Rudrajit Choudhuri

OR, USA 458-272-8669 choudhru@oregonstate.edu rudrajit-c rudrajit1729 rudrajit-c R-Choudhuri

Summary

Mixed-methods researcher with 5+ years of experience leading end-to-end research projects. Specialization in *Human-Centered AI (HCAI), Cognitive Science, UX Design, AI, and Software Engineering (SE)*. Currently focused on (1) understanding cognitive factors influencing Human-AI (HAI) interactions in SE, and (2) designing human-centered interfaces for AI tools to improve user experiences in AI-assisted software development and knowledge work.

Education

Oregon State University **Corvallis, OR**

Ph.D. in Computer Science, GPA: 3.92/4 (Focus: Human-Centered AI, Software Engineering) *2022–2026 (Expected)*

M.S. in Computer Science, GPA: 4/4 (Focus: Human-Centered AI, CS Education) *2022-2024*

Committee: Anita Sarma (Advisor), Margaret Burnett, Christopher Hundhausen, Igor Steinmacher, Christopher Sanchez

St. Thomas' College of Engineering & Technology **Kolkata, India**

B.Tech (with Hons.) in Computer Science, GPA: 9.81/10 (Focus: AI in Radiology) ***[Rank 1]*** *2018-2022*

Work Experience

Graduate Research Assistant, HAI-UX Researcher **Sep 2022–Present**

***Oregon State University**, Advisor: Anita Sarma* *Corvallis, OR*

- Led user research on generative AI's effects on productivity, cognitive load, and self-efficacy; mapped AI failure modes (and their causes) to concrete design strategies for safer, more effective human–AI interactions.
- Built an empirically grounded model of (cognitive) factors shaping developers' trust and adoption of genAI in software development, through a large-scale mixed-methods study with developers at GitHub and Microsoft (N=238), yielding actionable guidelines for trustworthy AI and highlighting priority design gaps for improved developer–AI collaboration.
- Modeled AI overreliance leading to cognitive atrophy among STEM students (N=300), producing both interface and curriculum interventions that preserve reflection and critical thinking for an AI-native workforce.
- Led user research with CS students, investigating where and why they struggle to use AI in education, detailing impacts on learning, task quality, self-perception, and adoption decisions.
- Co-developed a framework modeling the diverse impact of interpersonal challenges on the sense of welcomeness in OSS, through a study of 706 contributors at Linux Foundation, producing actionable practices to foster inclusive communities.

PhD Research Intern **June–Sep 2025**

***Microsoft Research**, SAINTES, Mentors: Christian Bird, Robert DeLine, Carmen Badea* *Redmond, WA*

- Led a large-scale mixed-methods study with Microsoft developers (N=860) to identify where AI delivers real value in SE and how to design it responsibly so developers retain agency, craft, and meaningful work. Built a cognitive task-appraisal framework tied to AI openness and use, identified high-need/low-use targets for tooling investment, and uncovered the Responsible AI design guardrails needed to ship them safely.
- Conducted eight large-scale experiments with 2,000 developers testing contextual transparency patterns and cognitive-forcing interventions; showed that targeted friction improved verification and reduced over-reliance while preserving UX, and produced causal design guidelines for appropriate reliance.
- Co-designed a matched-pair study of individual and team AI usage patterns; identified the Productivity Pressure Paradox: rising expectations without enablement erode benefits; delivered organizational and product levers to unlock durable gains.
- Translated findings into product practices with AI for Healthcare, AI ethics, and Copilot Bing Search, delivering actionable guidance and evaluation rubrics adopted by partner teams.

Graduate Global Impact Research Fellow **Apr–Jun 2025**

Modular Open Source Identity Platform (Gates Foundation Fellowship) *Corvallis, OR*

- Designed an end-to-end, multi-agentic workflow to automatically debug usability issues in National ID systems. Operationalized inclusivity decision rules into AI-driven checks, achieving 87% accuracy on real-world data.
- Built an extensible framework adaptable to diverse personas and inclusivity dimensions (e.g., cognitive, socio-economic, gender), providing actionable recommendations to improve equity in large-scale national identity platforms.

Research Intern **May–July 2022**
***Indian Institute of Technology (IIT)**, Kharagpur, Lab: AI4ICPS, Advisor: Manoj Sharma* *Kharagpur, India*

- Led research in developing trustworthy cyber-physical systems & developed structure-based model defenses against adversarial attacks in autonomous driving agents.

Research Student (REU) **Nov 2021–Apr 2022**
***Oregon State University**, Advisor: Anita Sarma* *Remote*

- Developed an Automated Inclusivity Detector (AID) tool to detect cognitive bias bugs that impact diverse students in online CS courseware. Fixes significantly improved students' control over their learning experiences.

Associate Software Developer Intern **Sep–Dec 2021**
Nomura Research Institute Financial Technologies India Pvt. Ltd. *Kolkata, India*

- Co-developed an automated reconciliation solution enabling extensible, configurable processes for large, multi-format databases, enhancing functionality and efficiency across different business operations.

Research Fellow - AI for Radiology **Mar 2019–July 2022**
***St. Thomas' College of Engineering & Technology**, Advisor: Amiya Halder, Amit Paul* *Kolkata, India*

- Worked at the intersections of image processing, soft computing, and statistical machine learning, for developing algorithms for biomedical and radiological diagnostics. Received 2 distinguished paper awards.

Technical Skills

Qualitative and Quantitative UX Research Methods: Field and User Studies, Surveys, Interviews, Hypothesis Testing, Inclusive Design, Heuristic Evaluation, Cognitive Walkthrough, Experimental Design, Usability Testing, A/B Testing, PLS-SEM, CB-SEM, Exploratory & Confirmatory Factor Analysis, Psychometric Analysis, Regression Analysis, Bayesian Statistics, Product Research, Factorial Studies, Vignettes, Socio-Technical Grounded Theory

Machine Learning: Statistical Modeling, Supervised Learning, Unsupervised Learning, Feature Engineering, Fine Tuning, ANN, CNN, RNN, Attention Mechanisms, Transformers, Adversarial Networks, Natural Language Processing (NLP), Image Processing, Computer Vision, Image Segmentation, Causal Inference for AI

Generative AI: LangGraphs, Agentic Workflows, MCP, A2A, AgentKit, Neural Retrieval, RAG, Fine-tuning LLM

Frameworks and Cloud: Scikit-Learn, TensorFlow, PyTorch, Keras, OpenCV, Flask, React, node.js, Git, AWS

UX Research and Analysis Platforms: Qualtrics, SurveyMonkey, Atlas.ti, Figma, RStudio, JASP, SmartPLS

Programming: Python, R, C/C++, Java, JavaScript, MatLab, LaTeX, SQL, HTML, CSS

Peer-Reviewed Publications

**** Selected publications. For a full list, see** Google Scholar*

AI Where It Matters: Where, Why, and How Developers Want AI Support in Daily Work [pdf|data] **Under Review**
***R Choudhuri**, C Badea, C Bird, J Butler, R DeLine, B Houck*

"Maybe We Need Some More Examples" Individual and Team Drivers of Developer GenAI Tool Use [pdf] **Under Review**
*C Miller, **R Choudhuri**, M Ulloa, S Haniyur, R DeLine, MA Storey, EM Hill, C Bird, J Butler*

What Needs Attention? Prioritizing Drivers of Developers' Trust and Adoption of Generative AI [pdf|data] **Under Review**
***R Choudhuri**, B Trinkenreich, R Pandita, E Kalliamvakou, I Steinmacher, M Gerosa, C Sanchez, A Sarma*

What Guides Our Choices? Modeling Developers' Trust and Behavioral Intentions Towards GenAI [pdf|data] **ICSE 2025**
Acceptance: 10.2%
***R Choudhuri**, B Trinkenreich, R Pandita, E Kalliamvakou, I Steinmacher, M Gerosa, C Sanchez, A Sarma*

Investigating the Impact of Interpersonal Challenges on Feeling Welcome in OSS [pdf] **ICSE 2025**
*B Trinkenreich, Z Feng, **R Choudhuri**, M Gerosa, A Sarma, I Steinmacher* *Acceptance:* 10.2%

Insights from the Frontline: GenAI Utilization Among Software Engineering Students [pdf|data] — **CSEE&T 2025**, *Acceptance:* 31%
***R Choudhuri**, A Ramakrishnan, A Chatterjee, B Trinkenreich, I Steinmacher, M Gerosa, A Sarma*

How Far Are We? The Triumphs and Trials of Generative AI in Learning Software Engineering [pdf|data] — **ICSE 2024**, *Acceptance:* 21.2%
***R Choudhuri**, D Liu, I Steinmacher, M Gerosa, A Sarma*

Debugging for Inclusivity in Online CS Courseware: Does it Work? [pdf] — **ICER 2024**, *Acceptance:* 20.1%
*A Chatterjee, **R Choudhuri**, M Sarkar, S Chattopadhyay, D Liu, S Hedaoo, M Burnett, A Sarma*

Brain MRI Tumour Classification using Quantum Classical Convolutional Neural Network Architecture [pdf] — **NCAA Journal 2023**, *Impact Factor:* 4.5
***R Choudhuri**, A Halder*

Inclusivity Bugs in Online Courseware: A Field Study [pdf] — **ICER 2022**, *Acceptance:* 16%
*A Chatterjee, L Letaw, R Garcia, D Reddy, **R Choudhuri**, S Kumar, P Morreale, A Sarma, M Burnett*

Automated Brain Tumor Analysis using Deep Learning Based Framework [pdf] — **Book Chapter**
Medical Data Analysis and Processing using Explainable Artificial Intelligence, CRC Press
*A Halder, A Sarkar, **R Choudhuri***

Structure-Based Learning for Defense against Adversarial Attacks in Autonomous Driving Agents [pdf] — **CVIP 2022**, *Acceptance:* 33%
*MK Sharma, **R Choudhuri**, M Dixit, M Sarkar, B Dittakavi*

Adaptive Rough-Fuzzy Kernelized Clustering Algorithm for Noisy Brain MRI Tissue Segmentation [Distinguished Paper Award] [pdf] — **CVIP 2021**, *Acceptance:* 26.1%
R Choudhuri, A Halder

High-Density Salt and Pepper Noise Removal Algorithm using Statistical Approach [Distinguished Paper Award] [pdf] — **ICACA 2021**, *Acceptance:* 29.7%
A Halder, **R Choudhuri**

Invited Talks & Presentations

What Needs Attention? Designing for Appropriate Trust in AI — **Jul 2025**
Invited Talk, Appropriate Reliance, Microsoft Research

AI Where It Matters: Where, Why, and How Developers Want AI Support in Daily Work — **Sep 2025**
Internship Talk, SAINTES, Microsoft Research

What Guides Our Choices? Modeling Developers' Trust and Adoption Towards GenAI — **May 2025**
Intl. Conference on Software Engineering (ICSE) 2025

Insights from the Frontline: GenAI Utilization Among Software Engineering Students — **Apr 2025**
IEEE Conference on Software Engineering Education and Training (CSEE&T) 2025

Cognitive factors affecting trust & adoption towards AI — **Nov 2024**
Invited Talk, Colorado State University

How Far Are We? The Triumphs and Trials of Generative AI in SE — **Apr 2024**
Intl. Conference on Software Engineering (ICSE) 2024

Professional Service

Mentor

Mentored ***5 undergraduate** REU students* (Dylan Liu, Mrinmoy Sarkar, Pierce Fleming, Arinjay Bhowmick, Mayank Dixit) & ***2 graduate** students* (Ambareesh Ramakrishnan, Sadia Afroz) across research projects that led to successful publications.

Reviewer

- Information and Software Technology (IST) Journal
- Journal of Systems and Software
- ACM Conference on Human Factors in Computing Systems (CHI) 2024, 2026
- ACM Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP) 2022, 2023, and 2024
- International Conference on Computer Vision & Image Processing (CVIP) 2022 and 2023

Sub-reviewer

- 33rd ACM/IEEE International Conference on Program Comprehension (ICPC 2025)
- 46th ACM/IEEE International Conference on Software Engineering (ICSE 2024)
- Mining Software Repositories (MSR 2024)
- ACM Joint European Software Engineering Conf. & Symposium on the Foundations of Software Engineering (FSE 2023)
- ACM Conference on Human Factors in Computing Systems (CHI 2022)
- IEEE Transactions on Software Engineering
- Empirical Software Engineering

Volunteer

- Student Volunteer – 47th ACM/IEEE International Conference on Software Engineering (ICSE 2025)

Awards and Honors

- MOSIP-Global Impact Research Fellowship (Gates Foundation) 2025
- IAPR Distinguished Paper Award (CVIP 2021)
- Best Paper Award (ICACA 2021)
- Gold Medalist (NPTEL) - IIT Ropar
- NSF Travel Award for ICSE 2024, 2025