

Bishwamittra Ghosh

Research Interests

Formal methods in trustworthy machine learning; Foundational understanding of large language models; Fairness and interpretability of machine learning.

Appointment

Since 02.24 **Postdoctoral Researcher**, *Max Planck Institute for Software Systems*, Germany.
Advisor: Dr. Krishna P. Gummadi

Education

- 01.18 – 09.23 **PhD in Computer Science**, *National University of Singapore (NUS)*, Singapore.
Advisor: Dr. Kuldeep S. Meel
Thesis: Interpretability and Fairness in Machine Learning: A Formal Methods Approach
- 02.13 – 09.17 **BSc in Computer Science and Engineering**, *Bangladesh University of Engineering and Technology (BUET)*, Bangladesh, CGPA: 3.83 out of 4 (with Honours).
Advisor: Dr. Mohammed Eunus Ali
Thesis: The Flexible Socio Spatial Group Queries

Publications (sorted by publication year)

Conference Papers

- ICLR-25 Logical Consistency of Large Language Models in Fact-checking
[Bishwamittra Ghosh](#), Sarah Hasan, Naheed Anjum Arafat, Arijit Khan
- AAAI-25 Active Fourier Auditor for Estimating Distributional Properties of ML Models
Ayoub Ajarra, [Bishwamittra Ghosh](#), Debabrota Basu
- WSDM-25 Towards Reliable Latent Knowledge Estimation in LLMs: Zero-Prompt Many-Shot Based Factual Knowledge Extraction
Qinyuan Wu, Mohammad Aflah Khan, Soumi Das, Vedant Nanda, [Bishwamittra Ghosh](#), Camila Kolling, Till Speicher, Laurent Bindschaedler, Krishna P. Gummadi, Evimaria Terzi
- CAI-24 Split Learning of Multi-Modal Medical Image Classification
[Bishwamittra Ghosh](#), Yuan Wang, Huazhu Fu, Wei Qingsong, Yong Liu, Rick Goh
- FACCT-23 “How Biased are Your Features?”: Computing Fairness Influence Functions with Global Sensitivity Analysis
[Bishwamittra Ghosh](#), Debabrota Basu, Kuldeep S. Meel
- VLDB-23 Neighborhood-based Hypergraph Core Decomposition
Naheed Anjum Arafat, Arijit Khan, Arpit Kumar Rai, [Bishwamittra Ghosh](#)
- AAAI-22 Algorithmic Fairness Verification with Graphical Models
[Bishwamittra Ghosh](#), Debabrota Basu, Kuldeep S. Meel
- AAAI-21 Justicia: A Stochastic SAT Approach to Formally Verify Fairness
[Bishwamittra Ghosh](#), Debabrota Basu, Kuldeep S. Meel
- AAAI-20 A MaxSAT-based Framework for Group Testing
Lorenzo Ciampiconi, [Bishwamittra Ghosh](#), Jonathan Scarlett, Kuldeep S. Meel

- ECAI-20 Classification Rules in Relaxed Logical Form
Bishwamittra Ghosh, Dmitry Malioutov, Kuldeep S. Meel
- AIES-19 IMLI: An Incremental Framework for MaxSAT-Based Learning of Interpretable Classification Rules
Bishwamittra Ghosh, Kuldeep S. Meel
- VLDB-18 The Flexible Socio Spatial Group Queries
Bishwamittra Ghosh, Mohammed Eunus Ali, Farhana M. Choudhury, Sajid Hasan Apon, Timos Sellis, Jianxin Li

Journal Papers

- JAIR-22 Efficient Learning of Interpretable Classification Rules
Bishwamittra Ghosh, Dmitry Malioutov, Kuldeep S. Meel
- TSAS-21 Social-Spatial Group Queries with Keywords
 Sajid Hasan Apon, Mohammed Eunus Ali, Bishwamittra Ghosh, Timos Sellis

Professional Experiences

Tutorials

- IJCAI-23 Auditing Bias of Machine Learning Algorithms: Tools and Overview

Talks

- Invited Talks** Trustworthy Machine Learning: A Formal Methods Approach
 – Microsoft Research (24), University of Michigan, Dearborn (23), MPI-SWS, Germany (22), INRIA, France (22), IHPC, Singapore (22)
- Conference ICLR (25), FAccT (23), AAI (22, 21, 20), ECAI (20), CP (19), VLDB (19), IJCAI (19), AIES (19)

Program Committee

AAAI (25)

Reviewer

NeurIPS, KDD, ICML, AAI, JAIR, TNNLS, TMI, AIES, CAV, TKDE

Research Visit

- 03.23 – 05.23 Max Planck Institute For Software Systems, Saarbrücken, Germany
- 11.21 – 02.22 INRIA, Lille-Nord, France
- 06.21 – 08.21 Goldman Sachs, Singapore
- 03.20 – 06.20 Max Planck Institute For Software Systems, Kaiserslautern, Germany

Past Appointments

- 06.23 – 02.24 **Scientist**, *Institute of High Performance Computing (IHPC), A*STAR*, Singapore.
- 01.18 – 06.23 **Graduate Research Assistant**, *National University of Singapore*, Singapore.
 CS2030: Programming Methodology II, 2018 – 2021
 CS3243: Introduction to Artificial Intelligence, 2020
- 10.17 – 01.18 **Lecturer**, *Department of CSE, United International University (UIU)*, Bangladesh.

Awards and Honors

- 2026 Invited to Dagstuhl seminar on User-Aligned Assessment of AI Systems
- 2025 Invited to Dagstuhl seminar on Interactions in Constraint Optimization

2021 Moblilex Scholarship, Université de Lille, France
2018 – 2023 NUS Research Scholarship, Singapore
2013 – 2017 University Deans List, BUET, Bangladesh
2011, 2012 National Math Olympiad winner, Bangladesh
2012 National Chemistry Olympiad winner, Bangladesh

References

- **Krishna P. Gummadi**
Scientific Director
MPI-SWS, Germany
- **Kuldeep S. Meel**
Associate Professor
Department of Computer Science
University of Toronto, Canada
- **Debabrota Basu**
Faculty (equivalent of Associate Professor)
Scool Team
INRIA at Université de Lille and CNRS, France