Brian, Shanka, Sheena - 6.111 Stereo camera -> depth map

Minimum:

Camera pipeline:

- Camera capture - Sheena
- Storing images in a triple buffer using (V)DMA+MIG architecture for high bandwidth - Brian
- Applying a filter to the image - Shankha
- Rendering the results - Sheena
- Block Diagram Architecture - Brian

Intermediate

- Camera Calibration - Sheena
    - Capture an image to the SD card and compute distortion parameters - Sheena
- Camera Rectification - Sheena
    - Compensate for the distortion in real-time - Sheena
    - Requires duplicating memory in order to get more bandwidth than is possible from dual ported memory - Brian
- Additional Processing - Shankha
    - Compute a binary feature descriptor like the census transform - Shankha
    - Gaussian smoothing of the image - Shankha

Stretch

- Semiglobal matching algorithm
    - High bandwidth Memory architecture, multiple clock domains - Brian
    - Cost function and DP - Shankha
    - Merging to compute depth map - Shankha
- Depth map rendering - Sheena