

Education

ABV-Indian Institute of Information Technology and Management

Integrated Bachelor's + Master's in Information Technology

GPA: 8.53/10

2015 - 2020

Work Experience

- **Pre-Doctoral Researcher - Google Research** Bengaluru, IN
Mentor: Prof. Milind Tambe June. 2021 - Present
 - Conducted large-scale Randomized Control Trials (RCT) involving 1M+ beneficiaries to show applicability of Restless Multi-Armed Bandits (RMAB) models in Public Health.
 - Developed and field-tested Robust-RMAB and End-to-End differentiable RMAB algorithms.
- **Data Scientist - United Health Group** Gurgaon, IN
Mentor: Kishore V. Ayyadevara Aug 2020 - May 2021
 - Modelled Hospital Readmission Risk problem for 40M+ beneficiaries with explainable predictions.
 - Developed sensitive health data flagging techniques for use within enterprise-wide databases.

Publications

- *Increasing Impact of Mobile Health Programs: SAHELI for Maternal and Child Care*
Verma S.*, Singh G.*, Mate A., Verma P., Gorantla S., Madhiwalla N., Hegde A., Thakkar D., Jain M., Tambe M., Taneja A.
To appear at the AAAI Conference on Artificial Intelligence 2023 - Innovative Applications of AI Track (**IAAI 2023, IAAI Innovative Application Award**)
- *Field Study in Deploying Restless Multi-Armed Bandits: Assisting Non-profits in Improving Maternal and Child Health*
Mate A.*, Madaan L.*, Taneja A., Madhiwalla N., **Verma S.**, Singh G., Hegde A., Varakantham P., Tambe M.
Published at the AAAI Conference on Artificial Intelligence 2022 (**AAAI 2022**)
- *Towards Sample-Efficient Learners in Population based Referential Games through Action Advising*
Verma S.
Published at the International Conference on Autonomous Agents and Multiagent Systems (**AAMAS 2021**)
- *Emergence of Writing Systems through Multi-Agent Cooperation (Student Abstract)*
Verma S., Dhar J.
Published at the AAAI Conference on Artificial Intelligence 2022 (**AAAI 2020**)
- *Deep Reinforcement Learning for Single-Shot Diagnosis and Adaptation in Damaged Robots*
Verma S., Nair, H.S., Agarwal, G., Dhar, J. and Shukla, A.
Published at ACM IKDD Joint Conference on Data Science and Conference on Management of Data 2020 (**CoDS-COMAD 2020**)

Workshop Papers

- *Understanding Decision Focused Learning in Restless Multiarmed Bandit Problem through Large Scale Field Study*
Verma S., Mate A., Wang K., Taneja A., Tambe M.
Accepted at Trustworthy and Socially Responsible ML workshop at NeurIPS 2022 (**TSRML NeurIPS 2022**)
- *On the Pitfalls of Visual Learning in Referential Games*
Verma S.
Accepted at Language and Reinforcement Learning Workshop at NeurIPS 2022 (**LaReL NeurIPS 2022**)
- *Restless Bandits in the Field: Real-World Study for Improving Maternal and Child Health Outcomes*
Mate A., Madaan L., Taneja A., Madhiwalla N, **Verma S.**, Singh G., Hegde A, Varakantham P., Tambe M.
Presented at Machine Learning in Public Health workshop at NeurIPS 2021 (**MLPH NeurIPS 2021, Best Paper award**)
- *Emergence of Multilingualism in Population based Referential Games*
Verma S.
Presented at Language and Reinforcement Learning Workshop at ICML 2020 (**LaReL ICML 2020**)

Under Review

- *Restless Multi-Armed Bandits for Maternal and Child Health: Results in Decision-Focused Learning*
Verma S., Mate A., Wang K., Taneja A., Tambe M.; Under review at AAAI 2023
- *Scalable Decision-Focused Learning in Restless Multi-Armed Bandits with Application to Maternal and Child Care*
Wang K.*, **Verma S.***, Shah S., Mate A., Taneja A., Tambe M.; Under review at AAMAS 2023
- *Robustness at Scale: Planning for Restless Bandits by Grouping over Large Populations*
Killian J.*, **Verma S.***, Biswas A*., Xu L., Nair V., Taneja A., Tambe M.; Under review at AAAI 2023

Awards, Grants & Honours

Student Travel Grant for presenting research poster at AAAI, New York, US 2020
Rotaract National Technical Quiz Pune, India - 1st in India among 500+ teams 2018
Outstanding Grade in 9 courses and projects across CS and Math 2015-2020
Ramanujan Mathematics Olympiad - 3rd in State among 400+ participants 2013
Regional Mathematics Olympiad - 22nd in State out of 2000+ participants 2013
National Cyber Olympiad - 8th in India among 30000+ participants 2012
Qualified for Indian National Mathematics Olympiad thrice - Top 900/50000 in India . . 2013, 2012, 2011

Selected Open-Source Contributions

- Creator of **Jupyter-Probe**, a library to monitor and manage resource usage on shared Jupyter environments.
- Contributor to **TensorForce**, a library for production-grade Reinforcement Learning. Implemented bindings with simulation environments such as Deepmind Pycolab and Unity ML Agents.
- Contributor to scientific Python libraries for Astronomy - **AstroPy**, and Heliophysics - **SunPy**.

Academic Service, Volunteering

Reviewer Trustworthy and Socially Responsible Machine learning Workshop at NeurIPS 2022
Volunteer Managing helpdesk at the International Conference on Learning Representations (ICLR) 2021
Facilitator Reinforcement Learning Data Study Group, The Alan Turing Institute, UK
Taught Lecture Series on Contributing to Open Source Software, IIITM Gwalior, India