Sushant Agarwal [Website] [Google Scholar]

Research Interests: Theoretical ML, Trustworthy ML (Fairness, Interpretability, Privacy, Robustness)

EDUCATION

Northeastern University, USA *Current*
PhD in Computer Science, Advisor: Jonathan Ullman

University of Waterloo, Canada *April 2020*
Master's in Computer Science, Advisor: Shai Ben-David

Chennai Mathematical Institute, India *July 2017*
Bachelor's in Mathematics and Computer Science

PUBLICATIONS

- On the Power of Randomization in Fair Classification and Representation
  Sushant Agarwal, Amit Deshpande
  ACM **FAccT** 2022 [pdf].

- Towards the Unification and Robustness of Perturbation and Gradient Based Explanations
  Sushant Agarwal, Shahin Jabbari, C. Agarwal*, S. Upadhyay*, Hima Lakkaraju, Steven Wu
  (contribution order, * represents equal contribution)
  ICML 2021 [pdf].
  FORC 2022 (non-archival) [pdf].

- Open Problem: Are all VC-classes CPAC learnable?
  Sushant Agarwal, Nivasini A., Shai Ben-David, Tosca Lechner, Ruth Urner
  COLT 2021 [pdf].

- On Learnability with Computable Learners
  Sushant Agarwal, Nivasini A., Shai Ben-David, Tosca Lechner, Ruth Urner
  ALT 2020 [pdf].

- On Trade-offs between Fairness, Interpretability, and Privacy in Classification
  Sushant Agarwal
  In Submission.
  Master's Thesis [pdf].
  AAAI 2021 workshop on *Explainable Agency in AI* [pdf].
  IJCAI 2021 workshop on *AI for Social Good* [pdf 1][pdf 2].

- Impossibility Results for Fair Data Representation
  Tosca Lechner, Shai Ben-David, Sushant Agarwal, Nivasini A. (contribution order)
  Arxiv [pdf].

EXPERIENCE

University of Waterloo *Feb '22 - Aug '22*
Research Assistant, Advisor: Gautam Kamath

Microsoft Research *Jun '21 - Jan '22*
Research Intern, Advisor: Amit Deshpande

Harvard University *Aug '20 - Feb '21*
Research Assistant, Advisor: Hima Lakkaraju

University of Waterloo *May '20 - Jul '20*
Research Assistant, Advisor: Peter Van Beek

National University of Singapore *Summer '16*
Research Intern

Codechef, DirectI *December '14 - April '15*
Software Intern

Teaching Assistant

· At UWaterloo: Statistical Foundations of ML, Intro to AI, Intro to Logic, Algorithmic Problem Solving, Data Types & Structures, Algorithm Design & Data Abstraction, Intro to CS 2
· At CMI: Design & Analysis of Algorithms, Discrete Mathematics, Advanced Programming (Python)

SERVICE

- Reviewer for COLT, NeurIPS, AISTATS.

- Co-organizer of the weekly Northeastern CS Theory seminar.

- Coach of the Northeastern ACM-ICPC team for the world finals in Bangladesh (November, 2022).

- Member of CS Graduate Student Association at UWaterloo. Also served as the CS department representative to the university wide GSA.

- Served as batch representative, and member of hostel committee & sports committee at CMI.

SCHOLASTIC ACHIEVEMENTS

- Recipient of Vector AI Institute Research Grant.
- Recipient of the University of Waterloo Entrance Scholarship.
- Recipient of the INSPIRE Scholarship by Dept. of Science and Tech, Govt. of India.
- Recipient of CMI Undergraduate Scholarship.

RELEVANT COURSEWORK

Machine Learning : Statistical Foundations of ML, Fairness and Interpretability in ML, Privacy in Data Science, Adversarial ML, Deep Learning for Discrete Optimization, Reinforcement Learning, Theory of Clustering, Data Mining and ML, Optimization for Data Science, AI: Law, Ethics & Policy.

CS Theory : Complexity Theory, Advanced Algorithms, Advanced Combinatorics & Probabilistic Methods, Topics in Graph Theory, Intro to Cryptography, Theory of Computation, Game Theory, Games on Graphs

Mathematics: Linear Algebra, Group Theory, Rings & Fields, Calculus (1, 2, & 3), Real Analysis, Complex Analysis, Differential Equations, Topology, Probability Theory, Discrete Mathematics

Programming: Programming in Python, Functional Programming, Concurrent Programming