Disha Sardana

An interdisciplinary researcher with a focus on HCI in AR/VR technologies
dishas9@vt.edu | https://www.linkedin.com/in/dishas9/ | Blacksburg, VA, USA

EDUCATION

VIRGINIA TECH
PH.D. CANDIDATE IN HCI
Graduating Dec 2022 | Blacksburg, VA
Cum. GPA: 3.88

VIRGINIA TECH
MS IN ELECTRICAL ENGINEERING
Graduated May 2018 | Blacksburg, VA
Cum. GPA: 3.85

LINKS

Portfolio: **disha-sardana**
Google Scholar: **publications**
GitHub: **disha13sardana**

SKILLS

Programming
• Python • R • MATLAB
• Unity3D • C# • Max/MSP
• HoloLens 2 • Magic Leap One
Research Methods
• User-studies • Interview
• Focus Group • Survey

LEADERSHIP

• **President** | CHCI Student Council
• **Co-Founder & VP** | Kala - Indian Classical Music Society at Virginia Tech
• **President** | Indian Students Association
• **Event Coordinator** | Eta Kappa Nu (IEEE-HKN) Honor Society

HONORS

• Received a student presentation award at the AMS 98th Annual Meeting for exceptional research & presentation
• Inducted life member of Phi Kappa Phi
• Awarded NSF scholarship for the Student ThinkTank at the ICAD 2019

COURSEWORK

Human Computer Systems
Human Centered Design
Virtual Environments
Advanced Data Analytics
Statistical Inference
Statistics in Research
Advanced Electromagnetics
Computational Plasma Dynamics

RESEARCH

IMMERSIVE ANALYTICS
DEMO | ICAT CREATIVITY + INNOVATION DAY 2021 | STUDENT SPOTLIGHT
Jan 2019 – Present | Center for Human-Computer Interaction (CHCI) at VT

- Developed an approach for embodied data exploration of multi-dimensional datasets in an immersive mixed reality (MR) environment
- Demonstrated the proof-of-concept at a science fair (ICAT Creativity + Innovation Day 2019) and collected preliminary feedback from over **20 users**
- Conducted a research study with **34 users** to analyze how efficient it is for users to explore data in an immersive MR environment compared to a non-immersive desktop environment
- Deployed the developed prototype in two MR environments using Microsoft HoloLens 1 and Microsoft HoloLens 2 devices to perform a cross-platform system performance comparison based on the prototype's scalability and functionality
- Also deployed the prototype in a browser setup using Web Graphics Library (WebGL) to compare between an immersive MR environment and a non-immersive 3D desktop environment

SPATIAL AUDIO DATA IMMERSIVE EXPERIENCE (SADIE)
NSF FUNDED PROJECT | WVTF-ARTICLE | VT-NEWS
Aug 2017 – Jul 2020 | Institute for Creativity, Arts, and Technology (ICAT) at VT

- Conducted user-studies with over **150 users** to study human perception of sound in an immersive multi-layered auditory environment
- Performed hypothesis testing and statistical analysis on user-data, leading to four publications in prestigious audio-related conferences
- To enable user interaction with immersive sound environments, designed a new motion tracking glove that allows physical control of a high-density, three-dimensional array of speakers
- Programmed the logic to recognize 3-dimensional gestures (such as pinch, zoom etc.) from real-time coordinates of various glove elements
- Packaged code into a reusable toolkit that can be deployed in other settings

RELEVANT PUBLICATIONS

2019 - Present

- **Sardana, D.**, Kahu, S. Y., Gračanin, D., & Matković, K. (2021). Multi-modal Data Exploration in a Mixed Reality Environment Using Coordinated Multiple Views. In: Yamamoto S., Mori H. (eds) Human Interface and the Management of Information. Information Presentation and Visualization. HCII 2021.
- Debchoudhury, S., **Sardana, D.**, & Earle, G. D. (2021). The relative importance of geomagnetic storm signatures on the total electron content perturbations over the continental US. Journal of Geophysical Research: Space Physics, 126(5), e2020JA028125.
- **Sardana, D.**, Joo, W., Bukvic, I. I., & Earle, G. (2020). Perception of spatial data properties in an immersive multi-layered auditory environment. In Proceedings of the 15th International Conference on Audio Mostly.
- Bukvic, I. I., Earle, G., **Sardana, D.**, & Joo, W. (2019). Studies in spatial aural perception: Establishing foundations for immersive sonification. In Proceedings of the 25th International Conference on Auditory Display.
- **Sardana, D.**, Joo, W., Bukvic, I. I., & Earle, G. (2019). Introducing Locus: A NIME for immersive exocentric aural environments. In Proceedings of the International Conference on New Interfaces for Musical Expression.