


MAYANK KHARBANDA

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SUMMARY







I am currently working in the area of multi-modal knowledge graphs under the guidance of Dr. V. Raghava Mutharaju and Dr. Rajiv Ratn Shah.

SKILLS

Languages: Python, C++.

Technologies: Latex, Docker, NVim.

RESEARCH INTERESTS

-  Knowledge Graphs
-  Graph Neural Networks
-  Discrete Mathematics
-  Probability Theory
-  Query Answering
-  Graph Embeddings

RESEARCH PROJECTS

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|---------------|--|
| PyTorch | FuzzyConE: Fuzzy Cone Embedding for Multi-Hop Logical Reasoning on Multi-modal Knowledge Graphs We proposed an embedding method for multi-hop logical query reasoning, consisting of First Order logic, over a knowledge graph with entities of different modalities (text and images). |
| PyTorch | Node Injection for Class-specific Network Poisoning We proposed a gradient-based node injection method to attack the node classification task in graphs by targeting a set of nodes. |
| Python, Shell | RNG TESTER We created a stream-based random number tester using standardized test suites like NIST Statistical Test Suite, Dieharder, and TestU01. We analyzed the quality of Quantum Random numbers. We also used different randomness extractors like Neumann and Trevisan to enhance the quality of random numbers generated from weak sources. |
| TensorFlow | PRNG We used Generative Adversarial Networks (GANs) to mimic different equations in number theory and act as a Pseudo-Random Number Generator. We used NIST Test suites to analyze the quality of random numbers generated. |

EDUCATION

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|------------------|--|--|
| 8/2020 - Present | PhD Aggregate: 8.82/10 CGPA | CSE, IIIT Delhi |
| 8/2018 - 7/2020 | MSc (Computer Science) Aggregate: 78.25% | Department of Computer Science, University of Delhi |
| 8/2015 - 7/2018 | BSc(H) (Computer Science) Aggregate: 8.784/10 CGPA | Sri Guru Gobind Singh College of Commerce, University of Delhi |

EXPERIENCE

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|-----------------|---|-------------------------------|
| 9/2024 - 2/2025 | Research Visit 6 months reserch visit to VU, Amsterdam for PhD collaboration. | Vrije Universiteit, Amsterdam |
| 1/2020 - 7/2020 | Research Associate We analyzed the Quantum Random numbers as a research project Random Number Generator (RNG) Tester. | IIIT Delhi/ DRDO |
| 2016 - 2017 | Data Analyst We analyzed the PM2.5 and PM10 molecules to detect the polluted areas in the metro city of New Delhi. To collect the live data stream, we attached sensors with Raspberry Pi to the automobile vehicles. | OpenVayu |

SCHOLARSHIPS & FELLOWSHIPS

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|-----------------|---|-----------------------------|
| 8/2020 - 7/2025 | JRF-SRF Fellowship (Dec 2019) Percentile - 99.9XX | University Grant Commission |
| 4/2015 - 3/2020 | CSSS Scholarship for Merit | Ministry of Education |

PUBLICATIONS

2025 **InductWave: Multi-Hop Logical Reasoning on Large Knowledge Graphs**
Mayank Kharbanda, Michael Cochez, Rajiv Ratn Shah, Raghava Mutharaju
Under Draft

2025 **FuzzyConE: Fuzzy Cone Embedding for Multi-Hop Logical Reasoning on Multi-modal Knowledge Graphs**
Mayank Kharbanda, Rajiv Ratn Shah, Raghava Mutharaju
IEEE Transactions on Knowledge and Data Engineering, 2025

2023 **Node Injection for Class-specific Network Poisoning**
Ansh Kumar Sharma*, Rahul Kukreja*, Mayank Kharbanda*, and Tanmoy Chakraborty
Neural Networks Journal 166 (2023), 236–247, Elsevier Ltd.

RESEARCH COMMUNITY SERVICE

PC Member: WWW (2026) (Short Papers) ISWC (2025) (Posters & Demos), FSS (2024), The Web Conf. 2024 (Industrial Track)

Reviewer: WSDM (2025) Demos Track, Semantic Web Journal (April) 2024

Sub-reviewer: MMFood 2025, ESWC 2025, AAAI 2025, ISWC 2024, CIKM 2023, IJCKG 2023, K-CAP 2023

TEACHING

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|--------------|--|
| Winter 2025 | Explainable AI Head Teaching Assistant |
| Winter 2024 | Semantic Web Head Teaching Assistant |
| Monsoon 2023 | Digital Image Processing Head Teaching Assistant |
| Winter 2023 | Fundamentals of Database Management Systems Teaching Assistant |

EXTRA CURRICULAR ACTIVITIES

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|----------------------------------|---|
| Organiser - KetchupTalks CSE | Ambassador - Future City Summit |
| Member - Infinity : Tech Society | Member - ACE : Computer Science Society |