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A wearable system for quick visualization and diagnosis of issues in space using mixed reality technology

Objective

The goal of the research is to develop a wearable system based on mixed reality (augmented reality (AR) and virtual reality (VR)) to help human quickly visualize and diagnose issues in space vehicles or habitats.

AR/VR system



Microsoft HoloLens

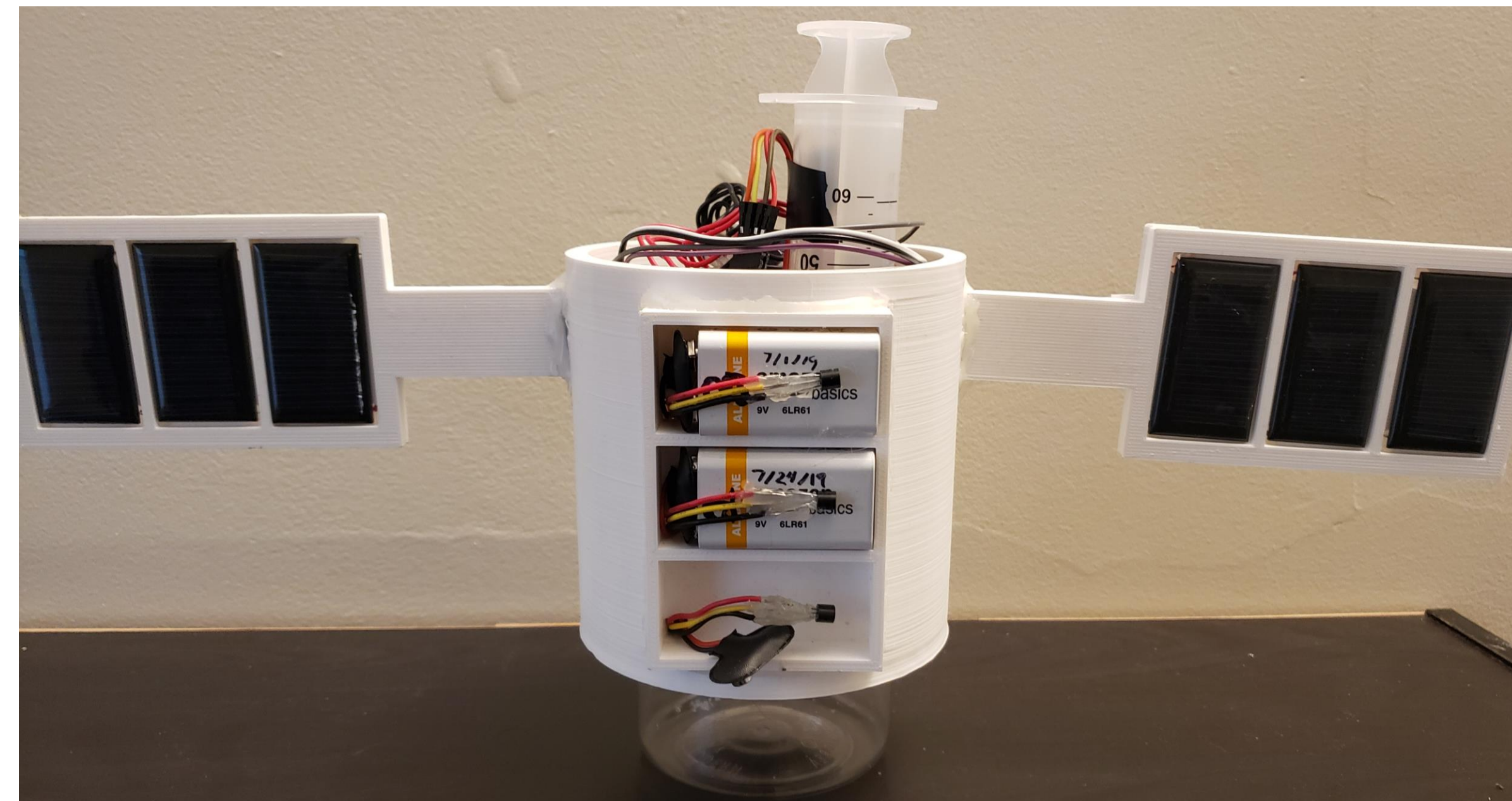
Software

- **C# and Unity**
 - UWP for HoloLens using Unity
- **C++/Arduino for Model Satellite**
 - Gather sensor data for visualization

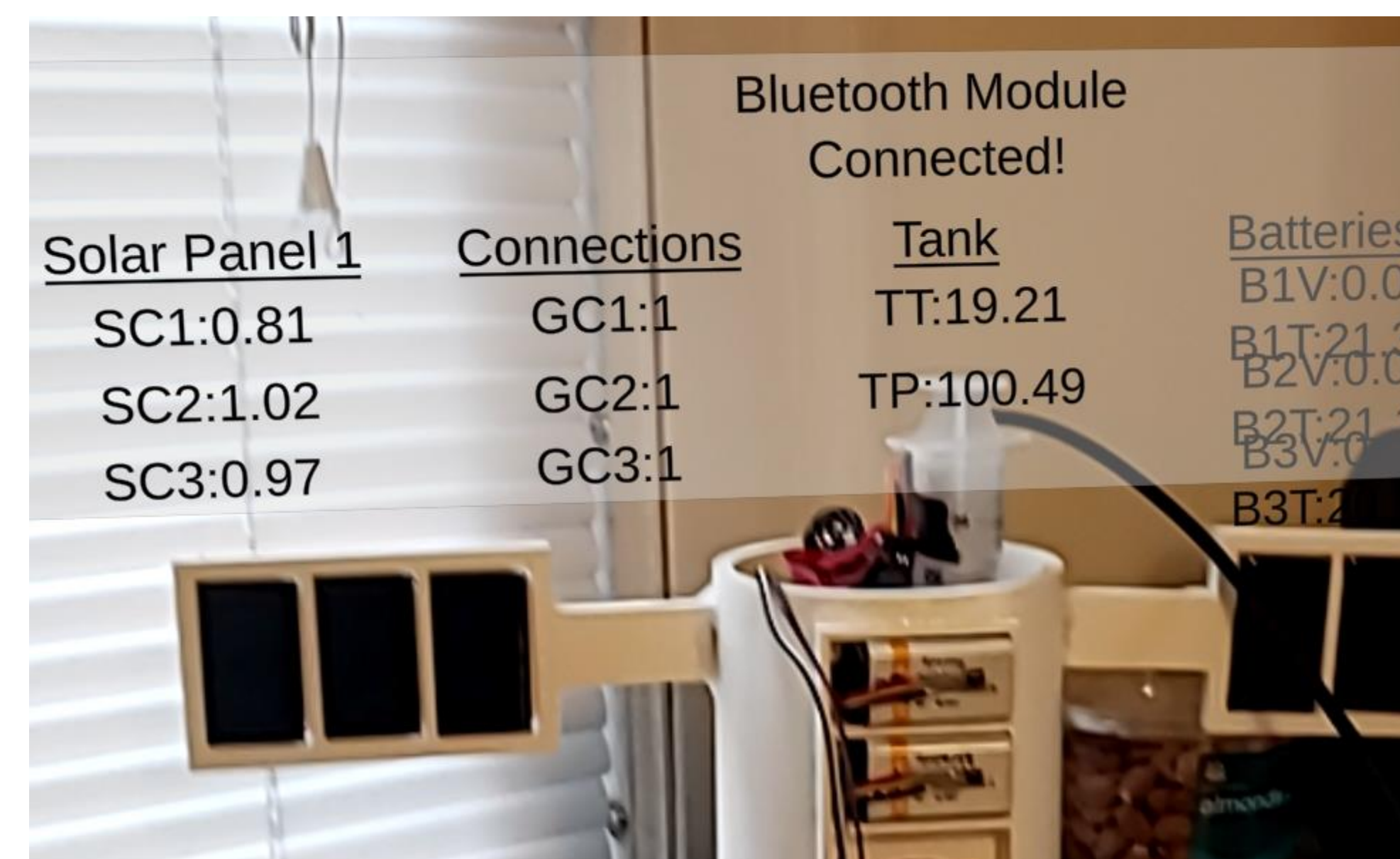
Methods

Model Satellite collects sensor data and sends it to the HoloLens through Bluetooth. HoloLens app uses Vuforia to detect what part of the satellite is in view and display relevant data.

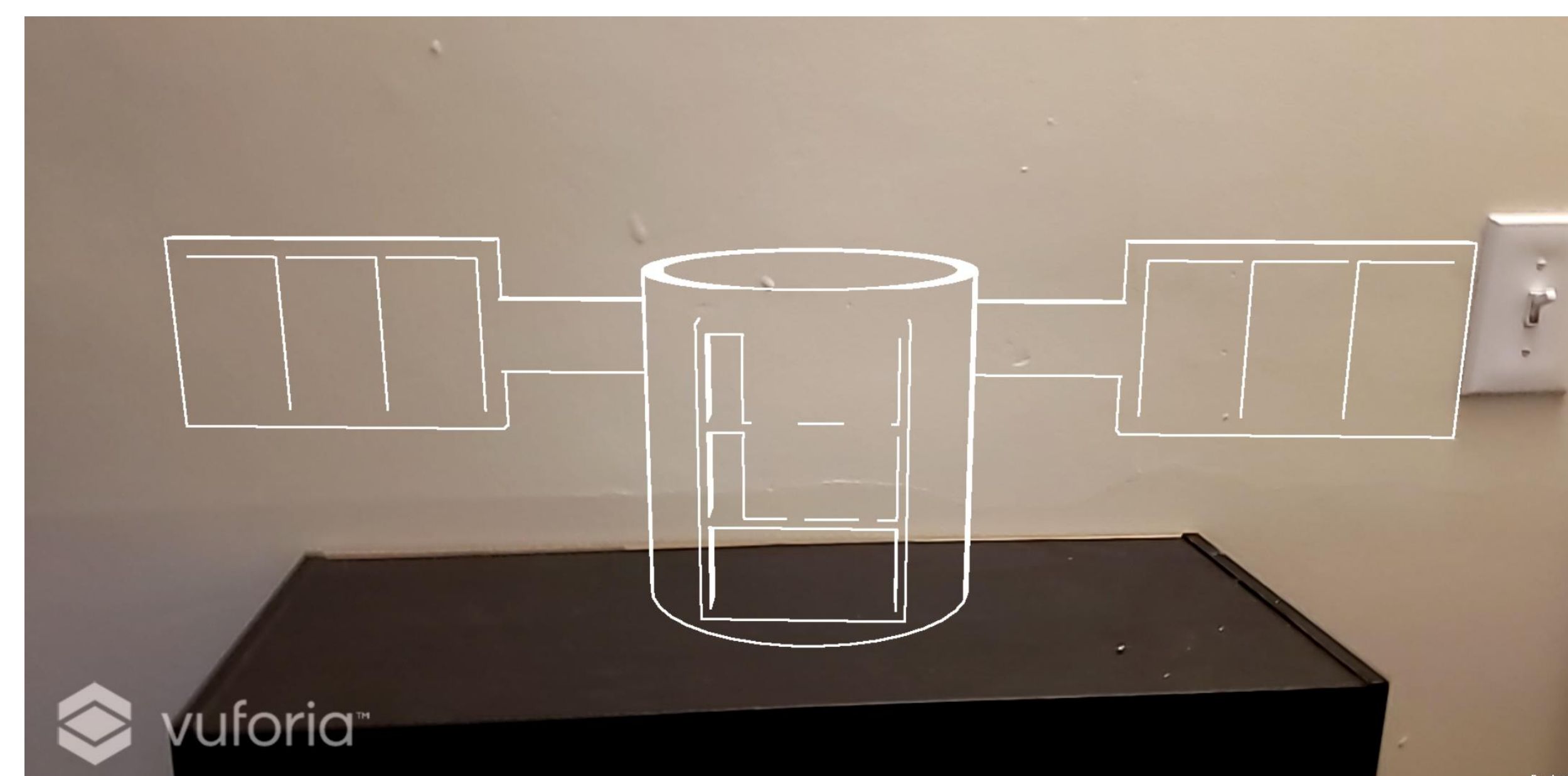
Development Results



Model satellite with sensors giving live telemetry about solar cells, batteries, and air tank.



Live data displaying in HoloLens



Localize data display using Vuforia and visual marks

Future research

- Integrate other mixed reality technologies such as Manus Glove
- Integrate with full VR environment for training purposes
- Use analytics to extract meaning from the real-time data

More information

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