Anjali Gupta

Google PhD Fellow
Dept. of Computer Science and Engineering,
Indian Institute of Technology Delhi

Phone: +91-9743887428
Email: anjali@cse.iitd.ac.in
Webpage: anjaliakg17.github.io

HIGHLIGHTS

- Received **Google PhD Fellowship-2022**. Awarded to top 5 global scholars in **Algorithms, Optimizations, and Markets** field.
- **4 research papers accepted** in top **A* conferences** and 2 under submission.
- Received **Women in "AI in Innovation and Research" award** by Mastercard on "AI Revolution-2024".
- Reviewed 25+ research papers in top AI and Big-Data conferences such as AAAI, VLDB, KDD, NeurIPS, ICML, ICLR, TKDE, ICDM, CODS-COMAD, etc.
- **5+ years of industrial experience** in the field of data–science and machine learning.
- **Area of interests:**
  - Machine Learning | Graph Neural Networks | Deep Learning | LLM | Multimodal-LLM
  - AI for Social Good | Fairness and Bias in Algorithms | Social Computational Choice
  - Data mining | Differential privacy
- **Looking for research opportunities in the field of AI/ML/Deep learning/LLM/Multimodal-LLM.**

ACADEMIC DETAILS

Year	Degree	Institute	GPA / Marks(%)
2020-2025	Doctor of Philosophy (CSE)	Indian Institute of Technology Delhi	9.7
2012-2014	M.Tech (CSE)	Delhi College of Engineering, Delhi	8.7
2008-2012	B.Tech (CSE)	Uttar Pradesh Technical University	75.3%

PUBLICATIONS (A*)

- **"Persona Identification in E-Commerce with Scarce Labels and In-Context Graph Learning"**, Knowledge Discovery in Databases (KDD), 2025
  - Done in collaboration with **Flipkart**, to develop a method to segment users into personas based on their e-commerce purchase behavior. A key innovation: in-context learning on Graph Neural Networks (GNNs) — enabling richer, behavior-aware representations at scale.

- **"Towards Fair Allocation in Social Commerce Platforms"**, International World Wide Web Conference (WWW), 2023
  - Done in collaboration with **Flipkart**, aiming to create a fair recommendation system that equitably assigns products from sellers to resellers, optimizing revenue for both parties and the e-commerce platform.

- **"FairFoody: Bringing in Fairness in Food Delivery",** Association for the Advancement of AI (AAAI), 2022
  - Done in collaboration with **Swiggy** to ensure fair compensation for delivery agents in the food delivery platforms.
  - Selected as one of the papers in the **top 4% for Oral presentation.**

- **"Gigs with Guarantees: Achieving Fair Wage for Food Delivery Workers**, The International Joint Conference on Artificial Intelligence (IJCAI), 2022
  - Done in collaboration with **Swiggy** to ensure fair compensation for delivery agents using auction auction-based model.
  - Featured in prominent media outlets including The Times of India, Economic Times, and Deccan Herald.

PUBLICATIONS (Under Submission)

- **GRAPHGINI: Fostering Individual and Group Fairness in Graph Neural Networks**
  - Introduces a novel method using the Gini coefficient to enforce individual and group fairness in Graph Neural Networks (GNNs) while maintaining high prediction accuracy, achieving an automatic balance between utility and fairness without manual parameter tuning.

- **Differentially Private Coarsened Graph Neural Networks**
  - Aim to rectify the scalability and privacy issues in GNNs by releasing a Differentially Private Coarsened Graph with Similarity Guarantees.

WORK EXPERIENCE

- **Data Scientist at Affle/RevX, Bangalore** (Jan 2016-Sep 2019)
  - Developed various business projects using Big Data and Machine learning techniques.
  - Developed in-house models to predict clicks for retargeting business and app installs from scratch. These in-house models outperformed existing 3rd party models in terms of accuracy, Click-through rate (CTR), and Conversion rate (CVR) during

AB testing. Deploying the in-house in full production saved the cost by 90% and provided flexibility to the engineering team.
- Build a dashboard to monitor the performance of the model across various metrics such as AUC, ROC, CTR, CVR, etc
- Performed multiple analyses on big data using R, shell scripting, xl, pig, hive, etc.
- Participated in design discussions, training, and code reviews.

• **Software Engineer** at **Arvind Ltd, Bangalore,** (Sep 2015-Jan 2016)
- Developed a tool for bulk conversion of product images in various sizes and to upload them with associated products in Hybris and AWS Glacier/S3.

• **Software Engineer at Nagarro, Gurgaon**, (Jun 2014-Aug 2015)
- Involved in the design and development of an e-commerce application using J2EE.
- Developed a Ticketing System (Customer care service module) from scratch for an e-commerce application

IIT DELHI THESIS

Title: Fair and Transparent Algorithmic Solutions in E-commerce and Gig Economies
Supervisors: Prof. Sayan Ranu and Prof. Amitabha Bagchi
Description: My research focuses on improving efficiency, fairness, and equity in the e-commerce sector, including areas like food delivery and social commerce. I leverage the latest advancements in artificial intelligence and machine learning to drive these improvements.

PROJECTS

- **Differentially Private Coarsened Graph Neural Networks,** Project at IIT Delhi
  - This project addresses scalability and privacy issues in GNNs. We released a Differentially Private Coarsened Graph for GNN with Similarity Guarantees.

- **Persona-aware User Embedding in E-commerce,** Project at IIT Delhi in collaboration with Flipkart
  - This project generates granular, data-backed segments of users (personas) linked to various e-commerce categories based on shopping behavior, demographics, and surrounding users' behavior. It associates multiple customer preferences across categories with personas. For example, a user may be associated with personas like "tech enthusiast" in the 'Mobile/Electronics' category, "fashionista" in the 'Lifestyle' category, or "bookworm" in the 'Books' category, depending on their purchases.
  - Proposed *TRIPER*, a tri-partite GNN for accurate, multi-label user persona identification in dynamic e-commerce graphs, addressing challenges of label scarcity, noise, and evolving behavior.
  - Introduced an in-context inference mechanism within *TRIPER* to enable generalization from limited labeled data in evolving interaction scenarios.

- **Individual Fairness under Group Fairness Constraints in Graph Neural Networks,** Project at IIT Delhi
  - Recent studies show that node representations learned through GNNs from discriminatory sensitive features in data may inherit societal biases, making their deployment in high-stakes situations questionable. We developed a fair GNN learning architecture addressing both group and individual fairness.

- **Fair Allocation of Products among Re-sellers in Social Commerce,** Project at IIT Delhi in collaboration with Flipkart/Shopsy
  - We developed a fair recommendation scheme to assign products from sellers to re-sellers, ensuring fairness in opportunity and optimizing revenue for sellers, re-sellers, and the e-commerce platform.

- **Developed an Algorithm to Provide Income/Opportunity Guarantees to Delivery Agents,** Project at IIT Delhi
  - Developed an algorithm called **Work4Food** to provide income guarantees to delivery agents while minimizing platform costs and ensuring customer satisfaction.
  - **Work4Food** ensures income guarantees without increasing working hours or degrading environmental impact.
  - Balances supply and demand by controlling the number of agents and providing dynamic payment guarantees based on factors like location and ratings.
  - This work was accepted at **IJCAI 2022** and featured in prominent media outlets, including *The Times of India*, *Economic Times*, and the *Deccan Herald*.

- **Developed an Algorithm to Fairly Distribute Income/Opportunity Among Delivery Agents,** Project at IIT Delhi
  - Analyzed data from a real-world food delivery platform across three large Indian cities along with their road network graphs.
  - Identified significant inequality in delivery agents' earnings.
  - Developed a novel matching algorithm called **FAIRFOODDY** to ensure equitable income distribution among agents while

maintaining timely food delivery
- This work was accepted at **AAAI 2022** and selected among the top 4% of papers for an oral presentation.

TECHNICAL SKILLS

• Programming Skills/Tools: Pig, Hive, Scala, Spark, R, C/C++, Java, Matlab, Python, PyTorch, Linux, Integer Linear Programming (ILP), Github, AWS

KEY COURSES

• Machine Learning, Data Mining, Graph Neural Network, Advanced Distributed System

REFERENCES

• **Prof. Sayan Ranu, Associate Professor, IIT Delhi,** Email: sayanranu@iitd.ac.in
• **Prof. Amitabha Bagchi, Professor, IIT Delhi,** Email: bagchi@cse.iitd.ac.in
• **Prof. Abhijnan Chakraborty, Assistant Professor, IIT Kharagpur,** Email: abhijnan@cse.iitkgp.ac.in
• **Prof. Rohit Vaish, Assistant Professor, IIT Delhi,** Email: rvaish@iitd.ac.in