Shubhangi Agarwal

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Summary

I am a researcher with a background in **Graph Mining** and **Machine Learning**. I have developed various algorithms based on statistical analysis for **Subgraph Querying** in large complex graphs. Some of the many areas that can benefit from the querying of subgraph structures are **information extraction**, **recommendation systems**, **disease diagnostics**, **fraud detection** are. I am intersted in developing effective and efficient algorithms for analyzing complex data structures using state-of-the-art machine learning techniques.

Education

Ph.D. in Computer Science and Engineering — CGPA: 8.25
Indian Institute of Technology Kanpur, Uttar Pradesh, India — *2014 - current*

Bachelor of Technology Computer Engineering — CGPA: 8.71
Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat, India — *2010 - 2014*

PhD Thesis

Subgraph Matching and Mining in Large Graphs — Supervisor: Arnab Bhattacharya

- Developed algorithms for Approximate Subgraph Matching in both deterministic and probabilistic graphs.
- Proposed a Graph Neural Network model for robust node embeddings with positional information.

Publications

- *"VeNoM: Approximate Subgraph Matching with Enhanced Neighbourhood Structural Information"* , **Shubhangi Agarwal**, Sourav Dutta and Arnab Bhattacharya, 7th Joint International Conference on Data Science and Management of Data (CODS-COMAD), 2024, India.
- *"VerSaChI: Finding Statistically Significant Subgraph Matches using Chebyshev's Inequality"* , **Shubhangi Agarwal**, Sourav Dutta and Arnab Bhattacharya, Proceedings of the International Conference on Information and Knowledge Management (CIKM), 2021, pages 2812-2816, Australia.
- *"GraphReach: Position-Aware Graph Neural Network using Reachability Estimations"* , Sunil Nishad, **Shubhangi Agarwal**, Arnab Bhattacharya and Sayan Ranu, Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI), 2021, pages 1527-1533, Canada.
- *"ChiSeL: Graph Similarity Search using Chi-Squared Statistics in Large Probabilistic Graphs"* , **Shubhangi Agarwal**, Sourav Dutta and Arnab Bhattacharya, Proceedings of the International Conference on Very Large Data Bases (VLDB), 2020, pages 1654-1668, Japan.

Experiences

External Reviewer — 2020 - current

- WSDM (2024), CIKM (2021, 2022), DASFAA (2022), CoDS-COMAD (2020, 2021), KDD (2021)

Teaching Assistant (IIT Kanpur) — Aug 2014 - Apr 2021

- Graded and evaluated projects for various courses of Computer Science.

Senior Tutor (IIT Kanpur) — Aug 2017 - Apr 2018, Aug 2019 - Apr 2020

- Led teams of strength ∼60; Assisted in backend management, paper-setting and grading.

Teaching Assistant for MOOC (NPTEL - Remote) — July 2017 - Sep 2017

- Crafted objective questions and resolved student queries on Fundamentals of Database Systems.

Technical Skills

Languages : C, C++, Java, Python, R, MySQL, JavaScript, PHP, Shell scripting
Libraries : PyTorch, Tensorflow, Scikit-learn, Numpy, Pandas
Tools : git, LaTeX, Docker, Weka