

# Namrata Mukhija

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## Education

### Courant School of Mathematical Sciences, New York University

M.S. COMPUTER SCIENCE

GPA: 3.91/4. Expected graduation: May 2023.

New York, USA

Jan 2021 - Present

### Netaji Subhas Institute of Technology

B.E. INFORMATION TECHNOLOGY

Percentage: 78.85%, CGPA: 8.635/10

Delhi, India

2014 - 2018

## Research Interests

- Socially Aware Language Technologies, Fairness in NLP, NLP for social good, Controllable Text Generation using Large Language Models (LLMs), Causal Inference, Low-Resource Settings, Multimodal Reasoning

## Work Experience

### Natural Language Processing Research Assistant

MACHINE LEARNING FOR LANGUAGE (ML<sup>2</sup>) LAB | ADVISOR: DR. HE HE

- Working on improving multimodal reasoning. Experimenting with image captioning using CLIP-based models with postdocs Dr. Chen Zhao and Dr. Abulhair Saparov.
- Worked on out-of-distribution (OOD) detection for summarization (transformer-based language models). Experimented with outlier exposure method in embedding space for OOD generalization.

New York, USA

Jan 2021 - Present

### Natural Language Processing Research Intern

J.P. MORGAN CHASE & CO. | MACHINE LEARNING CENTER OF EXCELLENCE | [PAPER](#)

- Implemented paraphrase generation using large transformer-based language models (GPT-3 and Pegasus).
- Fine-tuned and assessed performance improvement for BERT-based Named Entity Recognition models using paraphrased data.
- Work published at NeurIPS 2022 Workshop on Synthetic Data for Empowering ML Research.

New York, USA

June 2022 - Aug 2022

### Natural Language Processing Research Intern

MICROSOFT RESEARCH | ADVISOR: DR. AMIT SHARMA

- Implemented controlled counterfactual generation using fine-tuned GPT-2. Surveyed literature on counterfactual generation and controlled generation from language models.

Bangalore, India

April 2022 - May 2022

### Natural Language Processing Research Intern

MICROSOFT RESEARCH | ADVISORS: DR. MONOJIT CHOUDHURY AND DR. KALIKA BALI | [PAPER 1](#), [PAPER 2](#)

- Formulated six conundrums that NLP technologists must resolve while developing and deploying language technologies (LT) for social good for any LT community. Published at COMPASS 2022.
- Formulated principled techniques for prioritization of NLP technologies and methods for inclusion of the end-user during the development cycle.

Bangalore, India

June 2021 - Aug 2021

### Software Engineer 2

MICROSOFT INDIA R&D

- Successfully implemented a Distributed Data Structure to mitigate data inconsistency and data loss issues in Fluid Table. Developed Fluid Table de-serialization for enabling paste on Word, Excel, and PowerPoint apps.
- Implemented and shipped a re-architecture for PowerPoint Actions in the PowerPoint team with benefits of safe rollback and reliable undo support. Developed and shipped the [USD Performance Analyzer tool](#) and [USD 4.1](#) with Single Sign-On and caching features.
- **Awarded across 2500+ employees** in Experiences and Devices engineering group India - **E+D India Leadership Award** for generating energy in the team, demonstrating "All for One, One for All" mindset, and championing diversity and inclusion. Promoted twice in 2.5 years in recognition of the contributions.

Noida, India

July 2018 - Jan 2021

### Natural Language Processing Research Collaborator

MIDAS LAB, INDRAPRASTHA INSTITUTE OF INFORMATION TECHNOLOGY | ADVISOR: DR. RAJIV RATN SHAH | [CODE](#), [WEBSITE](#)

- Implemented topic segmentation and discourse analysis experiments to analyze the relationship between formality and virality of Reddit posts.
- Worked on abstractive text summarization. Implemented a LSTM-based encoder architecture for learning the representation of keywords extracted using the TextRank algorithm for news articles. Implemented an attention-based pointer-generator network to produce summaries.

Delhi, India

September 2018 - February 2020

### Natural Language Processing Research Intern

ASPIRING MINDS | [CODE](#)

- Developed a BiLSTM model to automate grammar scoring on essays.
- Implemented augmented C&W word embeddings which would take into account the usage information of a word to treat grammatical errors as informative. This model replaced a third-party solution, and thereby, estimated a cost saving of around **\$12,000/year**.

Gurgaon, India

Dec 2017 - Jan 2018

## Publications

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(\* indicates equal contribution)

- **Mukhija Namrata\***, Sharma Saket\*, Joshi Aviral\*, et al., Systematic Review of Effect of Data Augmentation using Paraphrasing on Named Entity Recognition. **NeurIPS 2022** Workshop on Synthetic Data for Empowering ML Research. <https://openreview.net/forum?id=rc2h1h89aDi>
- **Mukhija Namrata\***, Bali Kalika\*, Choudhury Monojit\*, and Diddee Harshita\*, The Six Conundrums of Building and Deploying Language Technologies for Social Good. ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies (**COMPASS 2022**). <https://doi.org/10.1145/3530190.3534792>
- **Mukhija Namrata**, Choudhury Monojit, & Bali Kalika, Designing Language Technologies for Social Good: The Road not Taken. (2021) arXiv preprint. <https://arxiv.org/abs/2110.07444>
- Chakraborty Pinaki, Arora Udit, **Mukhija Namrata** et al., OSAVA: An Android app to visualize and teach algorithms used in operating systems. **JEET 2019**, <http://52.172.159.94/index.php/jeet/article/view/145517>

## Skills

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**Deep Learning Frameworks** Keras, PyTorch

**Programming Languages** Python, C, C++, C#, TypeScript, JavaScript, SQL

**Other** Git, OpenCV, NumPy, React, Node.js, pandas, Transformers, HuggingFace, Linux (Ubuntu), Windows

## Projects

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### Beliefs Perpetuation

ADVISOR: DR. JENNIFER HILL, NYU | [PAPER](#)

- Studied whether workplace gender-focused D&I policy support is affected by personal beliefs towards poverty through causal inference tools.

### Question Answering for Healthcare

ADVISOR: DR. SUMIT CHOPRA, NYU

- Finetuned GPT2 and GPT3 models for Q&A on MASH-QA (long passage, consumer health domain) and MedMCQA (MCQ-type, entrance exam) datasets.

## Leadership Experience

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### AI Ambassador

*Global and India*

WOMEN IN AI | [WEBSITE](#) | [LINKEDIN APAC](#)

*Sep 2019 - August 2021*

- Head, [WaiDATATHON APAC](#) 2021 - Spearheading the initiative to spread awareness and envisage AI solution for domestic violence and mental health across the world. Responsible for managing end-to-end Program pipeline along with execution of rest of the pillars Sponsorship, Recruitment, and Communications.
- Program Chair, [WaiSUMMIT](#) 2020 - Organized a virtual global-scale Summit which saw participation of 40+ countries, 160+ women speakers, and 4000+ attendees to encourage and facilitate women participation in AI field. Responsible for Program design, management, and end-to-end execution.
- Head, [WaiCOUNCIL India](#). Responsible for organizing multiple technical, career, networking and educational events for increasing participation of Indian women in AI. Forged partnerships with leading AI organizations in India. Led to a 300% growth in India Women in AI community within a year.
- Invited as a panelist by Swiss Embassy, Delhi to speak on Women in AI and technology in India and Switzerland.

### Core Team Member & NLP Speaker

*India*

WOMEN IN MACHINE LEARNING & DS, DELHI | [LINKEDIN](#)

*Sep 2018 - January 2020*

- Organized a national-level machine learning conference to connect women in ML with industry ML projects, speakers from IBM Research and TCS Research. Speaker at 'Deep Dive into NLP' on training encoder-decoder architectures and beam search decoding. Slides [here](#)

### Mentor

*Delhi, India*

LEARN IT, GIRL! | [BLOG](#)

*Oct 2017 - Dec 2017*

- Mentored a student through the development of a Google Maps Chatbot developed using Python which she deployed on Facebook.

### NSIT Developer Student Club Lead

*Delhi, India*

GOOGLE DEVELOPER STUDENT CLUB, NSIT | [WEBSITE](#), [CODE](#)

*Jan 2018 - Jan 2019*

- Spearheaded Google's initiative to equip NSIT students with mobile development skills by developing solutions for startups and non-profits.
- Organized multiple Android hands-on workshops & multiple projects were developed by students applying learning from these workshops.

## Scholarships

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- 2023 Google Research Mentorship Program, 2023 CRA-WP Grad Cohort for Women, 2022 Grace Hopper Conference (Orlando), 2021 CRA-WP Grad Cohort for Women, 2021 CIFAR DLRL Summer School, 2017 Grace Hopper Conference (India), and 2014 INSPIRE - Higher Education

## Courses

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- Machine Learning, Causal Inference, Natural Language Processing with Representation Learning, Machine Learning for Healthcare, Virtual Reality, Programming Languages, Honors Analysis of Algorithms, Operating Systems