Shubhangi Agarwal

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INTERESTS

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.

TECHNICAL SKILLS

Programming Languages

C, C++, Java, Python, R, MySQL, JavaScript, PHP, Shell scripting

Libraries

PyTorch, Tensorflow, Scikit-learn, Numpy, Pandas

Software Tools

LaTeX, Docker, Weka

PUBLICATIONS

- *"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.

- *"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.

- *"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.

EDUCATION

Indian Institute of Technology - Kanpur   Kanpur, Uttar Pradesh, India

Ph.D. in Computer Science and Engineering   *2014 - current*
CGPA - 8.25   (*waiting for defense*)

Sardar Vallabhbhai National Institute of Technology   Surat, Gujarat, India

Bachelor of Technology Computer Engineering   *2010 - 2014*
CGPA - 8.71

PHD THESIS

Subgraph Matching and Mining in Large Graphs
Supervisor: Arnab Bhattacharya

Tackles the problem of Approximate Subgraph Matching in large graphs in deterministic and probabilistic settings, both. Contributions include various algorithms aimed at retrieving subgraphs similar to the given query pattern and a graph neural network model to capture information associated with graph nodes in a holistic manner.

EXPERIENCES

Teaching Assistant   **IIT Kanpur**
Aug 2014 - Apr 2021

Assisted in grading and evaluated projects for various under-graduate and graduate courses of computer science.

Senior Tutor   **IIT Kanpur**
Aug 2017 - Apr 2018, Aug 2019 - Apr 2020

Managed TA-Tutor administration for "ESC101: Introduction to Programming" course. Duties also involved heading the tutor team, managing Prutor interface, setting question papers and grading.

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

Responsibilities included setting objective questions and solving queries of students related to Fundamentals of Database Systems.

Summer Intern   **IIT Gandhinagar**
May 2013 - Jul 2013

Undertook a clustering project, under the guidance of a visiting professor, Prof. Pawan Lingras, Saint Mary's University, where daily patterns were grouped based on their volatility, to describe volatility of a financial instrument over a duration.

Summer Intern   **IIT Gandhinagar**
May 2012 - Jul 2012

Worked on the topic 'Data Mining for Industrial Purposes' and analyzed time-series data under the guidance of a visiting professor, Prof. Pawan Lingras, Saint Mary's University.

EXTRACURRICULAR ACTIVITIES

- I have served in the Hostel Executive Committees, in the capacity of Hostel Secretary and Maintenance Secretary, during my stay at IIT Kanpur and SVNIT.

- I have learnt Sanskrit as a language and hold a Diploma in Sanskrit Language under the Non-Formal Sanskrit Education programme offered by Central Sanskrit University. I have also completed Kovida, an advanced-level correspondence course offered by Samskrita Bharati.

- I am a frequent blood-donor with 17 donations. I have also been involved with Raktarpan, IIT Kanpur and helped organize many blood donation camps in the campus.

- I love doing yoga and mildly vigorous fitness activities. In my leisure time I like to read fiction.