

Arkaprava Saha

Curriculum Vitae

1 CREATE Way, #08-01 CREATE Tower
Singapore-138602, Singapore
☎ (+65) 91978638
✉ arkaprava.saha@cnrsatcreate.sg
🌐 [Webpage](#)

Experience

- January 2023 **Research Fellow**, *CNRS@CREATE*, Singapore, *DesCartes Program*.
– Present
- **Supervisors:** Prof. [Xiaokui Xiao \(NUS\)](#), Prof. [Bogdan Cautis \(Univ. Paris-Saclay\)](#)
 - **Description:** Learning from smart and complex data for Hybrid AI, primarily related to information propagation models and algorithms in graphs
- May 2017 – **Software Engineering Intern**, *Samsung R&D Institute*, Bangalore, India,
July 2017 Android Platform Team.
- **Mentor:** Preeti Rani Deka
 - **Description:** Designed a generalized parser for any arbitrary watch face (dial) of the Samsung GWD to be rendered on an Android phone, thereby improving the old parser which was completely hardcoded for some specific watch faces only

Education

- 2018–2022 **Doctor of Philosophy (PhD) in Computer Science and Engineering (CSE)**, *Nanyang Technological University (NTU)*, Singapore, *Data Management and Analytics Laboratory (DMAL)*.
- **Thesis:** [Efficient Optimization of Network Metrics in Large Uncertain Graphs](#)
 - **Graduate Courses:** Information Retrieval and Analysis, Data Mining, Deep Learning for Data Science, Advanced Topics in Distributed Systems, Artificial Intelligence in Game Design, Database Systems
 - **CGPA:** 4.0/5.0
 - **Certifications:** [Algorithms](#), [Machine Learning](#), [Deep Learning](#)
- 2014–2018 **Bachelor of Technology (BTech) in Computer Science and Engineering (CSE)**, *Indian Institute of Technology (IIT) Delhi*, New Delhi, India, Departmental Specialization in Data Analytics and Artificial Intelligence.
- **Thesis:** Random Walks and Reachability in Large Bloom Graphs
 - **Graduate Courses:** Machine Learning, Logic For Computer Science, Natural Language Processing, Numerical Algorithms
 - **CGPA:** 8.187/10.0, **DGPA:** 8.223/10.0

Publications

For a quick overview, refer to my [Google Scholar](#), [ResearchGate](#) and [DBLP](#) profiles.

- **Hyperparametric Robust and Dynamic Influence Maximization.** [Arkaprava Saha](#), [Bogdan Cautis](#), [Xiaokui Xiao](#), [Laks V.S. Lakshmanan](#). (Under Review) *ACM International Conference on Knowledge Discovery and Data Mining (KDD) 2024*.
- **Most Probable Densest Subgraphs.** [Arkaprava Saha](#), [Xiangyu Ke](#), [Arijit Khan](#), [Cheng Long](#). *IEEE International Conference on Data Engineering (ICDE) 2023*.
- **Voting-based Opinion Maximization.** [Arkaprava Saha](#), [Xiangyu Ke](#), [Arijit Khan](#), [Laks](#)

V.S. Lakshmanan. *IEEE International Conference on Data Engineering (ICDE) 2023*.

- **Shortest Paths and Centrality in Uncertain Networks**. Arkaprava Saha, Ruben Brokkelkamp, Yllka Velaj, Arijit Khan, Francesco Bonchi. *International Conference on Very Large Data Bases (VLDB) 2021*.
- **Reachability in Large Graphs using Bloom Filters**. Arkaprava Saha, Neha Sengupta, Maya Ramanath. *IEEE International Conference on Data Engineering (ICDE) 2019 Workshop on Large Scale Graph Data Analytics*.

Research Interests

The broad area of big graph data mining and management; currently focusing on influence maximization in social networks; open to research in other areas of big graph data as well

Research Projects

Dynamic and Robust Influence Maximization

Institute CNRS@CREATE

Supervisor(s) **Prof. Xiaokui Xiao and Bogdan Cautis**

Description Given a social network with influence weights between every pair of users, the influence maximization problem seeks to find a set of seed users that can maximize the spread of a topic in the network. This project focuses on the case when the social network topology is dynamic and the influence weights are noisy and uncertain. **We have submitted a research paper on this project.**

Symmetric Decision Diagrams (SDDs)

Institute Indian Institute of Technology Delhi

Supervisor(s) **Prof. Kolin Paul**

Description SDDs are an extension to Binary Decision Diagrams (BDDs) that use symmetry in a boolean function to optimize the number of nodes needed for the function. However, unlike BDDs, a node in an SDD can correspond to multiple variables. Hence extending boolean operators to SDDs is pretty difficult. My role in the project was to code an implementation of SDDs along with their associated operations (AND, OR, NOT) and creating an SDD from a BDD after obtaining symmetry information from the BDD.

Teaching

Teaching Assistant (TA)

NTU Introduction to Databases (2018-19 Semester 1, 2019-20 Semesters 1 & 2, 2020-21 Semester 1)

NTU Data Structures and Algorithms (2018-19 Semester 2, 2020-21 Semester 2)

Services

Reviewer or Program Committee (PC) Member

2024 KDD, **EAI MTYMEX**

2023 ICDE (TKDE Poster Track)

- 2022 [EAI ICECI](#)
- 2021 [SEA Data @ VLDB](#)
[Journal Reviewer](#)
 The VLDB Journal
[External Reviewer](#)
- 2023 ICDE
- 2022 VLDB, SIGMOD, KDD
- 2021 ICDE, VLDB
- 2020 SIGMOD
- 2019 VLDB, WWW, CIKM, DSAA
[Volunteering](#)
- 2022 [Interview with Prof. Hanwang Zhang](#), winner of the [Singapore Young Scientist Award 2021](#)
- 2020 [VLDB Student Volunteer](#)
[Positions of Responsibility](#)
- 2019-2020 President of NTU School of CSE Graduate Students' Club

Talks

- July 2023 Efficient Optimization of Network Metrics in Large Uncertain Graphs. *University of Sydney, Sydney, Australia.*
- July 2023 Efficient Optimization of Network Metrics in Large Uncertain Graphs. *RMIT University, Melbourne, Australia.*
- March 2023 Most Probable Densest Subgraphs. *CNRS@CREATE, Singapore.*
- March 2023 Voting-based Opinion Maximization. *CNRS@CREATE, Singapore.*

Technical Skills

- Languages C, C++, PYTHON, JAVA, SQL, SML
- Software MATLAB, LATEX, ANDROID STUDIO

Honors and Awards

- 2024 **Global Young Scientists Summit (GYSS)**, *National Research Foundation (NRF)*, Singapore.
 Among 350 young researchers (worldwide) selected to attend the event featuring winners of the Nobel Prize, Turing Award etc., and among 120 of the above 350 researchers selected to present research posters in the event
- 2021 **VLDB Conference Attendance Support Award**, *Very Large Data Base (VLDB) Endowment*, United States of America.
 Awarded the grant for attending the conference
- 2019 **University Teaching for Teaching Assistants**, *Nanyang Technological University (NTU)*, Singapore.
 Officially certified by the university as “Recommended to Teach”

- 2018 **Commonwealth Research Scholarship**, *Nanyang Technological University (NTU)*, Singapore.
Awarded the scholarship for pursuing PhD
- 2014 **JEE Advanced (IIT-JEE)**, *Indian Institutes of Technology (IITs)*, India.
Secured **All India Rank 98** out of around 1.3 million students and **State Rank 1**
- 2014 **West Bengal Joint Entrance Examination (WBJEEM)**, *West Bengal Joint Entrance Examinations Board (WBJEEB)*, India.
Secured **State Rank 6**
- 2013 **Kishore Vaigyanik Protsahan Yojana (KVPY)**, *Department of Science and Technology (DST)*, Government of India.
Selected as a **Fellow** in the SA stream with **All India Rank 56** out of around 0.15 million candidates
- 2012 **Regional Mathematical Olympiad (RMO)**, *Homi Bhabha Centre for Science Education (HBCSE)*, India.
Among 35 students in West Bengal to qualify for the national level examination
- 2010 **National Talent Search Examination (NTSE)**, *National Council of Educational Research and Training (NCERT)*, India.
Selected as a **Scholar**

Languages

Bengali

Mother Tongue

English

Academic and Professional

Hindi

Advanced Conversations

French

Basic Conversations