

Anand Brahmbhatt

Google Research India

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🎓 Google Scholar

EDUCATION

Indian Institute of Technology Delhi

B.Tech in Computer Science and Engineering

Advisors: Prof. Parag Singla & Prof. Mausam

2018 - 2022

GPA: 9.687/10

WORK EXPERIENCE

Google Research India

Pre-Doctoral Researcher

Advisors: Dr. Rishi Saket & Dr. Aravindan Raghuvier

Worked on privacy and learnability of aggregated data

Jul 2022 - Present

Adobe Research

Research Intern

Advisors: Dr. Shiv Saini & Dr. Atanu R Sinha

Worked on designing fairer methods for cloud-based resources allocation

May 2021 - Aug 2021

PUBLICATIONS & PATENTS

Conference Publications

* - equal contribution

1. PAC Learning Linear Thresholds from Label Proportions

[NeurIPS'23]

Anand Brahmbhatt*, Rishi Saket* and Aravindan Raghuvier.

Spotlight @ Neural Information Processing Systems (NeurIPS), 2023;

Preprints

4. Label Differential Privacy via Aggregation

[Preprint-1]

Anand Brahmbhatt, Rishi Saket, Shreyas Havaldar, Anshul Nasery and Aravindan Raghuvier.

arXiv:2310.10092, 2023 (under review @ ITCS 2024)

3. LLP-Bench: A Large Scale Tabular Benchmark for Learning from Label Proportions

[Preprint-2]

Anand Brahmbhatt*, Mohith Pokala*, Rishi Saket and Aravindan Raghuvier.

arXiv:2310.10096, 2023

2. Towards Fair and Calibrated Models

[Preprint-3]

Anand Brahmbhatt, Vipul Rathore, Mausam and Parag Singla

B.Tech Project, Computer Science and Engineering, IIT Delhi, 2021 - 22 (under review @ AAAI 2024)

1. Measures of Closeness to Cordiality for Graphs

[Preprint-4]

Amithbha Tripathi, Anand Brahmbhatt and Kartikeya Rai

preprint, 2023

Patents

1. Cloud-Based Resource Allocation Using Meters

[Patent'23]

Atanu R Sinha, Shiv Kumar Saini, Sapthotharan Nair, Saarthak Marathe,

Manupriya Gupta, Anand Brahmbhatt, Ayush Chauhan

US Patent number 20230259403, 2023

AWARDS AND HONORS

• Department Rank 5 amongst 90+ students in the CSE Department at IIT Delhi

2018 - 2022

• All India Rank 917 in JEE Advanced (IIT-JEE) 2018 among 150,000 candidates

2018

• Awarded KVPY Fellowship from Government of India - All India Rank 514

2018

• Awarded Certificate of Merit for being in Institute Top 7% in semesters I, II, III and VI at IIT Delhi

2018 - 2022

RESEARCH PROJECTS

Algorithms for Aggregated Data

Google Research India

Advisors: Dr. Rishi Saket & Dr. Aravindan Raghuvver

❖ Learning from Label Proportions (LLP) with Linear Thresholds (LTFs)

Sep 2022 - Feb 2023

- Studied the **NP-Hard LLP with LTF** problem after imposing realistic **distributional assumptions**
- Proposed a **PCA** based algorithm to PAC learn LTFs (in this relaxed case) with **polynomial sample complexity**
- Work to be presented as **Spotlight paper (top 3% of all submissions)** at NeurIPS 2023 **[NeurIPS'23]**

❖ Aggregation algorithms for Differential Privacy

Feb 2023 - Sep 2023

- Studied the implications of random aggregation to attain **label differential privacy** (label DP)
- Suggested two aggregation methods for label DP: one **without noise**, the other with **minimal additive noise**
- Established the dependence of privacy and utility on bag size and number of bags for both mechanisms **[Preprint-1]**

❖ Benchmark for Learning from Label Proportions (LLP)

Jul 2022 - May 2023

- Created a **benchmark of LLP datasets** by Criteo CTR prediction dataset using different realistic techniques
- Introduced **metrics** to assess **LLP dataset learnability** and demonstrated benchmark diversity using these metrics
- Evaluated **9 SOTA LLP techniques** on our benchmark and provided insights to aid future exploration **[Preprint-2]**

Fairer Cloud Resource Allocation

Adobe Research

Advisors: Dr. Shiv Saini & Dr. Atanu R Sinha

May 2021 - Aug 2021

- Designed a **Shapley-Value** based approach for fairer cloud resource allocation using historic **meter** (usage metrics) data
- Presented a fresh method for pinpointing the **most suitable meters** for resource allocation
- Identified resource under-utilization by modelling ideal utilization on internal Adobe usage data **[Patent'23]**

Bias Amplification in Deep Networks

B.Tech Project, IIT Delhi

Advisors: Prof. Parag Singla & Prof. Mausam

Sep 2022 - Feb 2023

- Proved that **Proportional-Equality Definition** is an implication of **group-wise calibration**
- Posited modifications of existing calibration techniques to attain group-wise calibration
- Analysed tradeoffs of these techniques between fairness and calibration **[Preprint-3]**

Quantifying Closeness to Cordiality of Graphs

Summer Research Project, IIT Delhi

Advisor: Prof. Amitabha Tripathi

Apr 2020 - Jul 2020

- Proposed two measures of **distance from cordiality** for graphs
- Computed these measures or bounds on these measures for general classes of graphs
- Proved an overarching theorem of bound on these measures under graph join operations **[Preprint-4]**

RELEVANT COURSES

Mathematics

Real & Complex Analysis, Probability & Stochastic Processes, Discrete Mathematical Structures, Linear Algebra & Differential Equations, Calculus

Computer Science

Theory of Computation, Analysis and Design of Algorithms, Machine Learning, Artificial Intelligence, Natural Language Processing, Database Management Systems, Data Structures and Algorithms, Operating Systems, Computer Networks

Electrical Engineering

Signal and Systems, Computer Architecture, Digital Logic and System Design

EXTRA CURRICULAR ACTIVITIES

- **Academic Mentor** for the introductory Applied Mechanics course at IIT Delhi

Jul 2019 - Dec 2019

- Board of Student Welfare **Student Mentor** to four incoming freshmen at IIT Delhi

2020-2022