

SUBHOJYOTI MUKHERJEE

Wisconsin Institute of Discovery
University of Wisconsin-Madison
Madison, WI 53715

Email: smukherjee27@wisc.edu,
subhojyotimukherjee22@gmail.com
Website: <https://subhojyoti.github.io/>

Research Interests Reinforcement Learning ([RL](#)), Large Language Models ([LLM](#)), Reinforcement Learning with Human Feedback ([RLHF](#)), Incontext Learning ([ICL](#)), Optimal Design ([OD](#)).

Education **University of Wisconsin-Madison**, Madison, USA Fall 2019 – 2024 (expected)
Ph.D., Electrical & Computer Engineering
Adviser: Dr. Robert Nowak, Dr. Josiah Hanna and Dr. Qiaomin Xie

University of Wisconsin-Madison, Madison, USA Fall 2019 – 2021
M.S., Electrical Engineering
Adviser: Dr. Robert Nowak

Indian Institute of Technology Madras, India 2015–2018
M.S (Research), Computer Science
Advisers: Dr. Balaraman Ravindran and Dr. Nandan Sudarsanam

West Bengal University of Technology, Kolkata, India 2009–2013
Bachelor of Technology, Computer Science & Engineering

Publications

1. **Subhojyoti Mukherjee**, Anusha Lalitha, Kousha Kalantari, Aniket Anand Deshmukh, Ge Liu, Yifei Ma, Branislav Kveton, "*Optimal Design for Human Preference Elicitation*". (**NeurIPS 2024, main conference**) [Paper] ([LLM](#), [RLHF](#))
2. **Subhojyoti Mukherjee**, Josiah Hanna, Robert Nowak, "*SaVeR: Optimal Data Collection Strategy for Safe Policy Evaluation in Tabular MDP*". (**ICML 2024, main conference**) [Paper] ([RL](#))
3. **Subhojyoti Mukherjee**, Anusha Lalitha, Kousha Kalantari, Aniket Anand Deshmukh, Ge Liu, Yifei Ma, Branislav Kveton, "*Optimal Design for K-Way Human Feedback*". (**Models of Human Feedback for AI Alignment workshop ICML 2024**) [Paper] ([LLM](#), [RLHF](#), [OD](#))
4. Aniruddha Bhargava, Lalit Jain, Branislav Kveton, Ge Liu, **Subhojyoti Mukherjee**, "*Off-Policy Evaluation from Logged Human Feedback*". (**Models of Human Feedback for AI Alignment workshop ICML 2024**) [Paper] ([LLM](#))
5. **Subhojyoti Mukherjee**, Qiaomin Xie, Josiah Hanna, Robert Nowak, "*SPEED: Optimal Experimental Design for Policy Evaluation in Linear Heteroscedastic Bandits*". (**AISTATS 2024**) [Paper] ([RL](#), [OD](#))
6. **Subhojyoti Mukherjee**, Qiaomin Xie, Josiah Hanna, Robert Nowak, "*Multi-task Representation Learning for Pure Exploration in Bilinear Bandits*", Neural Information Processing Systems. (**NeurIPS 2023**) [Paper] ([RL](#), [OD](#))
7. **Subhojyoti Mukherjee**, Josiah Hanna, Robert Nowak, "*ReVar: Strengthening Policy Evaluation via Reduced Variance Sampling*". Uncertainty in Artificial Intelligence. (**UAI-22**) [Paper] ([RL](#))
8. **Subhojyoti Mukherjee**, "*Safety Aware Changepoint Detection for Piecewise i.i.d. Bandits*". Uncertainty in Artificial Intelligence (**UAI-22**). [Paper] ([RL](#))

9. **Subhojyoti Mukherjee***, Ardhendu Tripathy*, Robert Nowak, "*Chernoff Sampling for Active Testing and Extension to Active Regression*". The 25th International Conference on Artificial Intelligence and Statistics (**AISTATS-22**). [Paper] ([RL](#), [OD](#))
10. Blake Mason, Romain Camilleri, **Subhojyoti Mukherjee**, Kevin Jamieson, Robert Nowak, Lalit Jain, "*Nearly Optimal Algorithms for Level Set Estimation*". The 25th International Conference on Artificial Intelligence and Statistics (**AISTATS-22**). [Paper] ([RL](#), [OD](#))
11. Samarth Gupta, Shreyas Chaudhari, **Subhojyoti Mukherjee**, Gauri Joshi, Osman Yagan, "*A Unified Approach to Translate Classical Bandit Algorithms to the Structured Bandit Setting*", *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP-21)*. [Paper] ([RL](#))
12. Samarth Gupta, Shreyas Chaudhari, **Subhojyoti Mukherjee**, Gauri Joshi, Osman Yagan, "*A Unified Approach to Translate Classical Bandit Algorithms to the Structured Bandit Setting*", *IEEE Journal on Selected Areas in Information Theory* (**2020**). [Paper] ([RL](#))
13. **Subhojyoti Mukherjee**, and Odalric-Ambrym-Maillard, "*Distribution-dependent and Time-uniform Bounds for Piecewise i.i.d Bandits*", *Thirty-sixth International Conference on Machine Learning (ICML-19)*, Workshop on Reinforcement Learning for Real Life 2019 track [Poster]. [Paper] ([RL](#))
14. **Subhojyoti Mukherjee**, K.P. Naveen, Nandan Sudarsanam, and Balaraman Ravindran, "*Efficient UCBV: An Almost Optimal Algorithm using Variance Estimates*", *Proceedings of the Thirty-Second Association for the Advancement of Artificial Intelligence (AAAI-18)*, main conference track [Oral]. [Paper] ([RL](#))
15. **Subhojyoti Mukherjee**, K.P. Naveen, Nandan Sudarsanam, and Balaraman Ravindran, "*Thresholding Bandits with Augmented UCB*", *Proceedings of the Twenty-Sixth International Joint Conference on Artificial Intelligence (IJCAI-17)*, main conference track [Poster]. [Paper] ([RL](#))

Preprints

1. **Subhojyoti Mukherjee**, Ge Liu, Aniket Anand Deshmukh, Anusha Lalitha, Yifei Ma, Branislav Kveton, "*Optimal Design for Adaptive In-Context Prompt Tuning in Large Language Models*". NeurIPS 2024 (Submitted) [Paper] ([LLM](#), [ICL](#), [OD](#))
2. **Subhojyoti Mukherjee**, Josiah Hanna, Qiaomin Xie, Robert Nowak, "*Pretraining Decision Transformers with Reward Prediction for In-Context Structured Bandit Learning*". NeurIPS 2024 (Submitted) [Paper] ([LLM](#), [ICL](#))
3. **Subhojyoti Mukherjee**, Qiaomin Xie, Robert Nowak, "*Multi-task Representation Learning for Fixed Budget Pure-Exploration in Linear and Bilinear Bandits*". NeurIPS 2024 (Submitted)
4. **Subhojyoti Mukherjee**, Ruihao Zhu, Branislav Kveton, "*Efficient and Interpretable Bandit Algorithms*", [Paper]. ([RL](#), [OD](#))
5. **Subhojyoti Mukherjee**, Devin Conathan, Robert Nowak, "*AdaTune: Active Learning for Fine-Tuning BERT on QA Task*" ([LLM](#), [RL](#))

Research Internships

1. **Amazon AWS AI, Santa Clara, USA:** Summer 2024 (Full-time), Host: Branislav Kveton, Yifei Ma, Anusha Lalitha, Kousha Kalantiri, Aniket Deshmukh. Working on Alignment for Multi-objective optimization with LLMs.

	<ol style="list-style-type: none"> Amazon AWS AI, Santa Clara, USA: Fall 2023 (Part-time), Host: Branislav Kveton, Yifei Ma, Anusha Lalitha, Kousha Kalantiri, Ge Liu, Aniket Deshmukh, Anoop Deoras. Working on RLHF with LLMs Amazon AWS AI, Santa Clara, USA: Summer 2023 (Full-time), Host: Branislav Kveton, Yifei Ma, Anusha Lalitha, Ge Liu, Aniket Deshmukh, Anoop Deoras. Worked on Active In-Context Learning with LLMs CMU, ECE Dept., Pittsburgh, USA: Summer 2019, Host: Gauri Joshi. Worked on Structured Bandits Adobe Research, San Jose, USA: Spring 2018. Host: Branislav Kveton. Worked on Item recommendation with Ranking and Bandits INRIA, SequeL Lab, Lille, France: Fall 2017, Host: Odalric Maillard. Worked on Non-stationary Bandits
Master's Thesis (EE, UW-Madison)	Active Sequential Hypothesis Testing with Extension to Active Regression and Multi-armed Bandits [Thesis] (RL , OD)
Master's Thesis (CS, IIT Madras)	Finite-time Analysis of Frequentist Strategies for Multi-armed Bandits [Thesis](RL)
Teaching Experience	<p>Teaching Assistant, UW-Madison 2019–current <i>Matrix Methods in Machine Learning</i> - Prof. Robert Nowak <i>Mathematical Foundation in Machine Learning</i> - Prof. Robert Nowak</p> <p>Teaching Assistant, UMass Amherst 2018–2019 <i>Natural Language Processing</i> - Prof. Mohit Iyyer <i>Design of Algorithms</i> - Prof. Daniel Sheldon</p> <p>Teaching Assistant, IIT Madras 2015–2018 <i>Introduction to Programming</i> - Prof. Raghavendra Rao B. V. <i>Reinforcement Learning</i>(twice) - Prof. Balaraman Ravindran</p>
Reviewer and Service	<ol style="list-style-type: none"> AISTATS, UAI, AAAI, ICML, ICLR, NeurIPS, TMLR, KDD, RLC Main Co-ordinator of SILO seminar at UW-Madison
Award Grants and Fellowship	<ol style="list-style-type: none"> Top reviewer award for UAI 2023, Neurips 2023 Student Scholarship for AAAI 2018, UAI 2022, Neurips 2023 UW-Madison nominee for Apple PhD fellowship and Two-sigma PhD fellowship. Received UW-Madison Chancellor's Opportunity Fellowship 2019-20, UW-Madison ECE Welcome Award of USD 3000. IIT Madras student travel grant of USD 2300, Google travel grant of USD 1700, Microsoft travel grant of USD 1435 (declined).
Other Achievements	<p>Ranked 1150/155190 candidates in Graduate Aptitude Test in Engineering (GATE) 2014.</p> <p>Secured 98.93 percentile in Common Admission Test (CAT) 2014 among 196988 candidates.</p>
References	Available Upon Request.