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6.111

Checkers Checklist

Commitment

Display Checker Board through VGA
- display b&w image from camera
- display color image from camera
- display generated board (like pong lab)
- display pieces on the board

Play against Computer
- create the checkers AI
- get connection over lab kit (USB communication)
- display the checkers from the computer on the display

Have game clock with button to move
- debounce signal
- divider module (to 1Hz for timer)
- game timer module
- display outputs from module

python to serial port (USB connection to Labkit)
- verilog code
- wiring on labkit
- computer driver/script

Goal

Have physical Checker board
- create pieces and board on the wall (red and green)
- process correct frame (set up camera to view board, correct height and dimensions)

Project computer pieces on board
- process board configuration signal to board layout
- filter computer's pieces
- assign correct pieces (kings or not) to each space
- show image on display
- project the compiled image

read in human pieces through camera
- detect colors
- filter
    - downsample
    - MSB's for colors red and green

- find where the player has checkers
- translate to board configuration signal

play through to kinged pieces, different colors

- detect green and red
- assign different bits to different colors (in sent board configuration)
- handle the different capabilities of each piece

Stretch Goal

synchronize camera and projector each time

- get frame for projector
- make button signal to know it's synchronized
- system for aligning camera with the board

serialize moves, as opposed to 96 bit string

- serializer module
- de-serializer module

checkers program features (undo, suggested move…)

- undo button
- undo software
- suggested move button
- suggested move calculation
- suggested move arrow/display

fancy checkers pieces

- save into memory
- recover from memory to display