Avijit Ghosh

(+1) 857-337-0180 | avijit@ccs.neu.edu | evijit.github.io | evijit | evijit

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

Education

Northeastern University — *Boston, MA*
Ph.D. student in Computer Science — *2019 - Present*

Indian Institute of Technology (IIT) Kharagpur — *Kharagpur, India*
B.Tech. in Chemical Engineering, M.Tech in Financial Engineering, Minor in Computer Science — *2014 - 2019*

Experience

Fiddler Labs — *Palo Alto, California*
Research Intern — *Oct 2020 - Apr 2021*
- 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.

Northeastern University — *Boston, MA*
Research Assistant at Khoury College of Computer Sciences | Advisors: Alan Mislove, Christo Wilson — *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 — *Grenoble, France*
Visiting Researcher | Advisor: Oana Goga — *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 — *Bangalore, India*
Research Intern — *May 2017 - July 2017*
- 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.

Google Summer of Code — *Remote*
GSoC Student at OpenMRS — *Apr 2016 - Aug 2016*
- 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.

IIT Kharagpur — *Kharagpur, India*
Undergraduate Researcher | Advisors: Niloy Ganguly, Saptarshi Ghosh - CNERG Lab — *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] — *FAccT '21*
Christo Wilson, **Avijit Ghosh**, *Shan Jiang, Alan Mislove, Lewis Baker, Janelle Szary, Kelly Trindel, Frida Polli* — *Toronto, Ontario*

Analyzing Political Advertisers' Use of Facebook's Targeting Features [PDF] — *Conpro '19*
Avijit Ghosh, *Giridhari Venkatadri, Alan Mislove* — *San Francisco, California*

Public Sphere 2.0: Targeted Commenting in Online News Media [PDF] — *ECIR '19*
Ankan Mullick, Sayan Ghosh, Ritam Dutt*,* **Avijit Ghosh***, *Abhijnan Chakrabarty* ** equal contribution* — *Cologne, Germany*

SAVITR: A System for Real-time Location Extraction from Microblogs during Emergencies [PDF] — *WWW '18*
Ritam Dutt, Kaustubh Hiware, **Avijit Ghosh**, *Rameshwar Bhaskaran* — *Lyon, France*

When Fair Ranking Meets Uncertain Inference [PDF] — *Under Review*
Avijit Ghosh, *Ritam Dutt, Christo Wilson*

Characterizing Intersectional Group Fairness with Worst-Case Comparisons [PDF] — *Under Review, Preprint*
Avijit Ghosh, *Lea Genuit, Mary Reagan*

Algorithms that "Don't See Color": Comparing Biases in Lookalike and Special Ad Audiences [PDF] — *Under Review, Preprint*
Piotr Sapiezynski, **Avijit Ghosh**, *Levi Kaplan, Alan Mislove, Aaron Rieke*

Awards & Grants

2019 **Winner**, Best Poster Award — *ECIR'19*
2019 **Winner**, Institute Order of Merit - Technology — *IIT Kharagpur*
2018 **Winner**, SGSIS Institute Challenge Grant - Worth INR 1 Million — *IIT Kharagpur*

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