



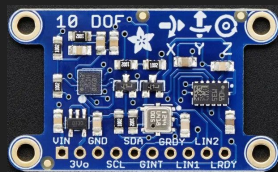
# Digiteyes

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# Overview





IMU



Google Street View Panorama

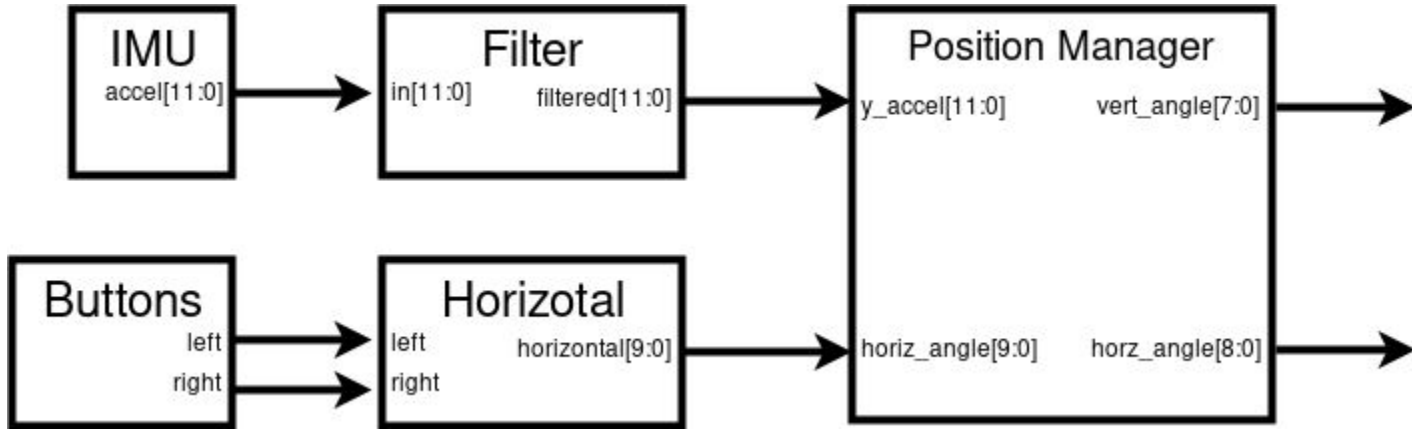


240x320 hd  
screens



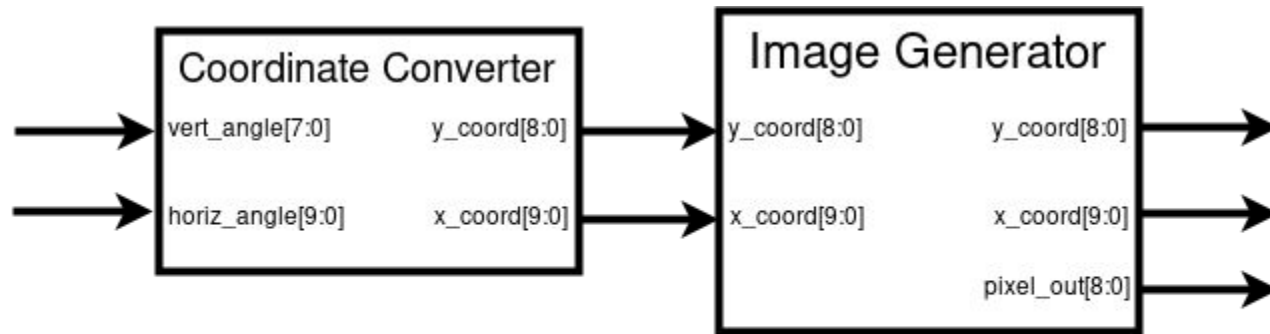
VR Headset for phones

# Block Diagram: rom the real world



- 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

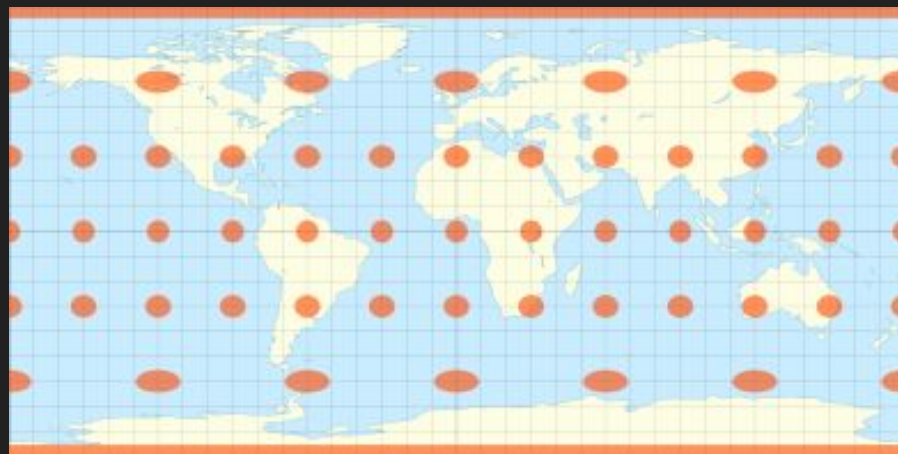
$\lambda$  = longitude

$\lambda_0$  = central meridian

$\varphi$  = latitude

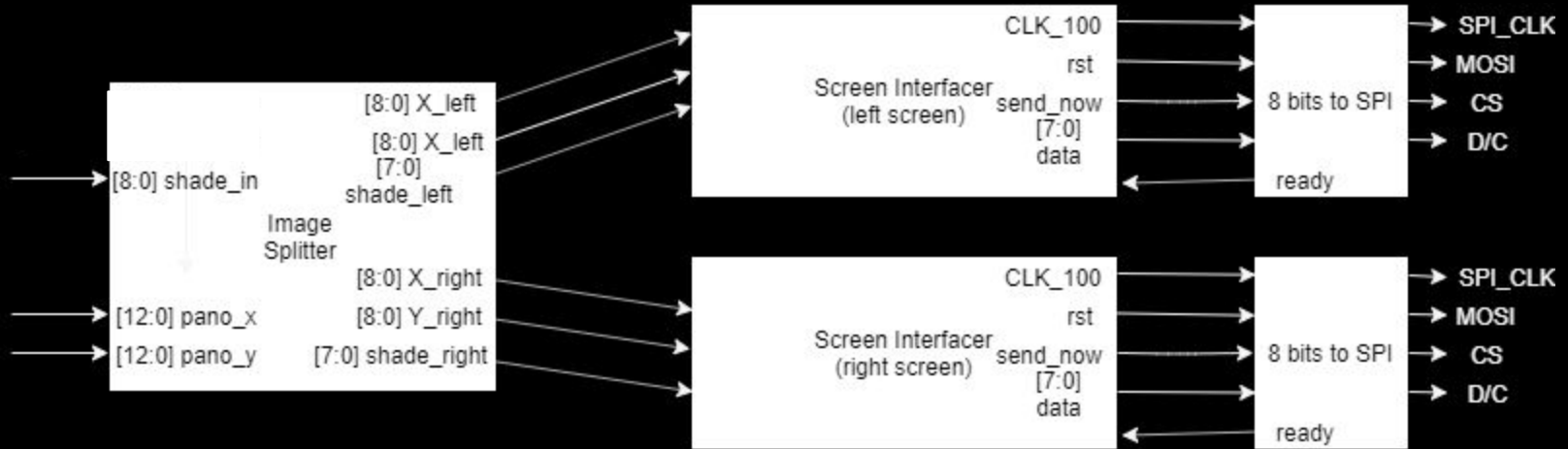
$\varphi_1$  = standard parallels

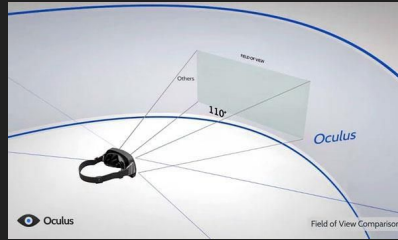
$R$  = radius



[https://en.wikipedia.org/wiki/File:Plate\\_Carr%C3%A9\\_with\\_Tissot%27s\\_Indicatrices\\_of\\_Distortion.svg](https://en.wikipedia.org/wiki/File:Plate_Carr%C3%A9_with_Tissot%27s_Indicatrices_of_Distortion.svg)

# Block Diagram: To The Screen







# Timeline

Week 1  
(Nov 3)

Week  
2

Week  
3

Week  
4

Week 5  
(Nov 9)

Draft a C version  
of the screen  
controller

Test projection  
methods with  
python

Implement screen  
controller, show  
basic images

Pan around  
images with arrow  
keys

Show two different  
images, mount in  
headset

Pan around with  
IMU

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



