

# Disha Sardana

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## EDUCATION

### VIRGINIA TECH

PH.D. IN HCI

Graduating May 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](#)

## COURSEWORK

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

## SKILLS

### Programming

• Python • R • MATLAB  
• Unity3D • C# • Max/MSP  
• HoloLens • Magic Leap • Vuforia

### Research Methods

• User-studies • Interview • Focus Group  
• Survey • Storyboarding • Ethnography

## HONORS

• Received a student presentation award at the AMS 98th Annual Meeting for exceptional research & presentation  
• Inducted life member of Phi Kappa Phi  
• Invited reviewer for the late-breaking works at CHI 2020, Hawai'i, USA

## LEADERSHIP

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

## RESEARCH

### IMMERSIVE ANALYTICS

ICAT CREATIVITY + INNOVATION DAY 2021 | CHCI SYMPOSIUM 2021 | DEMO  
Jan 2019 – present | Center for Human-Computer Interaction, VT

- Proposed 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
- 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
- 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

### SPATIAL AUDIO DATA IMMERSIVE EXPERIENCE (SADIE)

NSF FUNDED PROJECT | WVTF-ARTICLE | VT-NEWS

Aug 2017 – July 2020 | Institute for Creativity, Arts, and Technology, VT

- To enable user interaction with immersive sound environments, designed a new motion tracking glove that allows physical control of a high-density, 3-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
- Conducted user-studies with over **150 users** (till date) 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

## RELEVANT PUBLICATIONS

2019 - present

- **Sardana Disha**, 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. HCI 2021. Lecture Notes in Computer Science, vol 12765. Springer, Cham.
- **Sardana, Disha**, et al. "Perception of spatial data properties in an immersive multi-layered auditory environment." *Proceedings of the 15th International Conference on Audio Mostly*. 2020.
- Bukvic, Ivica Ico, **Disha Sardana**, and Woohun Joo. "New Interfaces for Spatial Musical Expression." *New Interfaces for Musical Expression*. 2020.
- Bukvic, Ivica Ico, Gregory Earle, **Disha Sardana**, and Woohun Joo. "Studies in spatial aural perception: establishing foundations for immersive sonification." *The 25th International Conference on Auditory Display*, 2019.
- **Sardana, Disha**, et al. "Introducing locus: a nime for immersive exocentric aural environments." *New Interfaces for Musical Expression*. 2019.