

### Final Project Check Off Sheet

**Project Title:** Squash Yourself

**Student Names:** Will Fotsch, Sumit Khataod, Azadeh Moini

**TA Name:** Cassie Huang

**TA Signature/Date:**

Sumit:

Inputs:

- 1) Decode YCrCb input from the camera, convert it to RGB, and output the signal to a VGA
  - 2) Detect the location of an LED and its center of mass and track movements of the LED
  - 3) Determine the acceleration of the LED over a few frames to determine the power of the swing
  - 4) Change the size of the paddle via buttons on the labkit.
- If time* - Calculate the movement vector of the LED over a few signals to determine the angle of the swing  
Repeat for a second LED

Azadeh:

Scorekeeper:

- 1) Increment player points and determine hits per point
- If time* –
- \* Change server appropriately
  - \* Determine whether a hit is legitimate (i.e. if the hitter and server are correctly paired)

Game Physics

- 1) (internally) chart size and location of both ball and paddle
  - 2) Collision detection (coordinate overlap?)
  - 3) Show 3D ball movement
  - 4) Increase ball speed based on paddle power
  - 5) Additionally increase ball speed based on ball “heat”
- If time-*
- \* Direct ball based on paddle angle
  - \* 2-player version

Will:

Video Output:

- 1) Display stationary background, including court and scoreboard.
- 2) Display the ball with size and location specified by Azadeh's Game Physics
- 3) Display ball HEAT with a bar that increases
- 4) Display Player 1 Score (P1 Score) and Player 2 Score (P2 Score) with two decimal digits displayed as digital seven segment displays. Also display a 3 digit decimal display for Rally (how many hits per point).

*If time-* Add displays for Game Over. Also, maybe add a start screen.

Make images more complex. If video has glitches, put some of the display into ROM and/or create a frame buffer.

Audio Output:

- 1) Create audio clips for Server Change (Player 1 or Player 2), Hits, End of a Point, End of a Game, and Power Hits.
- 2) These audio clips will be programmed using labkit switches and a button on the labkit and stored into BRAM.
- 3) Cause the audio clips to play at the appropriate times based on the data sent from Azadeh's Scorekeeper.

*If time-* Add an audio clip for taunting the opponent. This will also be stored on BRAM, but will play based on a user button press.