About Me



NAME

Sharad Sharma, Ph.D.

TITLE

Associate Dean of Research; Sinha Endowed Professor,
Department of Data Science, Director of the Data Visualization and eXtended Reality (DVXR) Lab; Affiliated Faculty, Health Informatics

YEARS AT UNT

4.5 years (since 2022)

RESEARCH FOCUS AREAS

- Virtual Reality (VR) & Augmented Reality (AR)
- Artificial Intelligence (AI) & Software Engineering (SE)
- Neuroinformatics & Brain Computer Interface (BCI)
- Data Visualization (DV)
- Multi-Agent Systems (MAS)
- Multi-User Virtual Reality (MUVR)
- Mobile Augmented Reality Applications (MARA)

VIRTUAL REALITY RESEARCH | DVXR LAB

Active Shooter Response VR Training System

Project Website: https://caiaa.unt.edu/dvxr/research/vr/activeshooter.html

Funded by 2 NSF Grants

1) Division of Computer Network Systems (CNS) 2) FW-HTF

Realistic Scenario Simulation

3D models & Unity scripting for high-fidelity emergency situations.

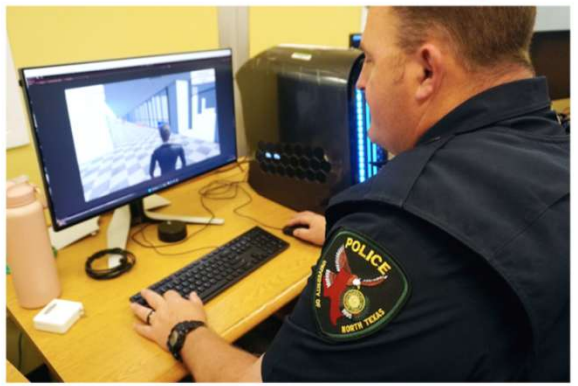
Behavioral & Physiological Tracking

Integrated real-time stress and emotional reaction analytics under pressure.

Interactive Evacuation Decision-Making

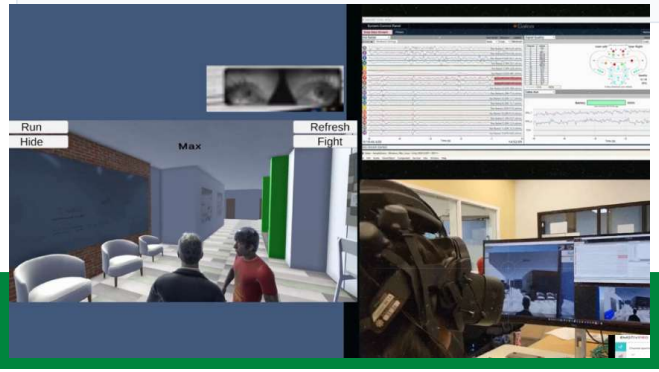
Dynamic pathfinding, cover engagement, and multi-agent emergency drills.

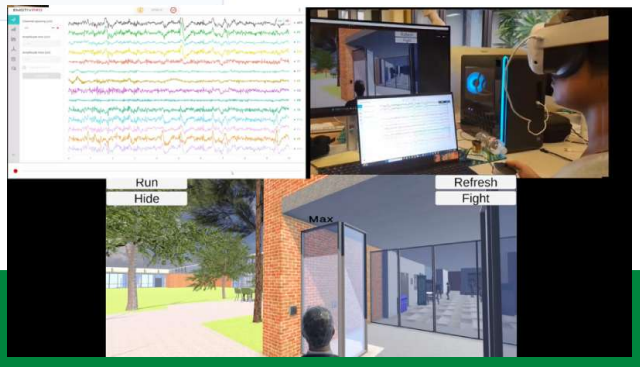


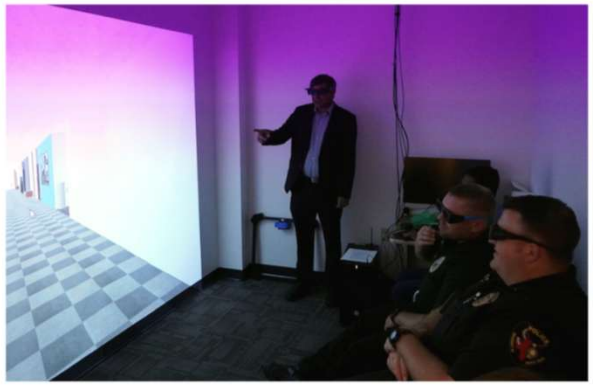


SYSTEM ARCHITECTURE DIAGRAM

3dsMax / Unity Environment → Agent Behavioral Controller → Biometric Assessment



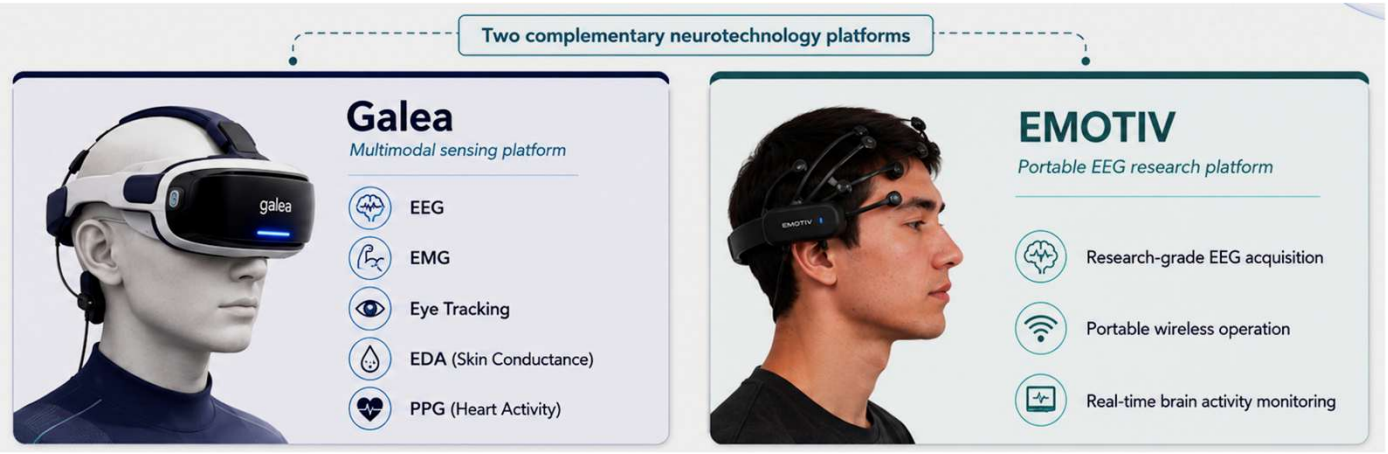




VIRTUAL REALITY AND HEALTH INFORMATICS RESEARCH | DVXR LAB

Multimodal Neuroinformatics Research

Project Website: https://caiaa.unt.edu/dvxr/research/hi/



Behavioral Metrics

- Route selection
- Evacuation speed
- Hesitation at intersections
- Compliance with emergency

Cognitive Metrics

- Mental workload
- Attention allocation
- Stress responses

Emotional Metrics

- Anxiety level
- Panic indicators
- Emotional regulation

Fire Evacuation Simulation using BCI Devices

Scenario: A participant is placed in a virtual building experiencing a fire emergency while researchers monitor real-time neural, physiological, and behavioral responses.



VIRTUAL REALITY AND AUGMENTED REALITY RESEARCH | DVXR LAB

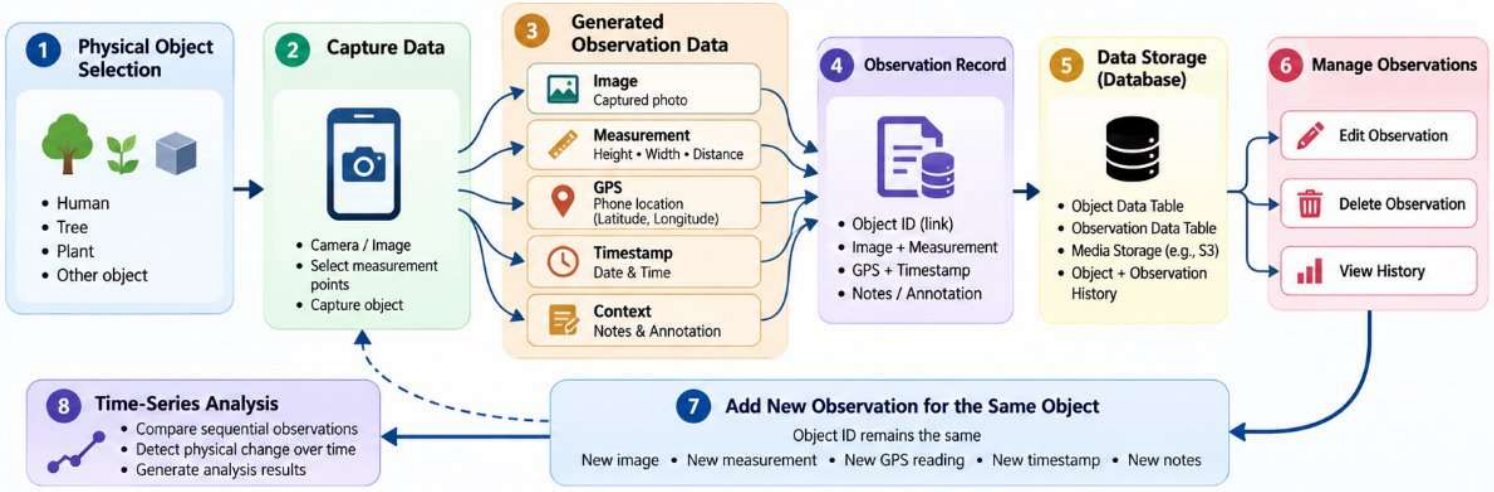
iHARP- NSF HDR Institute: Harnessing Data and Model Revolution in the Polar Regions

Project Website: https://caiaa.unt.edu/dvxr/research/vr/iharp-nsf-hdr.html

$13,731,122.00

13.7 Million Dollars

Annotation and Visualization of Heterogeneous Data using VR/AR



- The goal of this project is to create an integrated tool suite for accessibility, situational awareness, & understanding of science data connected with Arctic science using VR/AR
- Design, develop, and evaluate AR/VR tools to explore and annotate, using tablets/mobile devices, and HoloLens.

Heterogeneous Data Annotation

Integrating complex climate modeling, satellite feeds, and ice sheet radar data into immersive views.

Enhanced Situational Awareness

Bridging data science with spatial visualization to predict sea-level rise and ice dynamics.

Immersive Polar VR/AR Analytics

Enabling Arctic scientists to explore multi-dimensional environmental data in 3D collaborative space.

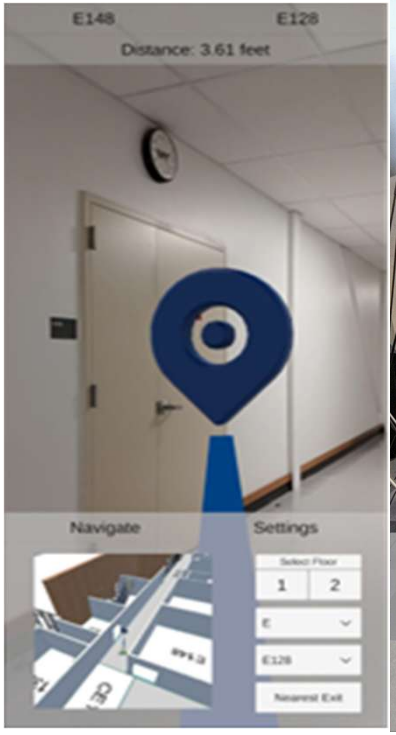
UNT | ANURADHA & VIKAS SINHA COLLEGE OF ARTIFICIAL INTELLIGENCE & ADVANCED ANALYTICS

AUGMENTED REALITY RESEARCH | DVXR LAB

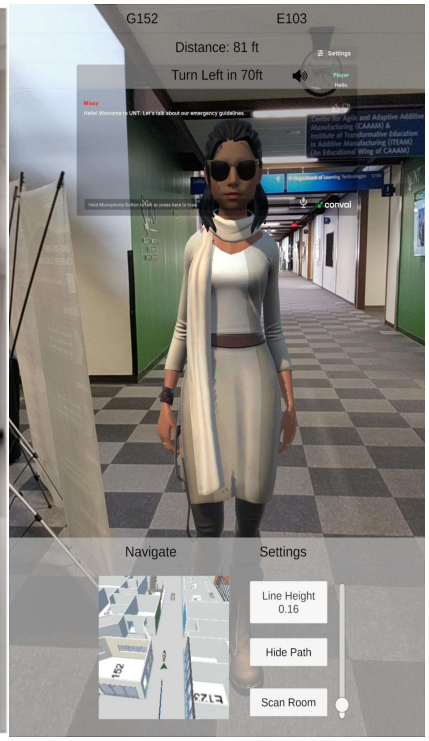
Augmented Reality (AR) & Mobile AR Systems

Project Website: https://caiaa.unt.edu/dvxr/research/ar/

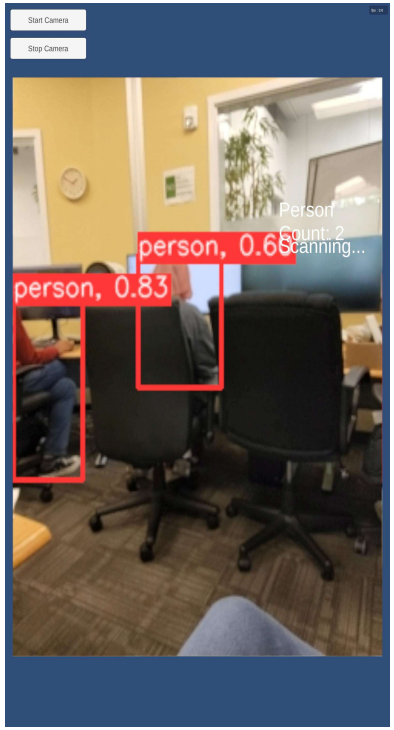
Mobile Augmented Reality Applications (MARA): Seamless indoor navigation
Context-Aware Data Visualization: Overlays spatial annotations and telemetry onto real-world structures with ultra-low latency.
Cross-Platform Scalability: Designed for mobile devices and smart glasses to assist emergency responders and facility visitors.



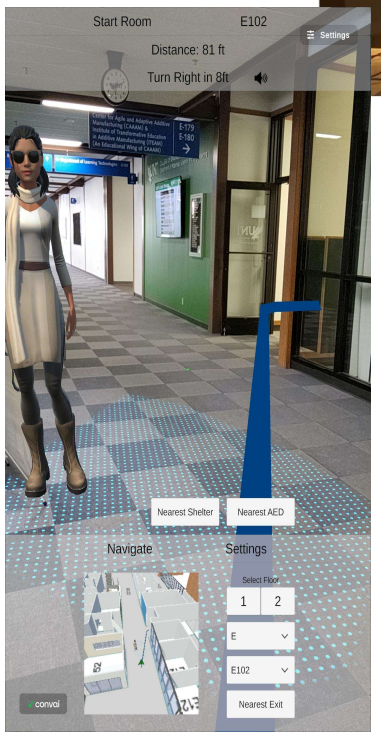
1. Room-level indoor navigation



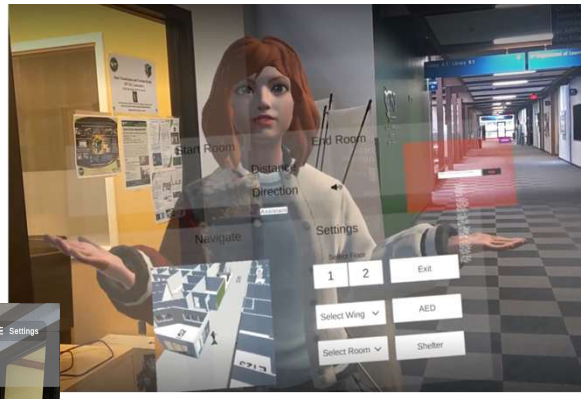
2. AI-powered assistance (GPT & Convai)

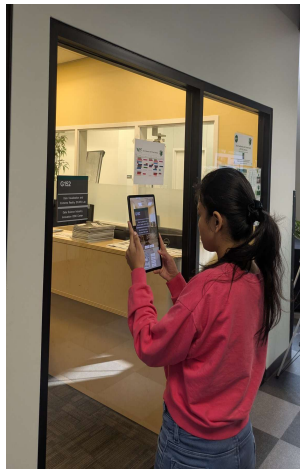


3. Real-time room occupancy detection



4. Cross-platform support (Android & HoloLens)





5. Helps new students and visitors easily locate rooms and facilities