

Namrata Mukhija

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Work Experience

Applied Scientist (Full-time)

New York, USA

JPMORGAN CHASE AND CO. | MACHINE LEARNING CENTER OF EXCELLENCE

August 2023 - Present

- Developed and successfully shipped an advanced retrieval augmented generation (RAG) based chatbot, **improving customer resolution time by 8%**.
- Designed and developed features such as question clarification, question filtering based on legal compliance, and developed post-filtering on retriever based on question intent, **achieving >80% satisfaction rate in user testing rounds**.
- Conducted extensive prompt engineering to optimize model responses. Developed evaluation strategy for RAG-components and features as well as model migration to new OpenAI models.
- Effectively navigated and balanced diverse stakeholder expectations throughout the project life-cycle (risk, product, engineering, analytics, and annotation teams, and end-user).

Software Engineer 2 (Full-time)

Noida, India

MICROSOFT INDIA R&D

July 2018 - Jan 2021

- 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 different PowerPoint Actions in the PowerPoint commanding team with benefits of safe rollback and reliable undo support. Implemented unit tests and telemetry for proper coverage and safe rollout to production. 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.

Applied Science Intern - NLP

New York, USA

ARTHUR | ADVISOR: PROF. JOHN DICKERSON

June 2023 - August 2023

- Benchmarked stereotype detection capability in large language models such as GPT-4, Command, GPT-3.5, and Claude.
- Curated novel question answering dataset for stereotype detection based on [BBQ](#).

Applied Science Intern - NLP

New York, USA

J.P. MORGAN CHASE & CO. | MACHINE LEARNING CENTER OF EXCELLENCE | [ACL'23 PAPER](#), [NEURIPS'22 WORKSHOP PAPER](#)

June 2022 - Aug 2022

- Implemented paraphrase generation using large transformer-based language models (GPT-3 and Pegasus).
- Ran 100+ experiments for finetuning a BERT-based Named Entity Recognition model using combinations of paraphrased and actual data.
- Work published at ACL 2023 conference (main, long paper) and NeurIPS 2022 Workshop on Synthetic Data for Empowering ML Research.

Research Intern - NLP

Bangalore, India

MICROSOFT RESEARCH | ADVISORS: DR. MONOJIT CHOUDHURY AND DR. KALIKA BALI | [COMPASS'22 PAPER](#), [ARXIV PAPER](#)

June 2021 - Aug 2021

- Developed a thought framework for NLP technologists for the development and deployment of language technologies (LT) for social good for any linguistic community. Published at COMPASS 2022.
- Formulated principled techniques for prioritization of NLP research fairly across technologies, communities, and languages, and methods for inclusion of the end-user during the development cycle.

Natural Language Processing Research Collaborator

Delhi, India

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

September 2018 - February 2020

- Worked on abstractive text summarization. Implemented a bi-LSTM attention-based pointer-generator network to produce summaries.

ML Intern - NLP

Gurgaon, India

ASPIRING MINDS | [CODE](#)

Dec 2017 - Jan 2018

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

Publications

(* indicates equal contribution)

- Sharma Saket, Joshi Aviral, Zhao Yiyun, **Mukhija Namrata**, et al., When and how to paraphrase for named entity recognition?. **ACL 2023** Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers) <https://aclanthology.org/2023.acl-long.390/>
- **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>

Education

Courant School of Mathematical Sciences, New York University

New York, USA

M.S. COMPUTER SCIENCE

Jan 2021 - May 2023

GPA: 3.94/4. Advisor: [Prof. He He](#). Courses: Natural Language Processing with Representation Learning, Machine Learning, Causal Inference, Programming Languages, Honors Analysis of Algorithms, Operating Systems

Netaji Subhas Institute of Technology

Delhi, India

B.E. INFORMATION TECHNOLOGY

2014 - 2018

Percentage: 78.85%, CGPA: 8.635/10

Skills

ML Frameworks and Libraries PyTorch, Langchain, Haystack, HuggingFace, Azure OpenAI

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

Other NumPy, OpenSearch, React, Node.js, pandas, Linux, Slurm, CometML, S3, Prompt Engineering

Projects

Multimodal Reasoning (Research Assistant)

New York, USA

MACHINE LEARNING FOR LANGUAGE (ML²) LAB | ADVISOR: DR. HE HE

Jan 2021 - July 2021, Sept 2022 - May 2023

- Worked on improving multimodal reasoning. Experimented 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.

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.

Leadership Experience

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](#)

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

- 2023 Fatima Fellowship recipient, 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