

Pulkit Verma

✉ verma.pulkit@asu.edu | 🏠 pulkitverma.net | 📧 pulkitverma25 | 🌐 pulkitverma25

Research Interests

AI Safety, AI Planning, Action-Model Learning, Analysis of Abstractions, and Robotics.

Education

Ph.D. in Computer Science, Arizona State University

Advisor: Prof. Siddharth Srivastava | GPA: 4.0/4.0

Tempe, USA

Exp. Fall 2023

Master of Technology in Computer Science & Engineering, IIT Guwahati

Advisor: Prof. P. K. Das | Thesis: Resource Usage Analysis for Speech Recognition Techniques | GPA: 9.07/10

Guwahati, India

May 2015

Bachelor of Engineering in Information Technology, SVITS, Indore

Advisor: Prof. Anand Rajawat | Capstone: Smart Analyzer - Predict and Cache Webpages based on Usage.

Indore, India

June 2011

Publications

Journals and Conferences

Pulkit Verma, Shashank Rao Marpally, and Siddharth Srivastava. "Discovering User-Interpretable Capabilities of Black-Box Planning Agents". In *19th International Conference on Principles of Knowledge Representation and Reasoning (KR)*, 2022. (To appear). 📄

Rashmeet Kaur Nayyar*, **Pulkit Verma***, and Siddharth Srivastava. "Differential Assessment of Black-Box AI Agents". In *36th AAAI Conference on Artificial Intelligence*, 2022. 📄 🎥 *Equal Contribution

Pulkit Verma, Shashank Rao Marpally, and Siddharth Srivastava. "Asking the Right Questions: Learning Interpretable Action Models Through Query Answering". In *35th AAAI Conference on Artificial Intelligence*, 2021. 📄 🎥

Pulkit Verma, and Pradip K. Das. "A Comparative Study of Resource Usage for Speaker Recognition Techniques". In *International Conference on Signal Processing and Communication*, 2016. 📄

Pulkit Verma, and Pradip K. Das. "i-Vectors in Speech Processing Applications: A Survey". In *International Journal of Speech Technology*, 18(4), pp.529-546, 2015. 📄

Mayank Gupta, **Pulkit Verma**, Tuhin Bhattacharya, and Pradip K. Das. "A Mobile Agents based Distributed Speech Recognition Engine for Controlling Multiple Robots". In *International Conference on Advances In Robotics*, 2015. 📄

Pulkit Verma, Mayank Gupta, Tuhin Bhattacharya, and Pradip K. Das. "Improving Services using Mobile Agents-based IoT in a Smart City". In *2014 International Conference on Contemporary Computing and Informatics*, 2014. 📄

Workshops, Demos, Posters, Preprints, DCs

Naman Shah*, **Pulkit Verma***, Trevor Angle, and Siddharth Srivastava. "JEDAI: A System for Skill-Aligned Explainable Robot Planning". In *21st International Conference on Autonomous Agents and MultiAgent Systems (Demonstration Track)*, 2022. (To appear). 📄 🎥 *Equal Contribution

Pulkit Verma. "Data Efficient Paradigms for Personalized Assessment of Taskable AI Systems". In *ICAPS 2022 Doctoral Consortium*, 2022. (To appear).

Yizhong Wang et al. "Benchmarking Generalization via In-Context Instructions on 1,600+ Language Tasks". (In submission), 2022. 📄

Pulkit Verma. "Data Efficient Algorithms and Interpretability Requirements for Personalized Assessment of Taskable AI Systems". In *IJCAI 2021 Doctoral Consortium*, 2021. 📄

Pulkit Verma, and Siddharth Srivastava. "Learning Causal Models of Autonomous Agents using Interventions". In *IJCAI 2021 Workshop on Generalization in Planning*, 2021. 📄

Alok Shankar Mysore et al. "Investigating the 'Wisdom of Crowds' at Scale.". In *Adjunct Proceedings of the 28th Annual ACM Symposium on User Interface Software & Technology (Poster)*, 2015. 📄

Professional Experience

Arizona State University

Graduate Research Associate

Tempe, USA

Aug. 2018 - (present)

- Investigating the minimal set of requirements in an AI system that would enable a user to assess and understand the limits of its safe operability.
- Developed a framework which generates interrogation policies to derive an interpretable model of an AI agent.
- Co-lead a team to create an educational tool “JEDAI” to introduce AI planning concepts to laypersons using mobile manipulator robots.
- Co-designed the experiments showcasing possible use-cases of an NSF project on training lay people to use adaptive AI systems which are safe, robust and reliable.

NetApp Inc.

Storage Efficiency Developer

Bengaluru, India

Jul. 2015 - Jul. 2018

- *Workload Prediction*: Predicted workload on a storage volume based on I/O patterns for All Flash systems. This helped in optimizing data storage and management while keeping the nature of data private to the users.
- *File and Volume Clones (FVCs)*: Developed features and managed issues related to file and volume clones on UNIX-based NetApp proprietary WAFL file system to improve the storage efficiency of enterprise data servers.
- Co-developed a file system component which prevented data loss if FVCs are modified when cloud backup is offline.

Tata Consultancy Services Ltd.

iOS Application Developer

Pune, India

Mar. 2012 - Aug. 2013

- Built interactive applications for iPhone and iPad and developed tools to analyze the user investment portfolio.
- Performed cross-platform application development of mobile applications supported on both Android and iOS.

Teaching Experience

CSE 571 Artificial Intelligence [Graduate-level Course]

Arizona State University

Tempe, USA

Spring'22, Fall'19

- Delivered hands-on sessions on Planning Graphs, Markov Decision Processes, Reinforcement Learning, and Neural Networks in Spring 2022 (in progress).
- Delivered tutorials and readings on Robot Operating System (ROS), Constraint Satisfaction Problems (CSPs), First Order Logic, Planning Domain Definition Language (PDDL), and Dynamic Bayesian Networks in Fall 2019.
- Co-created the software test-bed used to support the ROS-based course projects.
- Created and graded homework assignments and exams.
- Moderated research paper discussions in lectures.
- Mentored project groups working on course projects.

Session Lead [Graduate-level Courses]

Arizona State University

Tempe, USA

2020-2021

- Moderated three research paper discussions in CSE 574 Planning and Learning Methods in AI, Spring'21 (39 students).
- Delivered tutorial on *Probabilistic Inference* in CSE 471 Introduction to Artificial Intelligence, Fall'20 (118 students).

CS 566 Speech Processing [Graduate-level Course]

Indian Institute of Technology Guwahati

Guwahati, India

Fall 2014

- Co-developed a custom C++ API to use a voice recording tool that students used in course projects.
- Mentored students working on course projects and homework assignments.
- Graded homework assignments and exams.

Undergraduate Lab. Courses

Indian Institute of Technology Guwahati

Guwahati, India

2013-2015

- TA for the lab courses: CS 513 Programming Lab.; CS 462 Graphics Lab.; and CS 243 Software Engineering Lab.
- Mentored project groups working on course projects.
- Graded homework assignments and exams.

Service

- 2022 **Co-organizer**, IJCAI-ECAI 2022 Workshop on Generalization in Planning (GenPlan'22) [↗](#)
- 2022 **PC Member**, 32nd International Conference on Automated Planning and Scheduling (ICAPS 2022) [↗](#)
- 2022 **PC Member**, ICAPS 2022 Workshop on Explainable AI Planning (XAIP'22) [↗](#)
- 2021 **Reviewer**, IEEE Robotics and Automation Letters [↗](#)
- 2021 **Volunteer**, 30th International Joint Conference on Artificial Intelligence (IJCAI 2021) [↗](#)
- 2021 **Volunteer**, 31st International Conference on Automated Planning and Scheduling (ICAPS 2021) [↗](#)
- 2021 **PC Member**, ICAPS 2021 Workshop on Explainable AI Planning (XAIP'21) [↗](#)
- 2021 **PC Member**, IJCAI 2021 Workshop on Generalization in Planning (GenPlan'21) [↗](#)
- 2021 **Volunteer**, 9th International Conference on Learning Representations (ICLR 2021) [↗](#)
- 2021 **Research Grants Reviewer**, Graduate and Professional Student Association, ASU [↗](#)
- 2021 **GPSA Awards Reviewer**, Graduate and Professional Student Association, ASU [↗](#)
- 2019 **Volunteer**, Southwest Robotics Symposium 2019, Tempe, USA [↗](#)
- 2018 **Volunteer**, 16th Int. Conf. on Principles of Knowledge Representation & Reasoning (KR 2018) [↗](#)
- 2014 **Volunteer**, National Workshop on GPU Programming and Applications, IIT Guwahati [↗](#)

Honors & Awards

- Spring 2022 **SCAI Doctoral Fellowship**, School of Computing and AI, Arizona State University
- Spring 2022 **GPSA Teaching Excellence Award**, Arizona State University
- 2021-2022 **GPSA Travel Grant**, Arizona State University (for AAAI 2021 and AAAI 2022)
- Mar 2021 **Graduate College Travel Awards**, ASU (for AAMAS 2021, ICLR 2021, ICML 2021, IJCAI 2021)
- Oct 2018 **Fulton Schools Experiential Learning Grant**, Arizona State University
- Aug 2013 - May 2015 **Post Graduation Fellowship**, All India Council for Technical Education, Government of India

Other Affiliations

- Jan 2021 - (present) **Graduate Student**, Center for Human, Artificial Intelligence, and Robot Teaming, ASU [↗](#)
- Nov 2020 - (present) **Affiliated Graduate Student**, Center for Human-Compatible Artificial Intelligence, UCB [↗](#)
- Aug 2018 - (present) **Graduate Student**, Autonomous Agents and Intelligent Robots (AAIR) Lab, ASU [↗](#)
- Jul 2016 - Dec 2016 **Online Contributor**, Stanford Scholar Initiative [↗](#)
- Jan 2014 - May 2015 **Graduate Student**, Robotics Lab, IIT Guwahati [↗](#)

Mentorship

Trevor Angle

M.S. in Computer Science (Ongoing), Arizona State University

Tempe, USA

2021-2022

- Co-mentored Trevor at ASU where he worked on a system for skill-aligned explainable robot planning, called JEDAI.
- Resulted in one short paper which is accepted for publication in demonstration track at AAMAS 2022.

Shashank Rao Marpally

M.S. in Robotics and Autonomous Systems, Arizona State University

Tempe, USA

2020-2021

- Mentored Shashank for 3 semesters during his masters where he worked on learning action models for game agents.
- Resulted in one conference (AAAI'21) and one workshop (AAAI'22 EAAI Workshop) publication.

Masih Tamsoy

B.Tech. in Computer Science and Engineering, IIT Guwahati

Guwahati, India

2014-2015

- Mentored Masih for 2 semesters at Robotics Lab, IIT Guwahati where he worked on his bachelor's thesis titled "Speaker Verification Systems".
- Helped Masih in developing a speaker verification system using joint factor analysis and i-vectors.