI, Ethics, and Society (**AIES**), 2021.

Online Active Learning for Reject Option Classifier [pdf]
Kulin Shah, Naresh Manwani
AAAI Conference on Artificial Intelligence (**AAAI**), 2020 (**Oral**).

Sparse Reject Option Classifier using Successive Linear Programming [pdf]
Kulin Shah, Naresh Manwani
AAAI Conference on Artificial Intelligence (**AAAI**), 2019 (**Oral**) .

PLUME: Polyhedral Learning Using Mixture of Experts [pdf]
Kulin Shah, PS Sastry, Naresh Manwani

Ingredients for Happiness: Modeling Constructs via Semi-supervised Content Driven Inductive Transfer [pdf]
Bakhtiyar Syed, V. Indurthi, **Kulin Shah**, Manish Gupta and Vasudeva Varma
AAAI-19 Workshop on Affective Content Analysis, AFFCON-19 (**Runner-up** for CL-Aff shared task).

RESEARCH EXPERIENCE

Graduate Research Assistant, University of Texas at Austin   Aug 2021 - Present
· Advisor: Prof. Adam Klivans and Prof. Qiang Liu
· Working on problems in generative models, multi-objective optimization, and compression using theory and experiments.

Student Researcher, Google Research   June 2023 - Present
· Manager: Dr. Rina Panigrahy
· Working on understanding the architecture of the transformer with the goal of improving its efficiency.

Research Fellow, Microsoft Research, India   Aug 2019 - July 2021
· Mentor: Dr. Navin Goyal and Dr. Amit Deshpande
· Worked on problems in generative models, representation learning, theory of deep learning.

Research Intern, Microsoft Research, India   May 2019 - July 2019
· Mentor: Dr. Amit Deshpande and Prof. Chiranjib Bhattacharyya
· Worked on problems related to fairness in machine learning.

Research Intern, Indian Institute of Science (IISc), Bangalore   May 2018 - June 2018
· Mentor: Prof. PS Sastry
· Worked towards understanding architecture and training dynamics of Capsule Network.

AWARDS AND ACHIEVEMENTS

- Awarded **NeurIPS** scholar award 2023.
- Awarded **Google**, **Microsoft Research** travel grant and **AAAI Student Scholarship** to attend **AAAI** 2019.
- Awarded **Research Award** for exceptional research work at IIIT Hyderabad.
- Awarded **Dean's List** award for excellent academic performance in Spring 2016, Spring 2017 and Spring 2018.
- **34 rank** in India in online round of ACM ICPC programming contest, 2018 (Total 3000+ teams)
- **53 rank** in Amritapuri regional of ACM ICPC programming contest, 2017 (Total top 260 teams from India).

POSITIONS

- Teaching Assistant:
  ◇ Honors Data mining - *Prof. Adam Klivans*   Spring 2022
  ◇ Linear Algebra - *Prof. Naresh Manwani & Prof. Prasad Krishnan*   Spring 2019
  ◇ Statistical Methods in AI - *Prof. Naresh Manwani*   Spring 2018
  ◇ Algorithms - *Prof. Pawan Kumar*   Fall 2017

TECHNICAL SKILLS

Programming Languages	Python, Matlab, C, C++, Bash, Java
Libraries & Tools	PyTorch, TensorFlow, Jax, Keras, Scikit-learn, Git, Linux, Latex

RELEVANT COURSES

Generative Models & Multiobjective optimization	Reinfocement Learning
Topics in Machine Learning (Online Learning & Bandits)	Statistical Methods in AI
Optimization Methods	Autonomous Robots
Game Theory	Computer Vision
Adv. Probability (Concentration, Stein's Method, Mean-field theory)	Functional Analysis