

# Avijit Ghosh

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Algorithmic Fairness | Ethical AI | Machine Learning | AI Explainability | Computational Social Science

## Education

### Northeastern University

Ph.D. student in Computer Science

### Indian Institute of Technology (IIT) Kharagpur

B.Tech. in Chemical Engineering, M.Tech in Financial Engineering, Minor in Computer Science

Boston, MA

2019 – Present

Kharagpur, India

2014 – 2019

## Experience

### Fiddler Labs

Research Intern

- Research project: Explainable distributional shifts in Machine Learning model outputs and investigating how this impacts fairness.
- Worked with the product team and civil rights lawyers in the deployment of Fiddler's Machine Learning model fairness dashboard.

Palo Alto, California

Oct 2020 – Apr 2021

### Northeastern University

Research Assistant at Khoury College of Computer Sciences | Advisors: Alan Mislove, Christo Wilson

Boston, MA

Sep 2019 – Present

- Collaborating with **PyMetrics**, a talent matching software, for a fairness audit of their recommendation algorithm. [Press Release](#).
- Analyzing *Fair* ranking systems and showing how they break down in the presence of noisy protected attribute data.
- Investigated Facebook's Special Audiences system for opportunity advertisements and showed that the audience creation algorithm was still biased against women, seniors and minorities. Covered in the media by [Propublica](#) and [Mother Jones](#).
- Analyzed the ad reach and spend information obtained from Facebook's ad transparency feature and the personal targeting dataset from Propublica's Facebook ad dataset and showed that advertisers with higher budgets use more privacy sensitive targeting techniques like PII or Lookalike audiences. Findings published and presented at [IEEE ConPro 2019](#).

### LIG, University of Grenoble Alps

Visiting Researcher | Advisor: Oana Goga

Grenoble, France

May 2019 – July 2019

- Study of how news companies promote different items on social media, investigating possible patterns of differential information spreading using both posts and ads. We also discovered and reported an exposed access token bug to [Facebook Bug Bounty](#).

### Xerox Research Centre

Research Intern

- Implemented XTrack, a Smart Vehicle Tracking and Battery usage minimizing Algorithm, using BLE to distribute GPS information.
- Proposed a method for Uber-like Surge Price Prediction using Spatio-Temporal techniques like the Neural Hawkes and Recurrent Marked Temporal Point Process. Awarded the title of [Best Internship Project](#).

Bangalore, India

May 2017 – July 2017

### Google Summer of Code

GSoc Student at OpenMRS

- Replaced the HTML XForms system used with native generated forms using the Forms REST Api in the android client of the Opensource Medical Record System. Added offline form saving. Configured Travis CI to automatically build and push the apk to play store.
- Overall, contributed [100K lines of code](#) and became the top code contributor in the project repository.

Remote

Apr 2016 – Aug 2016

### IIT Kharagpur

Undergraduate Researcher | Advisors: Niloy Ganguly, Saptarshi Ghosh – CNERG Lab

Kharagpur, India

2014 – 2019

- Automated Extraction of Catchwords from Legal Documents using a novel NER based tagger to help categorize lengthy legal texts.
- Automatically position user comments against relevant news article paragraphs. Presented at [ECIR 2019](#).
- Savitr – A realtime location extraction system for disaster management using twitter. Presented at [WWW-SMERP 2018](#).

## Select Papers

### Building and Auditing Fair Algorithms: A Case Study in Candidate Screening [PDF]

Christo Wilson, Avijit Ghosh, Shan Jiang, Alan Mislove, Lewis Baker, Janelle Szary, Kelly Trindel, Frida Polli

FACCT '21

Toronto, Ontario / Virtual

### Characterizing Intersectional Group Fairness with Worst-Case Comparisons [PDF]

Avijit Ghosh, Lea Genuit, Mary Reagan

AIDBEI@AAAI'21

Vancouver, BC / Virtual

### Analyzing Political Advertisers' Use of Facebook's Targeting Features [PDF]

Avijit Ghosh, Giridhari Venkatadri, Alan Mislove

Conpro@S&P '19

San Francisco, California

### Public Sphere 2.0: Targeted Commenting in Online News Media [PDF]

Ankan Mullick, Sayan Ghosh\*, Ritam Dutt\*, Avijit Ghosh\*, Abhijnan Chakrabarty \*equal contribution

ECIR '19

Cologne, Germany

### SAVITR: A System for Real-time Location Extraction from Microblogs during Emergencies [PDF]

Ritam Dutt, Kaustubh Hiware, Avijit Ghosh, Rameshwar Bhaskaran

SMERP@WWW '18

Lyon, France

### When Fair Ranking Meets Uncertain Inference [PDF]

Avijit Ghosh, Ritam Dutt, Christo Wilson

Under Review

### Algorithms that "Don't See Color": Comparing Biases in Lookalike and Special Ad Audiences [PDF]

Piotr Sapiezynski, Avijit Ghosh, Levi Kaplan, Alan Mislove, Aaron Rieke

Under Review, Preprint

## Awards, Grants & Prizes

- 2019 **Dean's Fellowship**, First Year PhD students
- 2019 **Winner**, Best Poster Award
- 2019 **Winner**, Institute Order of Merit – Technology
- 2018 **Winner**, SGSIS Institute Challenge Grant – Worth INR 1 Million
- 2017 **Silver Medal**, Stock Market Analysis
- 2016 **Gold Medal**, Software Development
- 2010 **NTSE Scholar**, National Talent Search Examination

Northeastern University

ECIR'19

IIT Kharagpur

IIT Kharagpur

Inter IIT Tech Meet, Kanpur

Inter IIT Tech Meet, Mandi

NCERT

## Skills

**Languages** Python, Java, C, R, Bash, SQL, HTML/CSS, JavaScript, Matlab

**Frameworks** Git, Travis, Keras, TensorFlow, Pytorch, Docker, AWS, Google Cloud ML/AI, Android