

# 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 interested in developing effective and efficient algorithms for analyzing complex data structures using state-of-the-art machine learning techniques.

## EDUCATION

<b>Ph.D. in Computer Science and Engineering</b> <i>Indian Institute of Technology Kanpur, Uttar Pradesh, India</i>	CGPA: 8.25 2014 - 2023
<b>Bachelor of Technology Computer Engineering</b> <i>Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat, India</i>	CGPA: 8.71 2010 - 2014

## PHD THESIS

<b>Subgraph Matching and Mining in Large Graphs</b>	Supervisor: Arnab Bhattacharya
<ul style="list-style-type: none"><li>Developed algorithms for Approximate Subgraph Matching in both deterministic and probabilistic graphs.</li><li>Proposed a Graph Neural Network model for robust node embeddings with positional information.</li></ul>	

## 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

<b>External Reviewer</b>	2020 - current
<ul style="list-style-type: none"><li>WSDM (2024), CIKM (2021, 2022), DASFAA (2022), CoDS-COMAD (2020, 2021), KDD (2021)</li></ul>	
<b>Teaching Assistant (IIT Kanpur)</b>	Aug 2014 - Apr 2021
<ul style="list-style-type: none"><li>Graded and evaluated projects for various courses of Computer Science.</li></ul>	
<b>Senior Tutor (IIT Kanpur)</b>	Aug 2017 - Apr 2018, Aug 2019 - Apr 2020
<ul style="list-style-type: none"><li>Led teams of strength ~60; Assisted in backend management, paper-setting and grading.</li></ul>	
<b>Teaching Assistant for MOOC (NPTEL - Remote)</b>	July 2017 - Sep 2017
<ul style="list-style-type: none"><li>Crafted objective questions and resolved student queries on Fundamentals of Database Systems.</li></ul>	

## TECHNICAL SKILLS

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

## REFERENCES

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### **Arnab Bhattacharya**

*Professor, Indian Institute of Technology Kanpur*

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### **Sourav Dutta**

*Chief NLP Research Scientist, Huawei Research Centre*

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