Gesu India

Computer Science PhD, Swansea University
Website Email Google Scholar LinkedIn

Research Interests and Skills

I am a computer science researcher with a focus on Equitable AI, Human-Computer Interaction, and Accessibility. My expertise spans inclusive AI, education, health and wellness, and solving complex design challenges using both quantitative and qualitative research methodologies. During my PhD, I specialized in designing disability-first methods for AI dataset creation in low-resource settings. My work has been published in top-tier venues for HCI research, such as CHI, ASSETS, and ICTD. Notable contributions include the ORBIT-India dataset, a unique object-recognition dataset from India, collected by data collectors who are blind or have low vision, and the educational games I designed during my tenure at MSR India, such as JoJo Blocks and Braille Numeracy Cards, which promote numeracy among children who are blind or have low vision in India.

Experience

Research Fellow
Microsoft Research *Bangalore, India* *2018-2021*

- Designed game sets, Braille factor blocks (now JoJo Blocks), and Braille numeracy cards for teaching numeracy and computational thinking to school children who are blind or low-vision in India.
- Conducted mixed-methods research to adapt Project Torino, now Code Jumper, for schools for the blind in India, often facing resource constraints.
- Conducted mixed-methods qualitative research to test V-Stroll, an Android app that enables users who are blind or low-vision to 'virtually explore' any place in the world as they walk indoors at home.
- Applied and expanded Ludic Design for Accessibility, a theoretical framework for assistive technology design.
- Collaborated with a multi-disciplinary team and stakeholders, including various local and pan-India NGOs for the Blind.

Research Intern
Singapore University of Technology and Design and IRIT (France) *Singapore* *May-June, 2017*

- Conducted a contextual inquiry to explore how mobility instructors at the Lighthouse School, Singapore, can be better supported in their work.
- Developed a prototype for a multi-modal game (an Android app paired with a tabletop game) designed to improve spatial skills in children who are blind or low-vision in Singapore.

Research Intern
Indian Institute of Technology *Mumbai, India* *2016-17*

- Applied accessibility, usable security, and user-centered design principles to create a novel multi-modal user authentication system for smartphone users who are blind or low-vision in India; robust and secure to shoulder-surfing threats in public places.
- Conducted two-phase user testing to evaluate the app's accessibility and its effectiveness in preventing shoulder-surfing attacks.

Research Intern
Indian Institute of Technology *Guwahati India* *Dec, 2015*

- Designed a board game for teaching STEM concepts to young children in the schools of rural Assam.

Software & Skills

Skills	Quantitative and Qualitative research methods, User Experience (UX) and User Interaction (UI) design, Usability Testing
SOFTWARE	MAXQDA, Android Studio, MATLAB, Photoshop, Premier Pro, Jupyter Notebook
Programming	Python, JAVA, Web (HTML, CSS, JavaScript)

Education

Doctor of Philosophy, Computer Science *2021 - 2025 (expected)*
Swansea University, UK
Thesis Title: "Disability-first dataset creation in low-resource communities"
Advisors: Dr. Matt Jones, Dr. Cecily Morrison, Dr. Simon Robinson, Dr. Jennifer Pearson

Bachelor of Technology, Civil Engineering *2014-2018*
Indian Institute of Technology, Patna

Peer-Reviewed Conference Publications

CHI 2025	Exploring the Experiences of Individuals Who are Blind or Low-Vision Using Object-Recognition Technologies in India. ***Gesu India**, Simon Robinson, Jennifer Pearson, Cecily Morrison, Matt Jones.* [Soon to be published.]
ASSETS 2021	VStroll: An Audio-based Virtual Exploration to Encourage Walking among People with Vision Impairment. ***Gesu India**, Mohit Jain, Pallav Karya, Nirmalendu Diwakar, Manohar Swaminathan (Paper)*
INTERACT 2021	Understanding Motivations and Barriers to Exercise among People with Blindness in India. ***Gesu India**, Mohit Jain, Manohar Swaminathan. (Paper)*
CHI 2021	Teachers' Perceptions around Digital Games for Children in Low-resource Schools for the Blind. ***Gesu India**, Vidhya Y., Aishwarya O., Nirmalendu Diwakar, Mohit Jain, Aditya Vashistha, Manohar Swaminathan. (Paper)*
ICTD 2020	Conceptual Learning through Accessible Play: Project Torino and Computational Thinking for Blind Children in India. ***Gesu India**, Geeta Ramakrishna, Joyojeet Pal, Manohar Swaminathan. (Paper)*
ASSETS 2019	Computational Thinking as Play: Experiences of Children who are Blind or Low Vision in India*. ***Gesu India**, Geeta Ramakrishna, Jyoti Bisht, Manohar Swaminathan. (Paper)* *Recipient of Artifact Award

Notable Contributions

2024 **ORBIT-India dataset**. An object-recognition dataset (training and testing) collected with people who are blind/low-vision in India.

2023 **JoJo Blocks**. Accessible block-based game to teach numeracy to children with mixed-abilities.

2023 **Braille Numeracy Cards**. Accessible card-based game to teach numeracy to children with mixed-abilities.

Awards and Scholarships

UKRI 2021	EPSRC PhD Fellowship
Microsoft 2021	Industrial-CASE Award
ASSETS 2022	SIGACCESS Diversity and Inclusion Scholarship
ASSETS 2019	Artifact Award (Runner-Up)
INTERACT 2017	Student Design Consortium
IndiaHCI 2016	Best Poster Award

Workshop Articles and Whitepapers

ASSETS 2023	Bridging the Gap: Towards Advancing Privacy and Accessibility among People with Vision Impairment. *Rahaf Alharbi, Robin N Brewer,* ***Gesu India****, Lotus Zhang, Leah Findlater, Yixin Zou, Abigale Stangl. (Workshop Article)*
Microsoft 2021	Reimagining Accessibility and inclusion in K-12 CS Education through curriculum and professional development. *(Whitepaper)*
INTERACT 2017	TouchPIN: Numerical Passwords You Can Feel. **Gesu India.** *(Adjunct Proceedings)*

Panel, Presentations, and & Invited Talks

CHI 2023	(Workshop) *"Behind the Scenes of Automation: Ghostly Care-Work, Maintenance, and Interferences"*
2022	(Panel Discussion) *"Disability and Access to Public Digital Health Services".* Digital Futures Lab, India. Recorded Video
Empower 2019	(Presentation) *"Music, Storytelling and Play: Teaching Computational Thinking to Blind Children in India".*
EPISTEME 2019	(Invited Talk) *"Ludic Design for Accessibility".* Infosys, India
IIT Bombay 2019	(Invited Talk) *"Accessible Authentication for VI Smartphone User"*
IndiaHCI 2016	(Presentation) *"Haptics for Authentication"*

Leadership, Outreach & Services

- Organizer of panel, titled *"Charting an Ethical and Inclusive Path: Navigating the Future of AI and Data-Intensive Systems"* — Festival of Ideas (2023), Swansea University.
- Reviewer — CHI (2023-present), CSCW (2024), ASSETS (2023), TEI (2024)
- Student Volunteer — ASSETS (2022), INTERACT (2017), and IndiaHCI (2016)
- Student Design Consortium (Finalist) — INTERACT (2017)
- Co-ordinator (2017-18) — Entrepreneurship Club, IIT Patna)
- Best B.Tech Project (2018 Finalist) — Civil Engineering, IIT Patna
- Rank 4 (Innovation in Design) — Human Powered Vehicle Competition India (2016)
- Rank 5 (Vehicle Chassis Design) — Human Powered Vehicle Competition India (2016)

Hackathons

- NGO Hacks Winner — Microsoft TheGarage India Hackathon (2020)
- Regional Finalists — Microsoft TheGarage India (2018)