Bishwamittra Ghosh

Postdoctoral Researcher
MPI-SWS, Germany
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scholar, dblp

Research Interests

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

Appointment

Since 04.24 **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
<u>Bishwamittra Ghosh</u>, Sarah Hasan, Naheed Anjum Arafat, Arijit Khan

AAAI-25 Active Fourier Auditor for Estimating Distributional Properties of ML Models
Ayoub Ajarra, <u>Bishwamittra Ghosh</u>, 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, <u>Bishwamittra Ghosh</u>, Camila Kolling, Till Speicher, Laurent Bindschaedler, Krishna P. Gummadi, Evimaria Terzi

CAI-24 Split Learning of Multi-Modal Medical Image Classification
<u>Bishwamittra Ghosh</u>, 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
<u>Bishwamittra Ghosh</u>, Debabrota Basu, Kuldeep S. Meel

VLDB-23 Neighborhood-based Hypergraph Core Decomposition
Naheed Anjum Arafat, Arijit Khan, Arpit Kumar Rai, <u>Bishwamittra Ghosh</u>

AAAI-22 Algorithmic Fairness Verification with Graphical Models
<u>Bishwamittra Ghosh</u>, Debabrota Basu, Kuldeep S. Meel

AAAI-21 Justicia: A Stochastic SAT Approach to Formally Verify Fairness
<u>Bishwamittra Ghosh</u>, Debabrota Basu, Kuldeep S. Meel

AAAI-20 A MaxSAT-based Framework for Group Testing
Lorenzo Ciampiconi, <u>Bishwamittra Ghosh</u>, Jonathan Scarlett, Kuldeep S. Meel

ECAI-20 Classification Rules in Relaxed Logical Form
<u>Bishwamittra Ghosh</u>, Dmitry Malioutov, Kuldeep S. Meel

AIES-19 IMLI: An Incremental Framework for MaxSAT-Based Learning of Interpretable Classification Rules
<u>Bishwamittra Ghosh</u>, Kuldeep S. Meel

VLDB-18 The Flexible Socio Spatial Group Queries
<u>Bishwamittra Ghosh</u>, Mohammed Eunus Ali, Farhana M. Choudhury, Sajid Hasan Apon, Timos Sellis, Jianxin Li

Journal Papers

JAIR-22   Efficient Learning of Interpretable Classification Rules
<u>Bishwamittra Ghosh</u>, Dmitry Malioutov, Kuldeep S. Meel

TSAS-21   Social-Spatial Group Queries with Keywords
Sajid Hasan Apon, Mohammed Eunus Ali, <u>Bishwamittra Ghosh</u>, 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 Talks   ICLR (25), FAccT (23), AAAI (22, 21, 20), ECAI (20), CP (19), VLDB (19), IJCAI (19), AIES (19)

Program Committee

AAAI (25)

Reviewer

NeurIPS, ICML, AAAI, KDD, JAIR, AIES, CAV, TNNLS, TMI, 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 – 03.24   **Scientist**, *Institute of High Performance Computing (IHPC), A*STAR*, Singapore.

01.18 – 06.23   **Graduate Research Assistant**, *National University of Singapore (NUS)*, 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