Anirban Mukhopadhyay

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Interests and Expertise

- Developing design recommendations for incorporating transparency, user control, and verifiability in proactive AI Agents for creative and sensemaking tasks
- Enabling effective human-AI interaction in collaborative, LLM-powered workspaces
- Applying human-centered AI research methods to prototype and evaluate trustworthy generative AI applications leveraging crowdsourcing, social computing, and leadership frameworks

Education

Virginia Tech **Jan 2021 – 2026 (Expected)**
PhD in Computer Science (GPA: 4.0); Advisor: Dr. Kurt Luther *Blacksburg, Virginia*

Jadavpur University **Aug 2014 – May 2018**
Bachelor of Engineering in Computer Science (GPA: 3.6) *Kolkata, India*

Professional Experience

Virginia Tech, Center for Human-Computer Interaction **Jan 2021 – Present**
Graduate Researcher in the Crowd Intelligence Lab *Blacksburg, Virginia*

- Designed and implemented a trustworthy, multi-tool agentic AI workflow (20+ external tools) for cybersecurity vulnerability assessment, integrating transparency cues, proactivity, and adaptivity to cater to teams of analysts.
- Developed and deployed an LLM-powered Slack bot to support leadership behaviors like planning, clarifying goals, monitoring progress, and providing feedback in 5 teams creating Capture-the-Flag challenges (CTFs).
- Led a two-semester co-design study using technology probes to explore the role of LLMs in developing technical skills, supporting team collaboration, and augmenting real-world cybersecurity investigations.
- Designed and evaluated crowdsourcing workflows with 30 undergraduates to help journalists, fact-checkers, and law enforcement verify social media content at scale through ethical, expert-guided collaboration.
- Developed and evaluated an online crowdsourcing platform for 40 students using a Research through Design approach, blending collaboration and competition to debunk real-world online misinformation. It reduced information silos and duplicate effort among the student teams.

Honda Research Institute **May 2025 – Aug 2025**
Research Intern in Human-Centered Intelligence Team *San Jose, California*

- Investigated the impact of proactive generative AI agent roles on group performance and processes in problem-solving tasks by designing and implementing two probes—a facilitator agent providing summaries and proposing group structures, and a peer agent contributing ideas and answering queries.
- Led a within-subjects study with 24 participants across 6 co-located teams to compare the roles. Presented design considerations for proactive generative AI agents in group collaboration based on it.

Microsoft **May 2023 – Aug 2023**
Design Research Intern in Mixed Reality Design and UX Research team *Redmond, Washington*

- Led a generative research study on understanding perceptions of trust in Copilot-driven AI experiences.

- Conducted a scenario-based study with 8 internal employees after a thorough literature review. This study focused on the effectiveness, preferred methods of interaction, and potential issues in 3 distinct scenarios faced by information workers depicted through storyboards, each varying in levels of importance and risk. Presented recommendations to partner design teams based on findings.

Microsoft **May 2022 – Aug 2022**
PhD Software Engineering Intern in Mixed Reality Design and UX Research team *Redmond, Washington*

- Identified challenges, brainstormed ideas, prototyped and evaluated intuitive 3D map interactions for Hololens 2 using Unity and MRTK.

Microsoft **Jun 2018 – Dec 2020**
Software Engineer (Full-stack) in SharePoint Taxonomy *Hyderabad, India*

- Instrumented, analyzed, and implemented fixes based on telemetry and boosted service reliability to 99.99%, ensuring robust user experiences.
- Developed REST API endpoints and integrated them to modernize the user interface for filtering SharePoint lists using React.
- Collaborated cross-functionally with design and PM teams and geographically distributed development teams.

Peer-Reviewed Conference Papers

A. Mukhopadhyay, K. Luther. 2025. OSINT Clinic: Co-designing AI-Augmented Collaborative OSINT Investigations for Vulnerability Assessment In Proceedings of CHI Conference on Human Factors in Computing Systems (CHI '25), April 26-May 1, 2025, Yokohama, Japan. ACM, New York, NY, USA, 22 pages. **(CHI 2025)**

A. Mukhopadhyay, S. Venkatagiri, K. Luther. 2024. OSINT Research Studios: A Flexible Crowdsourcing Framework to Scale Up Open Source Intelligence Investigations. In Proceedings of the ACM on Human-Computer Interaction 8. CSCW1 (2024): 1-38. **(CSCW 2024)**

S. Venkatagiri, **A. Mukhopadhyay**, D. Hicks, A. Brantly, and K. Luther. 2023. CoSINT: Designing a Collaborative Capture the Flag Competition to Investigate Misinformation. In Proceedings of the 2023 ACM Designing Interactive Systems Conference (DIS '23). Association for Computing Machinery, New York, NY, USA, 2551–2572. **(DIS 2023)**

A. Mukhopadhyay, K. Salubre, S. Mehrotra, H. Javed, K. Akash. Exploring The Impact of Proactive Generative AI Agent Roles In Time-Sensitive Collaborative Problem-Solving Tasks. **(Under review)**

Research Skills and Methods

Machine Learning Tools and Frameworks: MCP Framework, PyTorch, TensorFlow, OpenAI Assistants, Llama, LangChain, Hugging Face Transformers, Whisper, Scikit-learn, CUDA, Pandas, NumPy

Web Development: Django, Azure Services, REST APIs, Figma, Node.js, React

Programming Languages: Python, C#, TypeScript, JavaScript, Java, Powershell scripting

Design and Research Methods: Personas, Journey Mapping, Wire-framing, Rapid Prototyping, Functional Technology Probes, Usability Evaluations, Crowdsourcing, Experiment Design, Survey Design, User Interviews, Instrumentation and Log Analysis, Content Analysis, Qualitative Analysis

Relevant Coursework: Human-AI Interaction (Explainable AI focus, Deep Learning focus), Deep Learning, Data Analytics, CSCW & Social Computing, Information Visualization, Usability Engineering, Statistics in Research