Adhyyan Narang

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Education

University of Washington
PhD., Electrical and Computer Engineering (September 2020 - Present)
Advisors: Prof. Maryam Fazel, Prof. Lillian Ratliff
GPA: 4.0

University of California, Berkeley
M.S., Electrical Engineering and Computer Science, 2020
Advisor: Prof. Anant Sahai
Thesis Topic: Overparameterized classification problems: How many support vectors do I have, and do large margins bode well for generalization?
GPA: 4.0

University of California, Berkeley
B.S., Electrical Engineering and Computer Science, 2019.
Minor in Theater, Dance & Performance Studies, 2019.
Overall GPA: 3.95, EECS GPA: 3.97

Dhirubhai Ambani International School
IB Diploma, 2015.
42/42 in the IB Final Exam, ranked in top 1% of all candidates

Research Experience

University of Washington
Research Assistant (Sep 2020 – Present)
- Advised by Professors Lillian Ratliff and Maryam Fazel. Collaborate closely with Prof. Dmitriy Drusvyatskiy and Prof. Samet Oymak
- Formulated a new class of machine-learning games called decision-dependent risk minimization games.
- Using optimization and control theory, designed and analyzed convergence of novel algorithms for these games.
- Studied generalization properties of meta-learning for overparameterized models.

BLISS Lab, UC Berkeley
Research Assistant (May 2019 – Aug 2020)
- Advised by Prof. Anant Sahai.
- Compared generalization in overparameterized models between regression and classification tasks
- Studied conditions for when min-L2 regression and the support vector machine algorithms learn exactly the same classifier.
- Demonstrated a novel estimation-centric explanation for adversarial examples in an overparameterized lifted-linear model.

BAIR Lab, UC Berkeley
Research Assistant (May 2019 - May 2020)
- Advised by Prof. Laurent El Ghaoui
- Used techniques of convex optimization to create data poisoning attacks for linear and logistic regression.

UC Berkeley EECS
Research Apprentice (Aug 2018 - May 2019)
- Advised by Prof. Dawn Song
- Proved generalization error bounds as a function of the stability of the learning algorithm in adversarial environments.

Professional Experience

UberEats
Machine Learning Engineering Intern (May 2018 - Aug 2018)
- Created a microservice in GoLang that automatically offers promotional offers to users; released over 20000 promotions.
- To decide which users to offer promotions to, framed a constrained optimization problem: maximize profits without exceeding the budget.
- To approximate a solution, used Machine Learning (random forests) to predict the effect of the promotion on the short-term and long-term consumption of each user.

Veritas Technologies
Data Engineering Intern (Jun 2017 - Aug 2017)
Using Apache Spark, built a service that automates the Machine Learning pipeline; reduced incubation time by 30-40% of future projects.

Publications

(*): Equal Contribution

Adhyyan Narang, Evan Faulkner, Dmitriy Drusvyatskiy, Maryam Fazel, Lillian Ratliff "Multiplayer decision-dependent risk minimization games" *In review at NeurIPS, 2021*

Vidya Muthukumar*, **Adhyyan Narang***, Vignesh Subramanian*, Misha Belkin, Daniel Hsu, Anant Sahai
"Classification vs regression in overparameterized regimes: Does the loss function matter?" *Accepted to JMLR, 2021*

Adhyyan Narang, Vidya Muthukumar, Anant Sahai
"A signal-processing perspective on classification and adversarial examples in the overparameterized linear model"
Short version in ICML Overparameterization Workshop, 2021

Yue Sun, **Adhyyan Narang**, Ibrahim Gulluk, Samet Oymak, Maryam Fazel "Towards sample-efficient overparameterized meta-learning". *In review at NeurIPS, 2021.*
Short version in TOPML Workshop, 2021

Tanner Fiez, Lillian J. Ratliff, Eric Mazumdar, Evan Faulkner, **Adhyyan Narang**. "Global Convergence to Local Minmax Equilibrium in Classes of Nonconvex Zero-Sum Games". *In review at Neurips 2021.*

Teaching

Head Content TA, UC Berkeley
Electrical Engineering 16A (Jan - May 2020)

- Led the design of homework assignments and final examination for a class of 700 students.
- Taught sections (2/week of 1 hour each) for $\approx$ 30 students.

Coursework

(*): Self-study/Audit

Optimization: Convex Optimization, Optimization Algorithms, Submodular Optimization
Machine Learning: Machine Learning, Deep Learning, Multi-armed bandits, Signal Processing*, Statistical Learning Theory*
Probability and Statistics: Stochastic processes, Randomized Algorithms, Information Theory, Game Theory
Mathematics: Real Analysis, Abstract Algebra, Topology*
Computer Science: Algorithms, Randomized Algorithms

Awards & Honors

B.S. with High Distinction
Dean's List for all semesters at UC Berkeley
Phi Beta Kappa
Tau Beta Pi