# 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
Interdisciplinary Ph.D.
Graduated May 2023 | 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 • Thematic Analysis
• Experimental Design • UX Research

## LEADERSHIP

• **President** | CHCI Student Council
• **Co-Founder & VP** | Kala - Indian Classical Music Society at Virginia Tech
• **President** | Indian Students Association

## HONORS

• Received honorable mention for the **IEEE VAST Challenge 2022**
• Awarded NSF scholarship for the Student ThinkTank at the **ICAD 2019**
• Received a student presentation award at the **AMS 98th Annual Meeting** for exceptional research & presentation
• Inducted life member of Phi Kappa Phi

## 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 | Creativity + Innovation Day-Article | 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
- Conducted a research study with 34 participants to evaluate the strengths and limitations of analyzing data in a 3D immersive environment compared to a non-immersive desktop environment based on specific visual analytics tasks
- Studied the effect of frame of reference on user understanding and interaction with data in an immersive analytics environment by conducting user studies with 20 people
- Measured the impact of sonification on augmenting visual data analysis in an immersive environment by conducting a user study with 55 participants
- Provided design guidelines based on the frame of reference and sonification for immersive analytics in mixed reality environments

### 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 the 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

2018 - Present

- Splechtna, R., Hulka, T., **Sardana, D.** , Chandrashekar, N. D., Gracanin, D., & Matkovic, K. (2023). "Interactive Exploration of Complex Heterogeneous Data." In Proceedings of the 18th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications.
- Ngo A., **Sardana, D.** , & Bukvic, I. I. (2022). "Sonifying 2D Cellular Behavior using Cellular Stethoscope." In Proceedings of the 27th International Conference on Auditory Display.
- **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.
- **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.
- **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.
- **Sardana, D.** (2018). "Quantification of Effect of Solar Storms on TEC over US sector Using Machine Learning." *Thesis, Virginia Tech.*