

Arkaprava Saha

Curriculum Vitae

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🌐 Webpage

Experience

- July 2025 – Present **Assistant Professor**, *University of Tsukuba*, Tsukuba, Japan, *Institute of Library, Information and Media Science*.
- **Description:** Explaining neural networks and graph algorithms with human feedback. Currently a Visiting Researcher at *Laboratoire d'Informatique de Grenoble (LIG)*.
- October 2024 – June 2025 **Postdoctoral Researcher**, *Université Grenoble Alpes (UGA)*, Grenoble, France, *Laboratoire d'Informatique de Grenoble (LIG)*.
- **Supervisor:** Prof. *Silviu Maniu*
 - **Description:** Explainability of data algorithms based on provenance
- January 2023 – August 2024 **Research Fellow**, *CNRS@CREATE*, Singapore, *DesCartes Program*.
- **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 – July 2017 **Software Engineering Intern**, *Samsung R&D Institute*, Bangalore, India, 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*
 - **Advisor:** Prof. *Arijit Khan* (till March 2022), Prof. *Cheng Long* (after March 2022)
 - **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
 - **Advisor:** Prof. *Maya Ramanath*
 - **Graduate Courses:** Machine Learning, Logic For Computer Science, Natural Language Processing, Numerical Algorithms
 - **CGPA:** 8.187/10.0, **DGPA:** 8.223/10.0

Research Papers

For a quick overview, refer to my [Google Scholar](#), [DBLP](#) and [ResearchGate](#) profiles. Note that in many research areas within computer science, including databases, data mining and artificial intelligence, conferences (not journals) are the primary venues for peer-reviewed publications.

Peer-reviewed Conference Papers

- 2025 **Hyperparametric Robust and Dynamic Influence Maximization.** Arkaprava Saha, Bogdan Cautis, Xiaokui Xiao, Laks V.S. Lakshmanan. *AAAI Conference on Artificial Intelligence (AAAI) 2025*.
- 2023 **Voting-based Opinion Maximization.** Arkaprava Saha, Xiangyu Ke, Arijit Khan, Laks V.S. Lakshmanan. *IEEE International Conference on Data Engineering (ICDE) 2023*.
- 2023 **Most Probable Densest Subgraphs.** Arkaprava Saha, Xiangyu Ke, Arijit Khan, Cheng Long. *IEEE International Conference on Data Engineering (ICDE) 2023*.
- 2021 **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*.

Peer-reviewed Journal Papers

- 2025 **Beyond Influence: Voting Theory for Opinion Maximization.** Arkaprava Saha, Xiangyu Ke, Arijit Khan, Laks V.S. Lakshmanan. *International Journal on Very Large Data Bases (VLDB Journal) 34(5), 57 (2025)*.

Peer-reviewed Workshop Papers

- 2025 **Extending Layer-wise Relevance Propagation in Neural Networks using Semiring Annotations.** Antoine Groudiev, Arkaprava Saha, Silviu Maniu. *Provenance Week @ SIGMOD 2025*.
- 2019 **Reachability in Large Graphs using Bloom Filters.** Arkaprava Saha, Neha Sengupta, Maya Ramanath. *International Workshop on Large Scale Graph Data Analytics (LSGDA) @ ICDE 2019*.

Research Interests

I am currently working on applying algorithms for graph data to solve problems in explainable artificial intelligence (XAI) by interpreting neural networks as graphs. Earlier, during and just after my PhD, my research focused on efficient and effective algorithms for large-scale graph data management and mining.

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

- 2026 SIGMOD, VLDB, AAAI, WSDM
- 2025 WSDM, CIKM, ACML
- 2024 KDD, ACML, EAI MTYMEX
- 2023 ICDE (TKDE Poster Track)
- 2022 EAI ICECI
- 2021 SEA Data @ VLDB

Journal Reviewer

- 2025 Knowledge and Information Systems
- 2024 La Matematica, INFORMS Journal on Computing
- 2023 The VLDB Journal

External Reviewer

- 2025 VLDB
- 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

- May 2024 Efficient Optimization of Network Metrics in Large Uncertain Graphs. *INRIA, Lille, France.*
- 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 **AI4Science and Nobel Turing Challenge Initiative (NTCI) Conference**, *AI for Science Initiative*, Singapore.
Won the best poster award among 80 posters selected for the conference
- 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