

# TerpVISIO

Vision Interface Space Immersive Operations  
University of Maryland





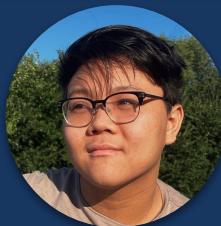
# Who are we?



**Jason-Alexander  
Fotso-Puepi**  
Student Team Leader



**Daniel  
Lopez**



**Alexander  
Wang**



**Vikaas  
Venkatesh**



**Oliver  
Adkins**



**Damian  
Figueroa**



**Nhi  
Tran**



**Amy  
Tran**



**Kevin  
Gu**



# Outreach





# What was our goal?



**Less is more!**

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Smaller Menus > Control Panels



**Respect their Vision**

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Extra clutter? Not worth it.



**Astronaut Autonomy**

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Astronauts choose when to use menus



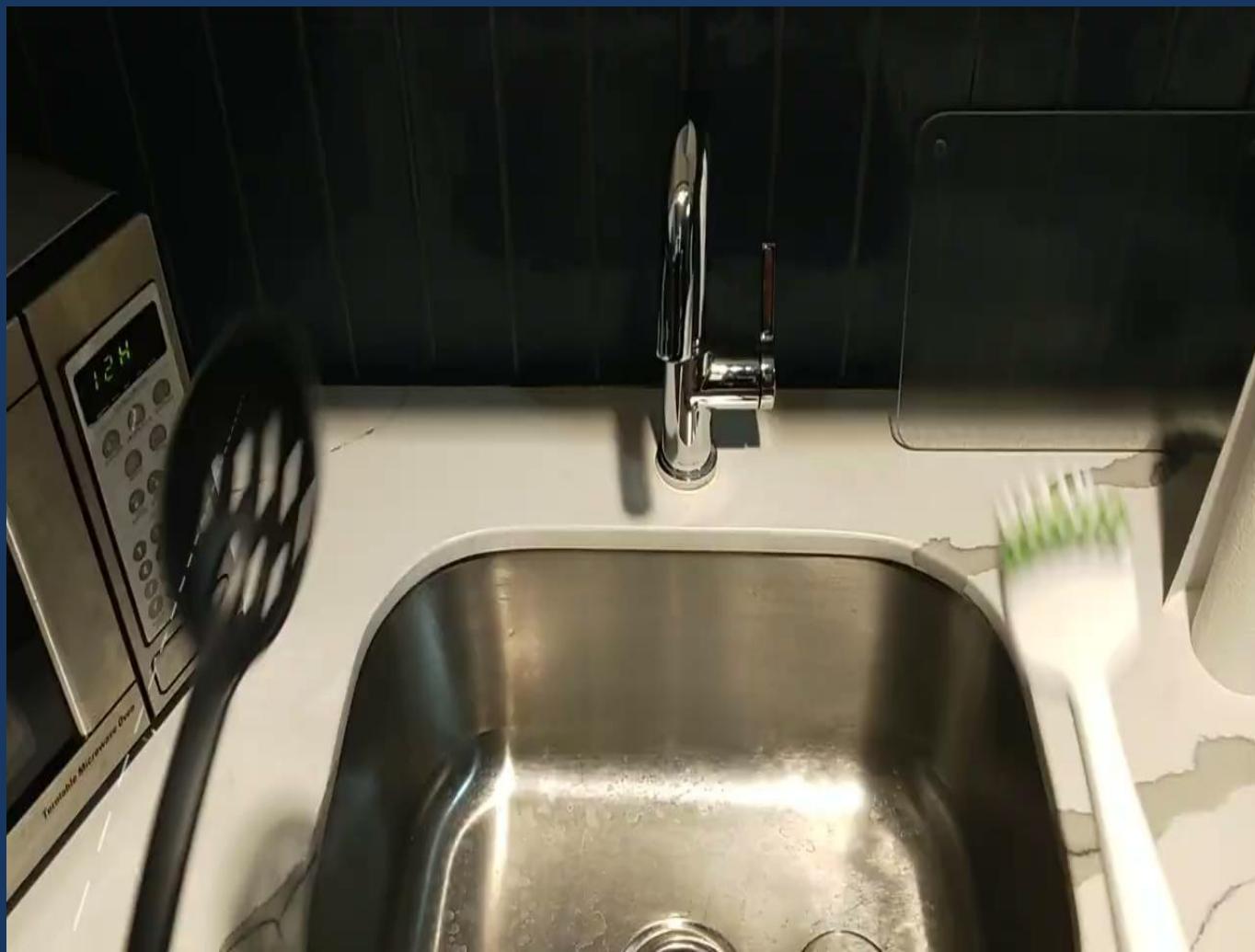
# Our Design



Persistent content  
here!



Give astronauts the choice to  
bring submenus into their  
active vision





# Control Bar

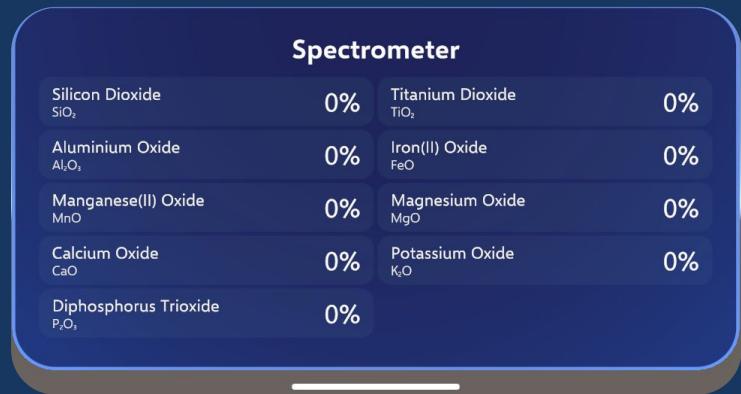
- Entry point for all of our interfaces
- Interactable via eye gazes
- Displays at a glance information
  - EVA
  - Time
  - Heading
  - System Failures
- Always stays above the horizon





# Egress & Geology

- Draggable windows
- Less involved tasks = Simpler Menus
  - Reduce the amount of information visible at a time
- Audio cues to inform when there is new information





# Navigation

- More Complicated Tasks
  - Still strive for simplicity
- Astronaut can still drag them around
- Required design compromises
  - Intended for waypoint beacons

The image displays two screenshots of a mobile application interface for managing waypoints.

**Waypoint Manager Screen:**

- Header: Waypoint Manager
- Buttons: +, ⚙️, +
- Table Headers: Group, Name, Location, Time, Distance, Info
- Row: "Temp", "3° 12' 43.2" S, T+3:30, 5m, ...

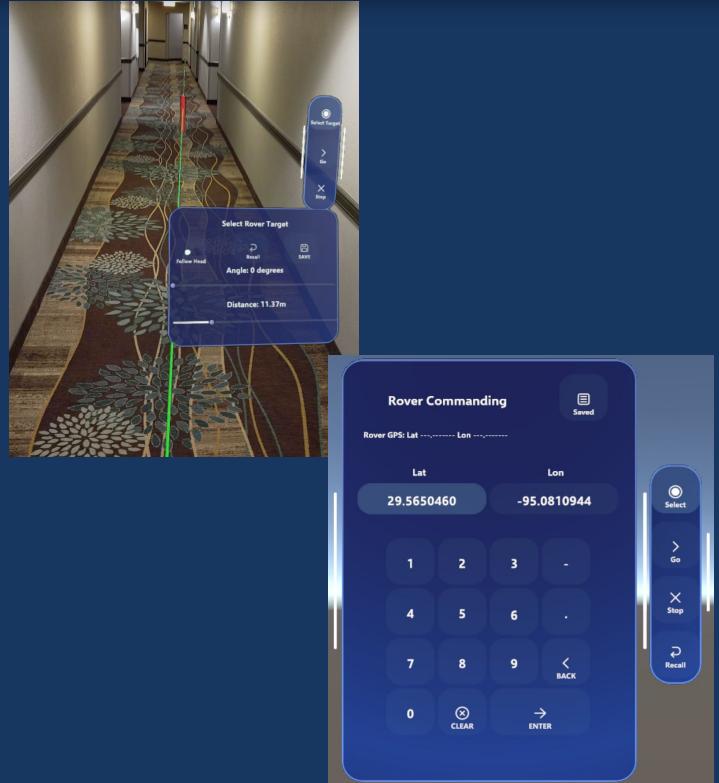
**"Temp Waypoint" Info Screen:**

- Header: "Temp Waypoint" Info
- Location: Latitude: 3° 12' 43.2" South, Longitude: 5° 12' 39.6" West
- Time: 3pm
- Notes: "3rd point where geodes were found"
- Distance: 5 inches
- ETA: 20 mins
- Buttons: Start Navigation, ⚙️



# Rover

- Initial design: Location selection using 3d holograms
- Final design: Quick coordinate input via numpad or saved locations
  - Smaller control menu for essential commands





# Test Night Results

- Have a manual override (and a backup plan!)
- Clear communication is key
- New Considerations
  - Color accuracy of HoloLens
  - Tracking affects “horizon”
  - Text size





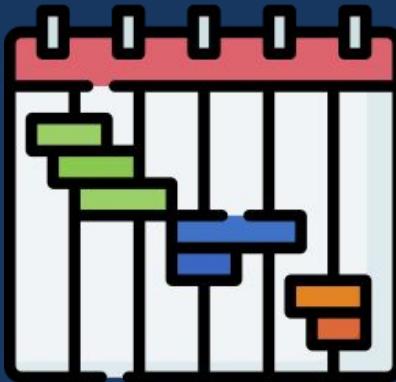
# Lessons Learned



## Communication

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Reach out for help when you need it



## Time Manage!

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Don't fall behind!



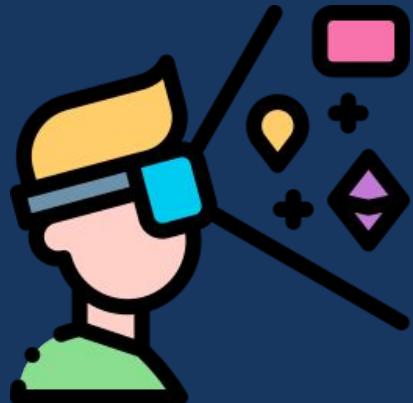
## Test, test, test!

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User-testing is key, as well as software testing



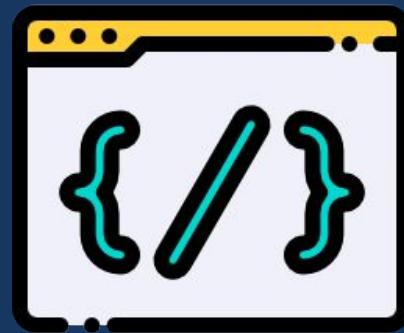
# Future Work



## Use MR? (For Now)

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Sacrifice Visual Clarity for Higher  
FoV



## Improved UI Tools

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No more “Prefab Soup”



## Astronaut Autonomy

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Offload Rendering Work to  
Central Hub?

# Questions?