Prachi Mahableshwarkar, Ph.D.

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SUMMARY

6+ years of experience designing experiments to quantify human cognition and conducting human-centered research in XR, medical, and behavioral science contexts to inform system improvements.

- Modeled user behavior in 3D spatial perception; results inform error prediction in time-constrained scenarios and XR design considerations for task interaction and virtual object placement (Python, R, Unity)
- Conducted usability testing, task analysis, and formative evaluation research in a healthcare simulation setting; analysis of cognitive/physical factors resulted in significant performance improvements in neonatal intubation tasks.
- Developed workflow and training protocols for multisensory (visual, haptic) medical simulation technology and presented product benefits to hospital employees leading to a 40% increase in buy-in.
- Leveraged observational research methods to test how human interaction with virtual agents might foster curiosity and collaborative problem-solving in learning using mixed reality.

PROFESSIONAL EXPERIENCE

HFC Specialist - GenAI - Scale AI **Mar 2025 - Present**

Scale AI provides model evaluation services for AI systems, supporting safety, performance, and trust in large-scale models.

- Created complex evaluation tasks to assess performance and identify potential usability issues in next-gen AI tools.
- Provided task-based qualitative feedback to inform research directions.

Doctoral Researcher - Visual Cognition & Depth Perception - George Washington University **2019 - 2024**

I developed robust models of human visual cognition important for predicting errors in distance judments in high cognitive workload, aging, or situations that require speeded judgments (e.g., driving; see codebase here).

- Designed and executed 3D spatial perception experiments on 3,000+ participants; modeled behavioral errors using linear mixed-effects, linear/logistic regression models to identify sources of error (**4 publications**, pre-print, in press)
- Developed custom experiments, analysis pipelines, and clear data visualizations using Unity, Python, R, and Photoshop's GenAI tool.
- Published open-source research guides and tools that accelerate online data collection by 25x using custom servers (AWS) and data collection platforms (MTurk, Prolific, Qualtrics)
- Presented findings to technical (OPAM, SfN, Psychonomics, VSS) and non-technical audiences (3MT winner)

Human Factors Research Collaborator, VR/AR - Children's National Hospital **2020 - 2023**

Partnered with clinicians and engineers to build and test a VR neonatal intubation training tool used by medical residents.

- Conducted formative and summative user testing, task analysis, cognitive load assessments (NASA-TLX), and expert interviews to assess system usability, task success rates, and user experience (see paper).
- Translated findings into actionable recommendations improving outcomes and increasing user satisfaction reports.
- Wrote comprehensive training protocols, assessment documentation, and IRB applications
- Presented findings and advocated for users to cross-functional stakeholders.

Human-Computer Interaction Researcher, SCIPR Project - Carnegie Mellon University **2016 - 2017**

The Sensing Curiosity in Play and Responding (SCIPR) project explored how intelligent agents can support STEM learning.

- Conducted observational research and Wizard-of-Oz prototyping to assess student engagement and system interaction.
- Transcribed and annotated audio/video recordings to inform iterative design.

Organizational Research Intern - Goldman Sachs **Summer 2018**

Social science team focused on driving internal learning and development across functions.

- One of 3 scientists reporting to the Director of HCM on data-driven psychology solutions for the firm.
- Conducted literature reviews and proposed interventions to close the gender pay gap and promote ethical practices.

SKILLS

Research: Psychophysics, Usability testing, Taskflow analysis, Experimental design, Behavioral Modeling, A/B Testing, Human-centered design, Report writing and presenting, Surveys, Interviews, Contextual inquiry, Ergonomic evaluation

Tools & Languages: Python (pandas, scipy, scikit-learn, NumPy), R, Unity, Qualtrics, Adobe CC, Git, AWS, MTurk, Prolific, MATLAB, JavaScript, PHP, SQL.

Data Analysis: Mixed-effects modeling, Regression, Data visualization (Matplotlib, ggplot2), Statistical inference, Quanitative & Qualitative analysis

EDUCATION

The George Washington University - PhD in Psychological and Brain Sciences
Dissertation - Natural Scene Perception: Interactions Between Semantics and Space

Carnegie Mellon University - B.S. in Cognitive Neuroscience, Minor in Human-Computer Interaction
Dean's List High Honors; Senior Thesis - Neural Representations and Categorization of Visual Input in the Brain

LEADERSHIP EXPERIENCE

Research Mentor - Brain and Navigation Lab

- Mentored a team of research assistants in independent studies
- Developed tutorials on best practices for stimulus selection, Python, JupyterLab, pandas, and GitHub

Board Member - GWU's Collaborative of Department Equity (CODE)

- Developed surveys, reviewed syllabi, and organized meetings to advance equity, diversity, and inclusion

HONORS AND PRESENTATIONS

Winner, GWU 3-Minute Thesis Competition
See news article here

OPAM Professional Development Award, 2022

Conference Presentations: Vision Sciences Society, Society for Neuroscience, Psychonomics, OPAM

Member: Nu Rho Psi, Psi Chi, Mortar Board Honor Societies