ANIMATE WITH ACTION

ECE532 Final Presentation

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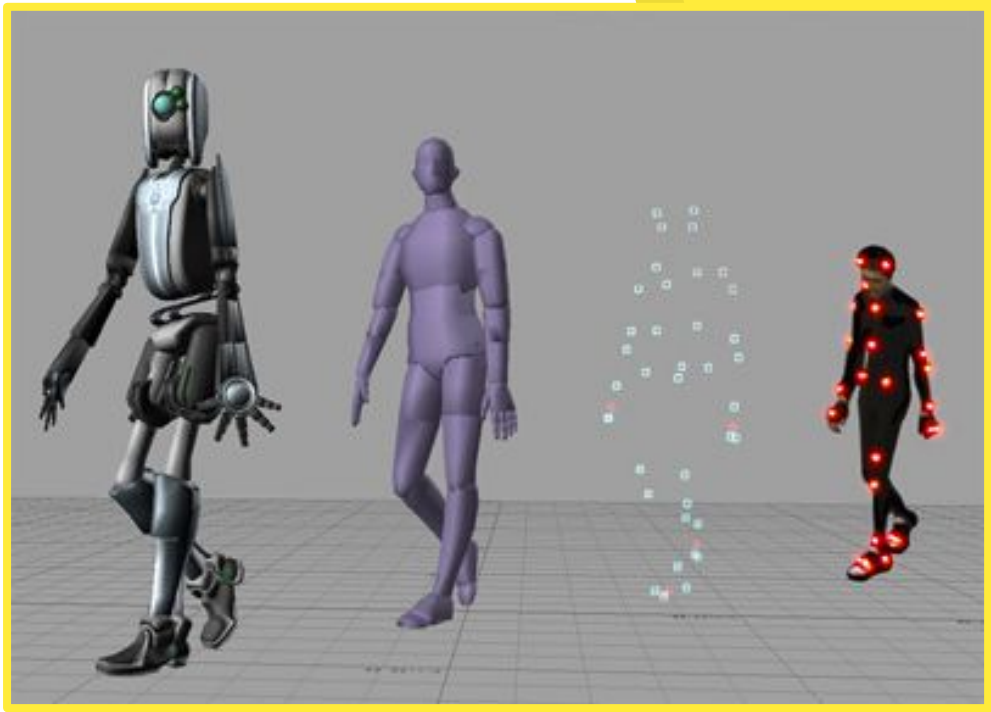
PRESENTATION
OVERVIEW

- The Problem
- Our Initial Solution
- Final Design
- Challenges Faced
- Our Design Process
- Learnings and Outcomes
- Demo

THE PROBLEM

- ★ Implemented in software
- ★ Slow and lengthy process
- ★ Not able to achieve real time animation



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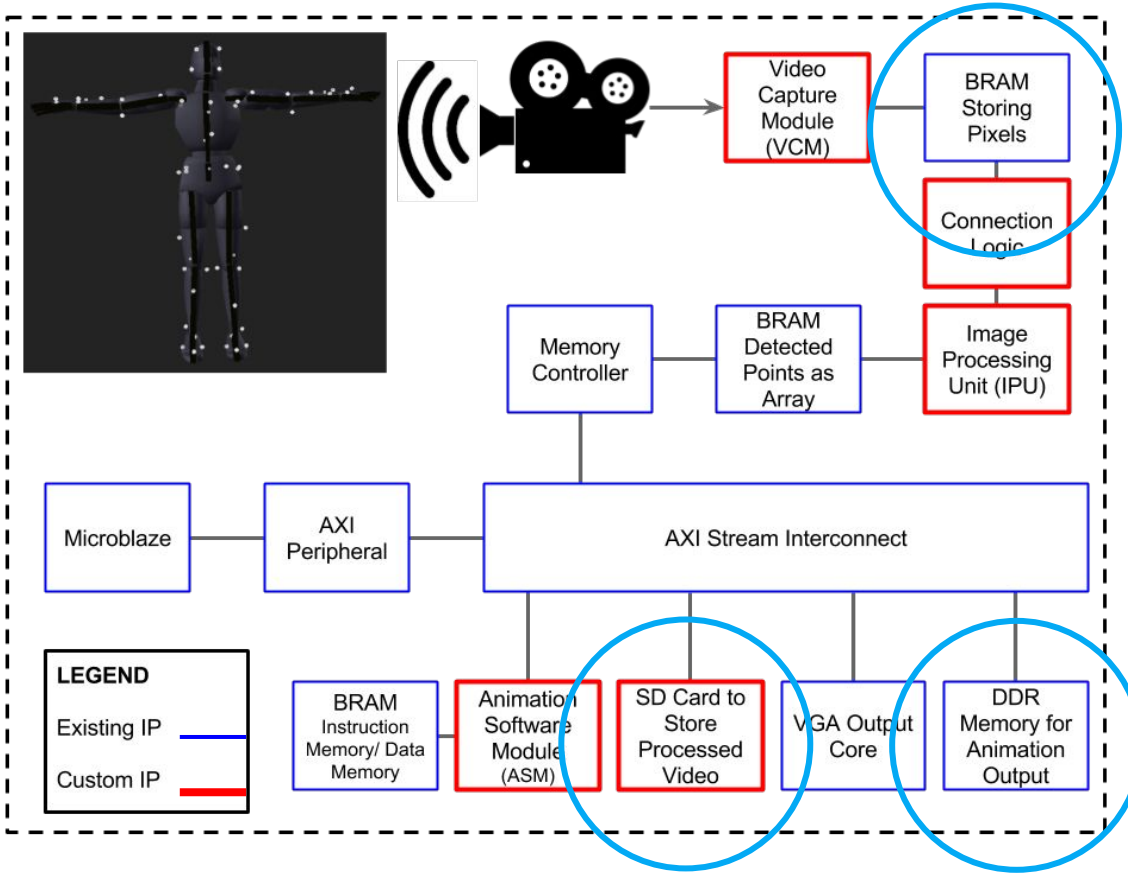
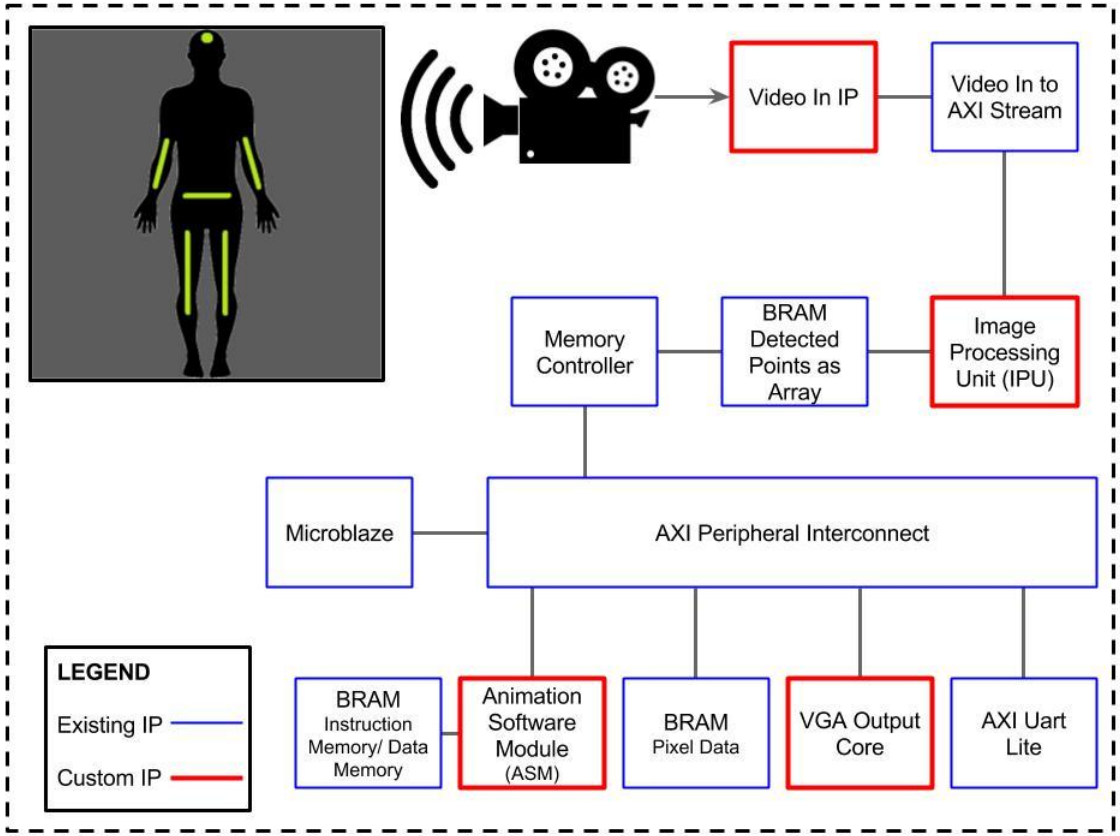
OUR INITIAL SOLUTION



FINAL DESIGN



CHALLENGES FACED

Software to Hardware Conversion

Converting our MATLAB code to Verilog for the IPU included tasks like removing mult/div operations and adding pipelines.

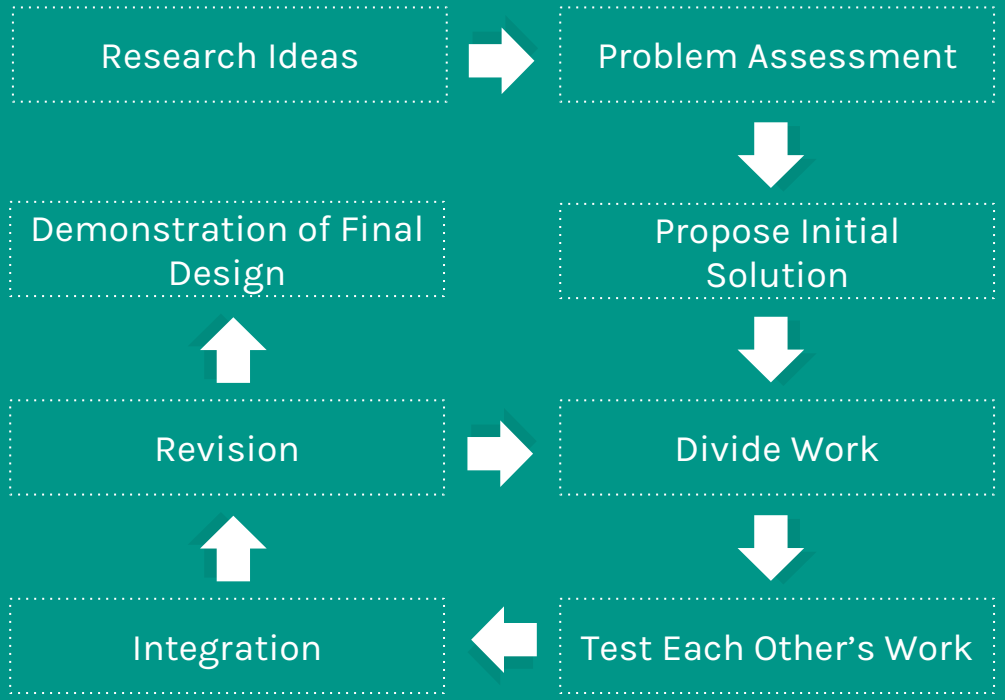
Testing and Simulating the Image Processing

Writing the testbench to verify the IPU required generating image data and a lengthy analysis of waveforms.

Integration and Coordination between IPs

Putting all the blocks togethers and changing them to ensure right connections and coordinations was a demanding task.

OUR DESIGN PROCESS

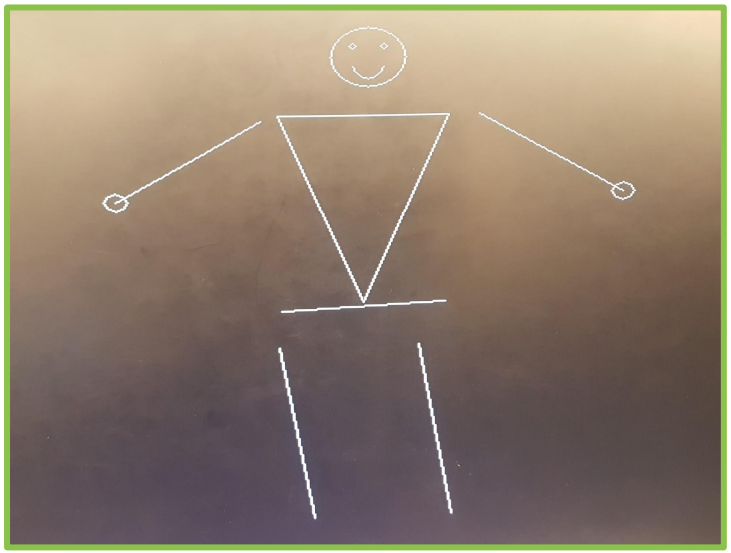


WHAT WE LEARNED

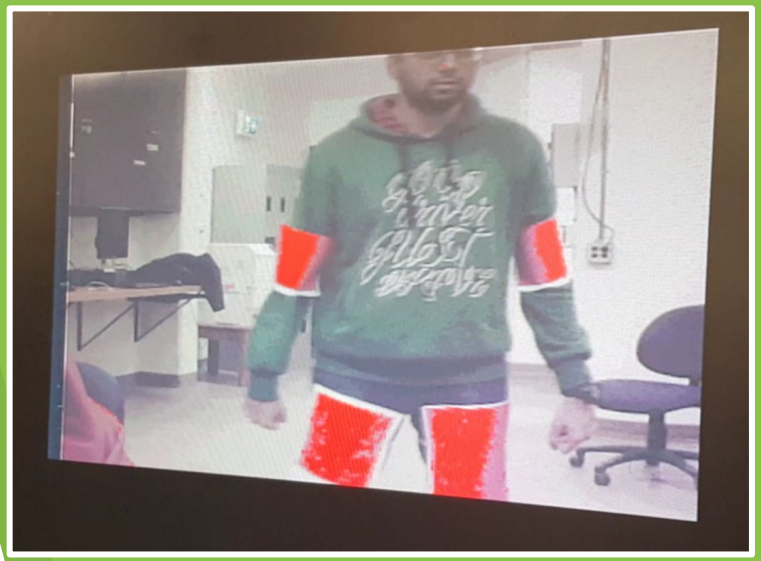
- Gained understanding of the entire design flow of getting a design on the chip
- Learnt different debugging tools to test hardware: testbenches, simulations and ILA
- Acquired knowledge about AXI interface for integrating IPs in order to generate a SoC
- Learnt about the versatility of FPGA and the speed of hardware implementation

OUTCOMES

ANIMATION



PIXEL DETECTION



DEMO TIME