Shravika Mittal

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RESEARCH INTERESTS

Social Computing and social applications of Natural Language Processing; understanding how and why technology-mediated interactions occur using computational analysis and theoretical frameworks of social engagement.

EDUCATION

Georgia Institute of Technology   Atlanta, GA, USA
Ph.D. in Computer Science; School of Interactive Computing   *Aug 2023 – Present*

Georgia Institute of Technology   Atlanta, GA, USA
Master of Science in Computer Science; CGPA: 4.00/4.00   *Aug 2021 – May 2023*

Indraprastha Institute of Information Technology, Delhi   New Delhi, India
B.Tech. (Hons.) in Computer Science and Engineering; CGPA: 9.77/10 *Aug 2016 – Jul 2020*
- Received the Chancellor's gold medal for the best academic performance, the highest recognition for an undergraduate at IIIT-Delhi.

RESEARCH EXPERIENCE

Social Dynamics and Well-Being Lab   Atlanta, GA, USA
Graduate Research Assistant   *Aug 2021 – Present*
- **Auditing Social Media to Measure Misinformation Related to Opioid Use Disorder**
  Advised by: Dr. Munmun De Choudhury and Dr. Tanushree Mitra
  * Characterizing online misinformation, myths, and stigma related to opioid use disorder and medication for addiction treatment.
- **Understanding Framings of Violence Against Women in News Media**
  Advised by: Dr. Munmun De Choudhury
  * Studying prevalence of stigma in online news reports of violence against women.
- **Understanding Moral Framing of Mental Health**
  Advised by: Dr. Munmun De Choudhury
  * Developed a BERT-based language representation framework, built on Moral Foundation Theory, to quantify moral framing of mental health discourse on Twitter and News media.
  * Paper accepted at the ACM CHI Conference on Human Factors in Computing Systems, 2023.
- **Framing of Suicide Circumstances by Gender**
  Advised by: Dr. Munmun De Choudhury and Dr. Steven Sumner
  * Collaborated with advisors from the Centers for Disease Control and Prevention (CDC) to study framings of suicide in News media via the axis of gender, using mixed-methods analysis.
  * Paper currently under review at the JMIR journal.

Adobe Research   San Jose, CA, USA
Research Scientist Intern   *May 2022 – Aug 2022*
- **GPU Instance Recommendation for Deep Learning Workloads**
  Advised by: Dr. Kanak Mahadik
  * Developed a novel GPU instance recommendation system for training deep learning workloads.
  * Curated a new benchmark dataset that contains training profiles of diverse workloads.
  * Paper currently under review at IEEE International Conference on Big Data, 2023.

Laboratory for Computational Social Systems   New Delhi, India
Undergraduate Researcher   *Jan 2019 – Aug 2021*
- **Hide and Seek: Outwitting community detection algorithms** [GitHub]
  Advised by: Dr. Tanmoy Chakraborty
  * Undergraduate Thesis | Devised a novel greedy model to hide a target community from community detection algorithms by minimally rewiring network nodes. Proposed model outperformed 4 state-of-the-art methods.
  * Project accepted at IEEE Transactions on Computational Social Systems.

- **Twitter retweet cascade prediction using content, network, and exogenous signals**
  Advised by: Dr. Tanmoy Chakraborty
  - ∗ Predicted the growth of retweet cascades on Twitter using information from tweet text, cascade structure, and external news articles. Built a deep learning framework that was able to outperform 7 baselines.
  - ∗ Project accepted at IEEE Transactions on Knowledge and Data Engineering.
- **Dynamics of node influence in network growth models** [GitHub]
  Advised by: Dr. Tanmoy Chakraborty and Dr. Siddharth Pal
  - ∗ Studied characteristics of influential nodes in popular network growth models: preferential attachment, additive fitness, multiplicative fitness, and spatial models. Verified theoretical findings via Python simulations.
  - ∗ Project accepted at Physica A: Statistical Mechanics and its Applications.

IBM India Research Laboratory   New Delhi, India
Undergraduate Researcher   *Jun 2018 – Dec 2018*
- **Gender and Occupational De-biasing** [HT News] [Quartz] [GitHub]
  Advised by: Dr. Nishtha Madaan
  - ∗ Built a human-in-the-loop system to detect gender bias in plots of books shortlisted for Man Booker's Prize.
  - ∗ Study was featured in *The Hindustan Times*, an Indian national daily.

PUBLICATIONS

- Jasmine C. Moore, **Shravika Mittal**, Eugenia Kim, Natalie Lennon, Andrea Carmichael, Steven A. Sumner, Munmun De Choudhury. "Framing of Suicide Circumstances by Gender Identity: Stigmatization and Glorification in News Media." Under review at *The Journal of Medical Internet Research*.

- **Shravika Mittal**, Kanak Mahadik, Ryan Rossi, Sungchul Kim, Handong Zhao. "Guiding GPU Instance Selection for Deep Learning Workloads." Under review at *IEEE International Conference on Big Data*.

- **Shravika Mittal**, Munmun De Choudhury. "Moral Framing of Mental Health Discourse and Its Relationship to Stigma: A Comparison of Social Media and News." In *ACM CHI Conference on Human Factors in Computing Systems*. 2023. [Link]

- Subhabrata Dutta, **Shravika Mittal**, Dipankar Das, Soumen Chakrabarti, Tanmoy Chakraborty. "Incomplete Gamma Integrals for Deep Cascade Prediction using Content, Network, and Exogenous Signals." In *IEEE Transactions on Knowledge and Data Engineering*. 2022. [Link].

- **Shravika Mittal**, Tanmoy Chakraborty, Siddharth Pal. "Dynamics of node influence in network growth models." In *Physica A: Statistical Mechanics and its Applications*. 2022. [Link].

- **Shravika Mittal**, Debarka Sengupta, Tanmoy Chakraborty. "Hide and Seek: Outwitting Community Detection Algorithms." In *IEEE Transactions on Computational Social Systems*. 2021. [Link].

- Brihi Joshi, **Shravika Mittal**, Aditya Chetan. "Did You "Read" the Next Episode? Using Textual Cues for Predicting Podcast Popularity." In *First Workshop on NLP for Music and Audio* (NLP4MusA) *at International Society for Music Information Retrieval Conference*. 2020. [Link]

- Nishtha Madaan, Sameep Mehta, **Shravika Mittal**, Ashima Suvarna. "Judging a Book by its Description: Analyzing Gender Stereotypes in the Man Bookers Prize Winning Fiction." 2019. [Pre-print].

WORK EXPERIENCE

Adobe Inc.   Noida, India
Software Development Engineer   *Aug 2020 – Aug 2021*
- **Adobe Illustrator on iPad**
  - ∗ Developed "Rulers and Guides" feature for Adobe Illustrator on iPad using C++ and iOS programming, which received positive feedback from customers during beta release.
  - ∗ Solved 100+ critical bugs to improve stability of the application.

Adobe Inc.   Noida, India
Product Intern   *May 2019 – Jul 2019*
- **Adobe Illustrator**

* Collaborated with Adobe Research, San Francisco to build a new feature for Illustrator using graphics and machine learning techniques.
　* Developed an automated framework to create a meaningful hierarchy of vector art in the "layers" panel of Illustrator. Formed the basis for improving the "smart edit" feature in Adobe Illustrator.

Rails Girls Summer of Code　　　　　　　　　　　　　　　　　　　　　　　New Delhi, India
Scholar　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　*Jul 2017 – Sep 2017*

- **Worked for Tessel** [Blog 1] [Blog 2] [Twitter]
　* Open source program | Worked for Tessel, an IoT and Robotics development platform to create tutorials, and model a Humanoid Arm project. One of the top 16 Sponsored Teams selected from a total of 192.

SERVICE

- **CSE632: Semantic Web, IIIT-Delhi**　　　　　　　　　　　　　　　　　*Jan 2020 – May 2020*
  Mentored 110 students | Graduate level course | Prepared quizzes and assignments.

- **ECO331: Foundations of Finance, IIIT-Delhi**　　　　　　　　　　　　*Aug 2019 – Dec 2019*
  Mentored 100 students | Conducted weekly office hours, quizzes, and tutorials.

- **MTH303: Graph Theory, IIIT-Delhi**　　　　　　　　　　　　　　　　*Jan 2019 – Apr 2019*
  Mentored 104 students | Conducted 11+ tutorials and 5+ doubt sessions.

- **Coach, Rails Girls Summer of Code**　　　　　　　　　　　　　　　　*Jul 2018 – Sep 2018*
  Mentored Team Delsquared for the 3-month program | Worked with the open source organization, Tessel.

- **Mentor, Government Girls Secondary School, New Delhi**　　　　　　　　　　*May 2018*
  Counseled 60 girls to take up STEM subjects in high school.

- **Community Work Volunteer, UDAAN [GitHub]**　　　　　　　　　　　　　　*May 2017*
  Taught basics of Computer Science to 15 students with special needs.
  Developed an Android App FUEL (Fun, Education, and Learn) that won best in code sprint by Google.

PROJECTS

- **Gendered Violence Conversations on Reddit**　　　　　　　　　　　　*Jan 2022 – May 2022*

  - Conducted a mixed-methods analysis to compare gender-based violence conversations across shared-identity and general-discourse spaces on Reddit.
  - Developed as a course project for Social Computing.

- **Podpop** [Paper] [Poster] [Video]　　　　　　　　　　　　　　　　　*May 2020 – Jul 2020*

  - Proposed a deep learning framework to predict popularity of podcasts using cues from textual content.
  - Project accepted at NLP4MusA workshop, part of ISMIR 2020.

- **Household Poverty Level Prediction** [Report]　　　　　　　　　　　　*Jan 2019 – Dec 2019*

  - Devised a machine learning model to predict the poverty level of a household.
  - Developed as a course project for Statistical Machine Learning.

- **Google Analytics Customer Revenue Prediction** [Report]　　　　　　　*Aug 2018 – Nov 2018*

  - Built a framework to predict revenue generated by users hitting the GStore website.
  - Developed as a course project for Machine Learning.

- **Moodify** [Github]　　　　　　　　　　　　　　　　　　　　　　　　　*Aug 2017*

  - Android Application to play songs based on the user's mood | Hackathon by Byld, IIIT-Delhi.
  - Won the first prize among 20 participating teams.

- **iDabba** [Github] [Poster] [Blog]　　　　　　　　　　　　　　　　　*Jan 2017 – Apr 2017*

  - Smart Container to update user about the ambient conditions and contents of it.
  - Uses Computer Vision frameworks like SIFT, HAAR classifiers, and Microsoft Vision API on top of humidity, temperature, and weight sensors to monitor ambient conditions.
  - Among the top 10 projects in the course and mentioned in the Director's blog.

Awards and Achievements

- Gary Marsden SIGCHI Travel Award for USD 2500 to attend CHI'2023 *2023*
- One of the top 30 finalists for Adobe Research Women-in-Technology Scholarship *2022*
- Chancellor's Gold Medal for the Best Academic Performance in batch *2020*
- Received Dean's letter of recognition for undergraduate thesis *2020*
- Invited for the Republic Reception at the Lt. Governor's residence *2020*
- Dean's List for Academic Excellence *2019*
- Won Google WTM Scholarship for APAC region *2019*
- Dean's List for Academic Excellence *2018*
- Dean's List for Innovation in Research and Development *2017*
- Dean's List for Academic Excellence *2017*

Talks Delivered

- Junior-Senior interaction with students of CSE branch at IIIT-Delhi *2020*
- Introductory session on Rails Girls Summer of Code | Women in Tech, IIIT-Delhi *2019*
- Tutorial on Open CV | Women Who Code, Delhi [Slides] *2017*
- Tutorial on Tessel | LinuxChix, India [Twitter] *2017*

Extracurricular

Member, W@CC | Club for Women at College of Computing, Georgia Tech *2021*
Member, Women in Tech | Club initiated by past WTM scholars at IIIT-Delhi *2018*
Member, Byld | IIIT-Delhi's Software Development Club *2017*
Founding Member, Women Who Code Delhi *2016*