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
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Short Biography

Rohit Mallick is a Ph.D. candidate for the Human-Centered Computing degree within the School of Computing at Clemson University. Since starting his degree in Fall of 2020, Rohit has been continuously employed as a Graduate Research Assistant under the advisement of Dr. Nathan J. McNeese and full member of the Team Research Analytics In Computational Environments (TRACE) Research Group. Throughout these four and a half years, Rohit has worked on funded grants from the United States Army Combat Capabilities Development Command (CCDC), the Office of Naval Research (ONR), and the National Science Foundation (NSF) totaling a value of $1,373,974.60. Rohit has leveraged these grants to make notable contributions to the fields of human factors, human-computer interaction (HCI), human-AI teaming (HAT), and computer-supported collaborative work (CSCW). To date, Rohit has produced three journal articles, eight conference papers, a technology disclosure, seven conference presentations, and ten research posters as a mixed-methods researcher of qualitative and quantitative methods. Along with his research accomplishments, he has also consistently taken on leadership within TRACE as the Undergraduate Student Coordinator (2023) and Lead Ph.D. Student (2024) to teach incoming students the nuances of academic research. Boasting research experience for over 10 years, via previous internships/assistantships at the United States Army Research Laboratory, and Purdue University's Computational Cognitive Neuroscience Laboratory, Rohit actively works to provide diverse perspectives in the design of AI technologies to promote the well-being of their human collaborators.

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*   **Summer Journeyman Fellow**, *Oak Ridge Institute of Science and Education*
2018*   *(ORISE)*. Contracted to the Human Research and Engineering Directorate
2016*   (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: $1,373,974.60

Graduate Research Assistant:

2024 FW-HTF-RL/Collaborative Research: The Future of Aviation Inspection: Artificial Intelligence and Mixed Reality as Agents of Transformation. **National Science Foundation (NSF)**. (Co-PI: Nathan McNeese. *$1,631,963*. McNeese funding based on percentage credit (20%): **$326,392.60**)

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.** (May 2025). 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.4 Hauptman, A., **Mallick, R.**, Flathmann, C., McNeese, N. J., (in-press). Human Factors Considerations for the Context-Aware Design of Adaptive Autonomous Teammates. *Ergonomics*

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* 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.5 Flathmann, C., **Mallick, R.**, Brady, C., 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 *GROUP*

UR.4 Hauptman, A., Schelble, B., Flathmann, C.,**Mallick, R.**, Macdonald, J.P., McNeese, N. J., (Under Review). Ethical Adaptation: Exploring the Use of Adaptive Autonomy in the Design of Ethical AI Teammates. *AI & Society: Knowledge, Culture, and Communication*

UR.3 Schelble, B., **Mallick, R.**, Hauptman, A., McNeese, N.J., (Under Review). Leveraging AI Information-Sharing to Improve Situational Awareness in Human-AI Teams *Human–Computer Interaction*

UR.2 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.1 **Mallick, R.**, Flathmann, C., Schelble, B., Duan, W., 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*

Conference Papers (Referred):

C.10 Schelble, B., Lancaster, C., **Mallick, R.**, McNeese, N.J., (In-press). A Comparative Evaluation of Ad Hoc Team Performance, Effectiveness, and Interactions in Modern Collaborative Technology. *Human Factors and Ergonomics Society*

C.9 Lancaster, C., Gilreath, H., **Mallick, R.**, McNeese, N.J., (In-press). Evaluating Cross-Training's Impact on Perceived Teaming Outcomes for Human-AI Teams *Human Factors and Ergonomics Society*

C.8   Macdonald, J. P., **Mallick, R.**, Wollaber, A. B., Peña, J. D., McNeese, N., & Siu, H. C. (2024). Language, Camera, Autonomy! Prompt-engineered Robot Control for Rapidly Evolving Deployment. *In Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction (pp. 717-721)* https://doi.org/10.1145/3610978.3640671

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 Research Foundation (CURF), *Approved: 00657*

Workshop Papers & Organization (Peer Reviewed):

WP.2 Li, W., **Mallick, R.**, Toxtli-Hernandez, C., Flathmann, C., McNeese, N.J., (in-press) Leveraging Artificial Intelligence to Promote Awareness in Augmented Reality Systems. *CHI'24 Novel Approaches for Understanding and Mitigating Emerging New Harms in Immersive and Embodied Virtual Spaces*

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.7 **Mallick, R.**, Brady, C., McNeese, N. J., "Focus Area 1.2 Task 5: Enhancing Situational Intelligence within Human-AI Teams," *2024 VIPR-GS Annual Review*, Embassy Suites by Hilton Greenville Golf Resort & Conference Center, Greenville, SC, 5 March 2024

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.11   Macdonald, J., **Mallick, R.**, Wollaber, A., Peña, J., McNeese, N. J., & Siu, H. C., "Language, Camera, Autonomy! Prompt-engineered Robot Control for Rapidly Evolving Deployment," *ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, University of Colorado, Boulder, CO, 13 March 2024

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

<u>Ph.D. Students</u>

2024-   Rhea Basappa- PhD, Human-Centered Computing (*multiple projects: 10 hours/week*)

2023-   Nan (Phoebe) Weng- PhD, Human-Centered Computing (*multiple projects: 10 hours/week*)

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

<u>Masters Students</u>

2023-2024   Swapnil Srivastava- M.S., Computer Science (*multiple projects: 20 hours/week*)

2022-2023   Siddharth Malladi- M.S., Computer Science (*multiple projects: 20 hours/week*)

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

<u>Undergraduate Students</u>

2024-   Arvind Mahadevan- B.S. Student, Industrial Engineering (*multiple projects: 10 hours/week*)

2024-   Anna Galeano- B.S. Student, Computer Science (*multiple projects: 10 hours/week*)

2023-   Kyle Zheng- 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*)

2023-2024   Jennifer Hsu- B.S. Student, Computer Science (*multiple projects: 10 hours/week*)

2023-2024   Ethan Johnson- B.S. Student, Computer Science (*multiple projects: 10 hours/week*)

2021-2024   Noah Tavarez- B.S. Student, Computer Science (*multiple projects: 10 hours/week*)

2021-2024   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

2023-2024   Shreya Mathur- High School Diploma @ South Carolina Governor's School for Science & Mathematics (*single project: 5 hours/week*)

Teaching Experience

Clemson University

Courses Taught

2023-2024   **Volunteer Graduate Teaching Assistant**
             HCC 8500: The Science of Teamwork and Technology

Professional Activities

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

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

Reviewing
Journals
2024-   International Journal of Human-Computer Interaction

2024-   Human Factors: The Journal of the Human Factors and Ergonomics Society

2023-   Topics of Cognitive Science

Conferences
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