Digiteyes
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Overview
IMU

Google Street View Panorama

240x320 hd screens

VR Headset for phones
- Convert IMU accelerometer to vertical angle (0 to 179)
- Use two buttons (left, right) to change horizontal angle (0 to 359)
Block Diagram: into the image
Equirectangular projection

\[ x = R(\lambda - \lambda_0) \cos(\varphi_1) \]
\[ y = R(\varphi - \varphi_1) \]

- \( x \) = horizontal coordinate
- \( y \) = vertical coordinate
- \( \lambda \) = longitude
- \( \lambda_0 \) = central meridian
- \( \varphi \) = latitude
- \( \varphi_1 \) = standard parallels
- \( R \) = radius

https://en.wikipedia.org/wiki/File:Plate_Carr%C3%A9e_with_Tissot%27s_Indicatrices_of_Distortion.svg
Block Diagram: To The Screen
Timeline

Week 1 (Nov 3)
- Draft a C version of the screen controller
- Test projection methods with python

Week 2
- Implement screen controller, show basic images
- Pan around images with arrow keys

Week 3
- Show two different images, mount in headset
- Pan around with IMU

Week 4

Week 5 (Nov 9)
- Implement stretch goals: Horizon generator, landscape generator
Goals

Base: Show the same image on two screens, scroll through image with arrow keys

Target: Show different images on screens, scroll with IMU

Stretch: Landscape generation with the IMU
Questions?