Rohit Mallick

Ph.D. Candidate, Human-Centered Computing
Senior Lead Graduate Research Assistant, Team Research Analytics in Computational Environments (TRACE) Research Group

School of Computing
College of Engineering, Computing, and Applied Sciences
Clemson University

Lab website: https://computing.clemson.edu/trace/
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Email: rmallic@clemson.edu
Address: 111b McAdams Hall, Clemson, SC, 29631

Short Biography

Rohit Mallick is a Ph.D. candidate at the Team Research Analytics in Computational Environments (TRACE) Research Group...

CURRICULUM VITAE

Rohit Mallick

Ph.D. Candidate, Human-Centered Computing
School of Computing, Clemson University
111b McAdams Hall, Clemson SC, 29631
Email: rmallic@clemson.edu

Education

Ph.D. **Human-Centered Computing**. School of Computing, College of Engineering, Computing and Applied Sciences. Clemson University. December 2024
(Advisor: Nathan J. McNeese)

B.S. **Brain and Behavioral Sciences**. Department of Psychological Sciences, College of Health and Human Sciences. Purdue University. May 2020
Minor: Computer Science

Appointments

Primary

2020- **Graduate Research Assistant**, *Team Research Analytics in Computational Environments (TRACE) Research Group*. School of Computing, College of Engineering, Computing and Applied Sciences (CECAS). Clemson University.
Lab Director(s): Drs. Nathan McNeese & Christopher Flathmann
https://computing.clemson.edu/trace/

2018-2020 **Undergraduate Research Assistant**, *Purdue Laboratory of Computational Cognitive Neuroscience (CCN)*. Department of Psychological Sciences, College of Health and Human Sciences. Purdue University.
Lab Director: Dr. Sébastien Hélie https://ccn.psych.purdue.edu/

Secondary

2020*
2018*
2016* **Summer Journeyman Fellow**, *Oak Ridge Institute of Science and Education (ORISE)*. Contracted to the Human Research and Engineering Directorate (HRED), U.S. Army Research Laboratory (ARL). Aberdeen Proving Ground (APG), Maryland.
2020 & 2018 Mentor: Dr. Nicholas Waytowich
2016 Mentor(s): Drs. Anthony Ries, Jon Touryan & Brent Lance

2019* **Journeyman Fellow**, *Oak Ridge Institute of Science and Education (ORISE)*. Contracted to the Human Research and Engineering Directorate (HRED),

U.S. Army Research Laboratory (ARL). Aberdeen Proving Ground (APG), Maryland.
Mentor: Dr. Nicholas Waytowich

2017* **College Qualified Leaders (CQL)**, *U.S. Army Research Laboratory (ARL)*. Employed at the Human Research and Engineering Directorate (HRED). Aberdeen Proving Ground (APG), Maryland.
Mentor: Dr. Anthony Ries

2015* **Science and Engineering Apprenticeship Program (SEAP)**, *U.S. Army*
2014* *Research Laboratory (ARL)*. (2015) Employed at the Human Research and Engineering Directorate (HRED). Aberdeen Proving Ground (APG), Maryland. (2014) Employed at the Sensors and Electron Devices Directorate (SEDD). Adelphi, Maryland.
2015 Mentor(s): Drs. Anthony Ries, Jon Touryan, Brent Lance
2014 Mentor: Dr. William Nothwang

Note: * Signifies a summer internship

Achievement Highlights

- Over **10 publications** in top HCI and Human Factors conferences and journals.
- **One journal article** nominated for Best Paper Award in ACM GROUP
- **4x Recipient** of the Journeyman Fellowship from Oak Ridge Institute of Science and Education
- Experience as a Research Assistant in **5 labs** ranging Clemson University, Purdue University, and the United States Army Research Laboratory since 2014
  4 Years served as an Graduate Research Assistant at Clemson University
  2 Years served as an Undergraduate Research Assistant at Purdue University
  7 research internships served at the United States Army Research Laboratory

Collaboration on Funded Projects

Project Summary
Total Value of Funded Projects Worked on: $1,047,582

Graduate Research Assistant:

2023 Human-Centered Dashboard Design and Development for Decision Aid Models. Office of Naval Research (ONR) subcontract through Applied Research Associates (ARA) Inc. (PI: Nathan McNeese. $196,338. McNeese funding based on percentage credit (100%): **$196,338**)

2020-2023 Virtual Prototyping in Ground Systems (VIPR-GS): 1.2 Enhanced Situational Intelligence for Off-Road Depot Vehicle through Collaborative Perception and Human-Centered Algorithmic Intent. Ground Vehicle Systems Center (GVSC), U.S. Army Combat Capabilities Development Command (DEVCOM). (PI: Zoran Filipi. $18,450,281. Co-PI: Nathan McNeese, funding based on percentage credit (4.6%): **$851,244**)

Publications

Dissertation (In Progress)

D.1 **Mallick, R.** (December 2024). The Inception of Team Morale: Nurturing Human Teammate Well-Being through Socially Supportive AI Teammates in Human-AI Teams. Committee: Nathan McNeese, Kapil Chalil Madathil, Guo Freeman, Carlos Toxtli-Hernández

Journal Articles

JA.3 **Mallick R.**, Flathmann, C., Lancaster, C., Hauptman, A., McNeese, N. J., & Freeman, G., (2023). The Pursuit of Happiness: The Power and Influence of AI Teammate Emotion in Human-AI Teamwork. *Behaviour & Information Technology* (in-press) https://doi.org/10.1080/0144929X.2023.2277909

JA.2 Flathmann, C., Schelble, B. G., Rosopa, P. J., McNeese, N. J., **Mallick, R.**, & Madathil, K. C. (2023). Examining the impact of varying levels of AI teammate influence on human-AI teams. *International Journal of Human-Computer Studies*, 177, 103061. https://doi.org/10.1016/j.ijhcs.2023.103061

🏆 JA.1 Schelble, B. G., Flathmann, C., McNeese, N. J., Freeman, G., & **Mallick, R.** (2022). Let's Think Together! Assessing Shared Mental Models, Performance, and Trust in Human-Agent Teams. *Proceedings of the ACM on Human-Computer Interaction. GROUP.* (Vol. 6, No. 13, pp. 1-29) Association of Computing Machinery (ACM). https://doi.org/10.1145/3492832
***Honorable Mention Paper Award**

Under Review

UR.4 Lancaster, C., Duan, W., **Mallick, R.**, McNeese, N.J., (Under Review). Human-Centered Team Training for Human-AI Teams: From Training with AI Tools to Training for AI Teammates *Computer-Supported Cooperative Work (CSCW)*

UR.3 **Mallick, R.**, Flathmann, C., Duan, W., Schelble, S., McNeese, N. J., (Under Review). What You Say vs What You Do: Utilizing Positive Emotional Expressions to Relay AI Teammate Intent within Human-AI Teams *International Journal of Human-Computer Studies*

UR.2 Hauptman, A., **Mallick, R.**, Flathmann, C., McNeese, N. J., (Under Review). Human Factors Considerations for the Context-Aware Design of Adaptive Autonomous Teammates. *Ergonomics*

UR.1 Flathmann, C., **Mallick, R.**, Brady, C., Srivastava, S., McNeese, N. J., Madathil, K. C., O'Neill, T. A., (Under Review). Team Composition and Interdependence: Empirically Linking Two Fundamental Teaming Considerations in Human-AI Teams *Human–Computer Interaction*

Conference Papers (Referred):

C.8 Macdonald, J., **Mallick, R.**, Wollaber, A., Pena, J., McNeese, N., & Chit Siu, H. (2024- in press). Language, Camera, Autonomy! Prompt-engineered Robot Control for Rapidly Evolving Deployment. In *ACM/IEEE Human-Robot Interaction (HRI) 2024 Late Breaking Work*

C.7 **Mallick, R.**, Sawant, S., Brady, C., McNeese, N. J., Madathil, K. C., & Bertrand, J., (2023). Can We Build it? Yes, We Can! Development Procedure of High-Fidelity Simulation Environments for Human-Agent Teams. *In Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. Sage CA: Los Angeles, CA: SAGE Publications. https://doi.org/10.1177/21695067231192225

C.6 Sawant, S., **Mallick, R.**, Brady, C., Madathil, K. C., McNeese, N. J., Bertrand, J., & Rangaraju, N., (2023). Balancing the Scales of Explainable and Transparent AI Agents within Human-Agent Teams. *In Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. Sage CA: Los Angeles, CA: SAGE Publications. https://doi.org/10.1177/21695067231192250

C.5 Sawant, S., Brady, C., **Mallick, R.**, Madathil, K. C., McNeese, N. J., & Bertrand, J., (2023). Human-AI teams in complex military operations: Soldiers' perception of intelligent AI agents as teammates in human-AI teams. *In Proceedings of the Human Factors and Ergonomics Society Annual Meeting*. Sage CA: Los Angeles, CA: SAGE Publications. https://doi.org/10.1177/21695067231192423

C.4 Musick, G., Schelble, B. G., **Mallick, R.**, & McNeese, N. J., (2023). Selective sharing is caring: Toward the design of a collaborative tool to facilitate team sharing. *Proceedings of the 56th Hawaii International Conference on System Sciences* (pp. 428) https://hdl.handle.net/10125/102681

C.3 Schelble, B. G., Lancaster, C., Duan, W., **Mallick, R.**, McNeese, N. J., & Lopez, J., (2023). The Effect of AI Teammate Ethicality on Trust Outcomes and Individual Performance in Human-AI Teams. *Proceedings of the 56th Hawaii International Conference on System Sciences* (pp. 322) https://hdl.handle.net/10125/102668

C.2 **Mallick, R.**, Sawant, S., McNeese, N. J., & Madathil, K. C., (2022). Designing for Mutually Beneficial Decision Making in Human-Agent Teaming. *In Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 66, No. 1, pp. 392-396). Sage CA: Los Angeles, CA: SAGE Publications. https://doi.org/10.1177/1071181322661358

C.1 Sawant, S., **Mallick, R.**, Madathil, K. C., & McNeese, N. J., (2022) Mutually beneficial decision making in human-AI teams: Understanding soldier's perception and expectations of AI teammates in human-AI teams. *In Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 66, No. 1, pp. 287-289). Sage CA: Los Angeles, CA: SAGE Publications. https://doi.org/10.1177/1071181322661355

Patents and Technology Disclosures:

TD.1 Madathil, K. C., Bertrand, J., McNeese, N. J., Sawant, S., **Mallick, R.**, Brady C., & Gramopadhye, A., (2023) Suite for Human-AI Teaming Research, Clemson University: College of Engineering Computing and Applied Sciences, *Approved: 00657*

Workshop Papers & Organization (Peer Reviewed):

WP.1 **Mallick, R.**, Slayback, D., Touryan, J., Ries, A.J., & Lance, B.J., (2016) The Use of Eye Metrics to Index Cognitive Workload in Video Games. *2016 IEEE Second Workshop on Eye Tracking and Visualization (ETVIS)* (pp. 60-64). Institute of Electrical and Electronics Engineers (IEEE). https://doi.org/10.1109/ETVIS.2016.7851168

Published Reports & Technical Reports:

R.3 **Mallick, R.**, (2017) Quantifying Visual Perception Before, Upon, and After an Eye Fixation, *2017 ARL Summer Student Program, Volume II: Compendium of Abstracts (ARL-SR-0388)* (p. 95) Army Research Laboratory Adelphi.

R.2 **Mallick, R.**, (2016) The Use of Eye Metrics to Index Cognitive Workload in Video Games, *2016 ARL Summer Student Program, Volume II: Compendium of Abstracts (ARL-TM-2016a)* (p. 31), Army Research Laboratory Adelphi.

R.1 **Mallick, R.**, (2015) Correlations Between Tetris Fall Speeds and Eye Movement, *2015 ARL Summer Student Program, Volume II: Compendium of Abstracts (ARL-TM-2015a)* (p. 35), Army Research Laboratory Adelphi.

Presentations (Invited, Conference, & Program Reviews):

PRE.6 Macdonald, J., **Mallick, R.**, McNeese, N. J., Wollaber, A., Peña, J., & Siu, H. C., "Demonstration of the Context-observant LLM-Enabled Autonomous Robots (CLEAR) System," *Recent Advances in AI for National Security (RAAINS)*, Massachusetts Institute of Technology (MIT) Lincoln Laboratory, Lexington, MA, 13-16 November 2023

PRE.5 Sawant, S., **Mallick, R.**, Brady, C., Madathil, K. C., McNeese, N. J., Bertrand, J., & Rangaraju, N., "Human-AI teams in complex military operations: Soldiers' perception of intelligent AI agents as teammates in human-AI teams", *67th Annual Meeting for the Human Factors and Ergonomics Society*, Washington Hilton, District of Columbia, 27 October 2023.

PRE.4 **Mallick, R.**, Brady, C., & McNeese, N. J., "Development of Soldier-Centered AI to enhance Situational Awareness within Human-Agent Teams" *VIPR-GS Student Symposium*, Clemson University International Center for Automotive Research (CU-ICAR), Greenville, SC, 1 March 2023

PRE.3 **Mallick, R.**, Sawant, S., McNeese, N. J., & Madathil, K. C., "Designing for Mutually Beneficial Decision Making in Human-Agent Teaming" *66th Annual Meeting for the Human Factors and Ergonomics Society*, Atlanta Marriott Marquis, Georgia, 12 October 2022.

PRE.2 Sawant, S., **Mallick, R.**, Madathil, K. C., & McNeese, N. J., "Mutually beneficial decision making in Human-AI teams under uncertainty: Understanding soldier's perceptions and expectations of AI teammates" *66th Annual Meeting for the Human Factors and Ergonomics Society*, Atlanta Marriott Marquis, Georgia, 11 October 2022.

PRE.1 **Mallick, R.**, Ries, A., Touryan, J., Slayback, D., & Lance, B., "The Use of Eye Metrics to Index Cognitive Workload in Video Games" *IEEE – Vis (ETVIS)*, Hilton Baltimore, Maryland, 23 October 2016.

Research Posters:

P.10 Macdonald, J., **Mallick, R.**, McNeese, N. J., Wollaber, A., Peña, J., & Siu, H. C., "Context-observant LLM-Enabled Autonomous Robots (CLEAR)," *Recent Advances in AI for National Security (RAAINS)*, Massachusetts Institute of Technology (MIT) Lincoln Laboratory, Lexington, MA, 13-16 November 2023

P.9 **Mallick, R.**, Sawant, S., Brady, C., McNeese, N. J., Madathil, K. C., & Bertrand, J., "Can We Build it? Yes, We Can! Development Procedure of High-Fidelity Simulation Environments for Human-Agent Teams," *67th Annual Meeting for the Human Factors and Ergonomics Society*, Washington Hilton, District of Columbia, 25 October 2023.

P.8 Sawant, S., **Mallick, R.**, Brady, C., Madathil, K. C., McNeese, N. J., Bertrand, J., & Rangaraju, N., "Balancing the Scales of Explainable and Transparent AI Agents within Human-Agent Teams," *67th Annual Meeting for the Human Factors and Ergonomics Society*, Washington Hilton, District of Columbia, 25 October 2023.

P.7 **Mallick, R.**, Sawant, S., McNeese, N. J., & Chalil Madathil, K., "Enhancing Situational Intelligence through Explainable and Transparent AI Teammates," *VIPR-GS Student Symposium*, Clemson University International Center for Automotive Research (CU-ICAR), Greenville, SC, 1 March 2023

P.6 Sawant, S., **Mallick, R.**, Chalil Madathil, K., & McNeese, N. J., "Building multimodal interfaces to enhance team situation awareness," *VIPR-GS Student Symposium*, Clemson University International Center for Automotive Research (CU-ICAR), Greenville, SC, 1 March 2023

P.5 **Mallick, R.**, McNeese, N. J., Brooks, J., & Chalil Madathil, K., "Building bi-directional HCA frameworks for Human-Artificial Intelligent Teams," *VIPR-GS Student Symposium*, Clemson University International Center for Automotive Research (CU-ICAR), Greenville, SC, 24 September 2021

P.4 Mishra, P., **Mallick, R.**, & Hélie, S., "A Network for 3D Perception Using Psychophysical Constraints," *Center for Research on Brain, Behavior, and NeuroRehabilitation (CEREBBRAL) Symposium*, Purdue University, West Lafayette, IN, 17 April 2019

P.3 **Mallick, R.**, Waytowich, N., Asher D., Henthorn, B., & Cesar-Tondreau, B., "Human-in-the-Loop Reinforcement Learning in Ground Robots," *ARL Summer Symposium*, Human Research and Engineering Directorate (HRED), Army Research Laboratory (ARL), Aberdeen Proving Ground (APG), MD, 25 July 2018

P.2 **Mallick, R.**, Ries, A., Touryan, J., Slayback, D., & Lance, B. J., "Quantifying visual perception before, during, and after an eye fixation," *ARL Summer Symposium*, Human Research and Engineering Directorate (HRED), Aberdeen Proving Ground (APG), Maryland, 25 July 2017.

P.1 **Mallick, R.**, Green, S., & Nothwang, W., "Range and Throughput Assessment of Wireless Radios in Various Environments," *ARL Summer Student Symposium, Sensors and Electron Devices Directorate (SEDD)*, Adelphi,

Maryland, 8 August 2014.

Student Advising

As the TRACE Undergraduate Student Coordinator, Ph.D. Student, & Research Assistant at Clemson University

Ph.D. Students

2022- Camden Brady- PhD, Industrial Engineering (*multiple projects: 10 hours/week*)

Masters Students

2022-2023 Siddharth Malladi- M.S., Computer Science (*multiple projects: 10 hours/week*)

2020-2023 Richard Garcia- M.S., Biomedical Data Science and Informatics (*multiple projects: 10 hours/week*)

Undergraduate Students

2023- Kyle Zheng- B.S. Student, Computer Science (*multiple projects: 10 hours/week*)

2023- Ethan Johnson- B.S. Student, Computer Science (*multiple projects: 10 hours/week*)

2023- Jennifer Hsu- B.S. Student, Computer Science (*multiple projects: 10 hours/week*)

2022- Jake Macdonald- B.S. Student, Computer Science (*multiple projects: 10 hours/week*)

2021- Christian Ihekweazu- B.S. Student, Computer Science (*multiple projects: 10 hours/week*)

2021- Noah Tavarez- B.S. Student, Computer Science (*multiple projects: 10 hours/week*)

2021- Alyssa Williams- B.S. Student, Computer Science (*multiple projects: 10 hours/week*)

2020-2021 Wesley "Houston" Everett- B.S., Computer Science (*multiple projects: 10 hours/week*)

2020-2021 Top Lee- BS, Computer Science (*multiple projects: 10 hours/week*)

High School Students

2023- Shreya Mathur- High School Diploma @ South Carolina Governor's School for Science & Mathematics (*single project: 5 hours/week*)

Professional Activities

Memberships

2023- **Clemson Chapter Member** Human-Factors and Ergonomics Society

2023- **Student Member** Human-Factors and Ergonomic Society

Reviewing

Journals

2023- Topics of Cognitive Science

2023- ACM/IEEE International Conference on Human-Robot Interaction (HRI)

University Service

University Service/Representation
Clemson University

2022- TRACE Undergraduate Student Coordinator

2021- NeoCities Virtual Research Platform Developer

2022- Clemson Experimental Forest Virtual Simulation Environment Developer

2023 United States Air Force Academy Visiting Cadet Host. *Duration: Two Weeks*

2023 Human-AI Interaction Lead @ Clemson Elementary STEAM Night. *23 February 2023*

2022 Visiting Scholar at the U.S. Army Research Laboratory: Human Research and Engineering Directorate. *Aberdeen Proving Ground, Maryland. 4 March 2022*

Honors & Awards

2023 ACM GROUP Honorable Mention Best Paper Award

2023 Human Factors Institute (HFI) Travel Award Recipient. *Amount: $500*

2022 Graduate Student Government (GSG) Travel Grant Recipient. *Amount: $750*

(Mult. Yrs) Oak Ridge Institute of Science and Education Summer Journeyman Fellow (2020)(2018)(2016)

2019 Oak Ridge Institute of Science and Education Journeyman Fellow