Interactive Checkers
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Motivation

- **Image Processing**
  - *Object recognition*
  - *Object tracking*

- Implement a system that interfaces with different machines

- Fun and challenging
Our Inspiration
Block Diagram

- **Image Capture**
  - "Human Ready" signal
  - "Computer Ready" signal

- **Display**
  - "Computer Ready" signal

- **Image Processing**
  - Encoded data of human's current move
    - State of the game board

- **Computer A.I.**
  - State of the game board
Image Capture

Camera

Video data

ZBT Memory

Video data

Read enable

Memory Read Enable

“Computer Ready” signal

Image Processing

“Human Ready” button

Display Module
Image Processing

**Image Capture**
- Data of captured images

**Determine Location of Human’s Pieces**
- Current location of humans pieces

**Compare the States of the Board**
- Previous location of human’s pieces

**Encoder**
- Human’s current move
- Encoded data of human’s current move

**Computer A.I.**
Computer AI

- **Encoded data of human’s current move**
  - Image Process
  - Decoder
  - *Human’s move*
  - **Computer A.I. Code Running**
    - **Computer’s counter move**
  - **Current State of the Board**
  - Display Module
  - Image Process
  - **State of the board**
Display Module

1. Logic for removal of Human’s Eaten Pieces
2. Redraw the Computer’s Pieces
3. “Computer Ready” signal
4. Image Capture
5. “Human Ready” button
6. State of the game board
Timeline

Week of Nov. 11-
Michael- Interfacing between camera and FPGA.
Ahmet- Establish interface between computer and FPGA.

Week of Nov. 18-
Michael- Design and Debug Image Processing Module.
Ahmet- Customize and test Checkers Computer AI.

Week of Nov. 25-
Michael- Create and test Display Module.
Ahmet- Combine Image Processing and Computer AI modules.

Week of Dec. 2-
Final Debugging and testing.
Questions?