

Aaquib Tabrez

Curriculum Vitae

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Research Interests

I work at the intersection of explainability and human-robot interaction. In my research, I leverage and enhance human-machine communication to achieve value alignment and foster appropriate trust within human-robot teams. My broader interests include Explainable AI, Reinforcement Learning, Multimodal Human-Machine Communication, and Human-AI Interaction.

Education

- 2019 – **University of Colorado, Boulder**, *Ph.D. Student, Computer Science.*
Advisor: Bradley Hayes
- 2017–2019 **University of Colorado, Boulder**, *GPA: 4.0, MS, Mechanical Engineering.*
- 2010–2014 **National Institute of Technology Karnataka, India**, *B.Tech, Mechanical Engineering.*

Awards and Recognition

- 2023 **Doctoral Consortium at AAMAS-2023.**
Selected for workshop on top early-career researchers in Multi-agent systems.
- 2022 **Robotics: Science and Systems (RSS) Pioneers.**
Selected for workshop bringing together top early career researchers in robotics.
- 2022 **Best Student Paper Award Runner-up at AAMAS.**
For the paper "Descriptive and Prescriptive Visual Guidance to Improve Shared Situational Awareness in Human-Robot Teaming".
- 2020 **IBM PhD Fellowship Finalist.**
One of three students nominated by the CS department at CU Boulder.
- 2019 **Best Paper Award Finalist for Technical Advances at ACM/IEEE HRI.**
For the paper "Explanation-based Reward Coaching to Improve Human Performance via Reinforcement Learning".
- 2019 **Human-Robot Interaction (HRI) Pioneers.**
Selected for workshop bringing together top early career researchers in HRI.
- 2019 **Awtar and Teji Singh Graduate Fellowship.**
A \$5,000 fellowship for early career PhD students demonstrating a strong academic and research record.

Journal Articles

- [paper link](#) **A survey of Mental Modeling Techniques in Human-Robot Teaming..**
Aaquib Tabrez, Matthew B. Luebbers, Bradley Hayes.
Springer-Nature Current Robotics Reports, 2020

Conference Publications

- [paper link](#) **Autonomous Justification for Enabling Explainable Decision Support in Human-Robot Teaming.**
Matthew B. Luebbers*, **Aaquib Tabrez***, Kyler Ruvane*, and Bradley Hayes.
Robotics: Science and Systems (RSS), 2023

- [paper link](#) **Descriptive and prescriptive visual guidance to improve shared situational awareness in human-robot teaming.**
Aaquib Tabrez, Matthew B. Luebbers, Bradley Hayes.
International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2022
Best Student Paper Runner-up (Top 2 of 629 submissions).
- [paper link](#) **Asking the Right Questions: Facilitating Semantic Constraint Specification for Robot Skill Learning and Repair.**
Aaquib Tabrez*, Jack Kawell*, Bradley Hayes.
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021
- [paper link](#) **Explanation-based Reward Coaching to Improve Human Performance via Reinforcement Learning.**
Aaquib Tabrez, Shivendra Agrawal, Bradley Hayes.
ACM/IEEE International Conference on Human Robot Interaction (HRI), 2019
Best Technical Paper Runner-up.

Workshop Publications

- [paper link](#) **Effective Human-Machine Teaming through Communicative Autonomous Agents that Explain, Coach, and Convince.**
Aaquib Tabrez, Bradley Hayes.
Doctoral Consortium at International Conference on Autonomous Agents and Multiagent Systems, 2023
- [paper link](#) **Mediating Trust and Influence in Human-Robot Interaction via Explainable AI.**
Aaquib Tabrez, Bradley Hayes.
Pioneers Workshop at Robotics: Science and Systems (RSS), 2022
- [paper link](#) **Augmented Reality-Based Explainable AI Strategies for Establishing Appropriate Reliance and Trust in Human-Robot Teaming.**
Matthew B. Luebbers*, Aaquib Tabrez*, Bradley Hayes.
Workshop on Virtual, Augmented and Mixed Reality for Human-Robot Interaction (VAM-HRI), 2022
- [paper link](#) **Augmented Reality-Based Explainable AI Strategies for Establishing Appropriate Reliance and Trust in Human-Robot Teaming.**
Matthew B. Luebbers*, Aaquib Tabrez*, Bradley Hayes.
Workshop on Virtual, Augmented and Mixed Reality for Human-Robot Interaction (VAM-HRI), 2022
- [paper link](#) **Solutions for Socially Intelligent HRI in Real-World Scenarios (SSIR-HRI).**
Karen Tatarian, Sera Buyukgoz, Marine Chamoux, Aaquib Tabrez, Bradley Hayes, Mohamed Chetouani.
Companion of the ACM/IEEE International Conference on Human-Robot Interaction, 2021
- [paper link](#) **Robot Behavior Counterfactuals for Interactive Constrained Learning from Demonstration.**
Carl Mueller, Carl Mueller, Aaquib Tabrez, Bradley Hayes
Workshop on Accessibility of Robot Programming and Work of the Future at RSS, 2021
- [paper link](#) **Emerging Autonomy Solutions for Human and Robotic Deep Space Exploration.**
Matthew B. Luebbers*, Christine T. Chang*, Aaquib Tabrez*, Jordan Dixon*, Bradley Hayes.
SpaceCHI: Human-Computer Interaction for Space Exploration, 2021
- [paper link](#) **Automated Failure-Mode Clustering and Labeling for Informed Car-To-Driver Handover in Autonomous Vehicles.**
Aaquib Tabrez*, Matthew B. Luebbers*, Bradley Hayes.
Workshop on Assessing, Explaining, and Conveying Robot Proficiency for Human-Robot Teaming, 2020
- [paper link](#) **Improving human-robot interaction through explainable reinforcement learning.**
Aaquib Tabrez, Bradley Hayes.
Companion of the ACM/IEEE International Conference on Human-Robot Interaction, 2019

Teaching & Research Assistantships

- Spring 2021 - **Army Research Lab STRONG Program, University of Colorado Boulder, CO.**
Research Assistant, Prof. Bradley Hayes

- Fall 2020 **CSCI 5302/4302: Advanced Robotics**, *University of Colorado Boulder, CO.*
Teaching Assistant, Prof. Bradley Hayes
- Fall 2020 **CSCI 3302: Introduction to Robotics**, *University of Colorado Boulder, CO.*
Teaching Assistant, Prof. Bradley Hayes
- Spring 2020 **CSCI 5922: Neural Networks and Deep Learning**, *University of Colorado Boulder, CO.*
Teaching Assistant, Profs. Adam Bloniarz & Shumin Wu
- Fall 2020 **CSCI 3302: Introduction to Robotics**, *University of Colorado Boulder, CO.*
Teaching Assistant, Prof. Bradley Hayes
- Spring 2020 **CSCI 3302: Introduction to Robotics**, *University of Colorado Boulder, CO.*
Course Grader, Prof. Bradley Hayes
- Fall 2019 **MCEN-4026: Manufacturing Processes and Systems**, *University of Colorado Boulder, CO.*
Course Grader, Prof. Jenifer Blacklock

Organized Workshops

- August 2023 **Workshop on Human-Robot Interaction for Explainability in Robotics**, *RO-MAN 2023.*
Co-Organizer
- June 2023 **RSS Pioneers 2023 Workshop**, *RSS 2023.*
Program Committee Chair
- March 2021 **Solutions for socially intelligent HRI in real-world scenarios workshop**, *HRI 2021.*
Co-Organizer
- March 2021 **HRI Pioneers 2021 Workshop**, *HRI 2021.*
Program Chair
- August 2020 **Solutions for socially intelligent HRI in real-world scenarios workshop**, *RO-MAN 2020.*
Co-Organizer
- March 2020 **HRI Pioneers 2020 Workshop**, *HRI 2020.*
Program Chair

Professional Experience

- 2014 – 2016 **Daimler**, *Chennai, India.*
Procurement Manager
- Aug 2012 – **Kudremukh Iron Ore Company**, *Kudremukh, India.*
Dec 2012 Industrial Intern

Research Mentorship

- 2023 - **Nathan Howard**, *Masters*, CU Boulder.
- 2022 - 2023 **Kanaka Talanki Sreenivasa Murthy**, *Masters*, CU Boulder.
- 2021 - 2022 **Karthik Siddaramanna**, *Masters*, CU Boulder.
- 2020 - 2021 **Aditi Periyannan**, *Undergraduate*, Tufts University.
- 2019 **Felix Moses**, Berkeley High School.
- 2019 **Stephen Kwak**, Bellarmine High School.
- 2018 - 2019 **Xi Hu**, *Undergraduate*, CU Boulder.

Review Activities

- IEEE Robotics and Automation Letters (RA-L)
- ACM Transactions on Human-Robot Interaction (T-HRI)
- ACM/IEEE International Conference on Human-Robot Interaction

IEEE International Conference on Robotics and Automation (ICRA)
IEEE International Conference on Intelligent Robots and Systems (IROS)
CHI: Conference on Human Factors in Computing Systems
IEEE International Conference on Robot and Human Interactive Communication (RO MAN)
Explainable AI Planning Workshop (XAIP), ICAPS
Workshop on Explainable Artificial Intelligence (XAI), IJCAI
Companion of the Robotics: Science and Systems (RSS Pioneers)
Companion of the International Conference on Human-Robot Interaction (HRI Pioneers)
Late Breaking Reports at HRI