Lightsaber Training

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6.111 Project Checkoff List

Commitment

Sensor Data (rsyang)

- Get unfiltered accelerometer, gyroscope, and button data via hard wiring from the Arduino to the labkit
- Have data conversion module working that converts data from SPP format to a compatible format for later modules (e.g. 8-bit accelerometer and gyroscope data, 1-bit button data for each button)

Video (lcarter)

- Stream video to gameplay module
- Send two x,y coordinates to gameplay module for the two balls
- Processing done with <1000 ms delay

Gameplay (lolzhang)

- Solid color projection of lightsaber blade on screen
- Stationary, solid colored sprites on screen that can be hit by the lightsaber blade
- Player score is displayed on labkit

Goal

Sensor Data (rsyang)

- Filter data from data conversion module
    - Smoothing module for accelerometer and gyroscope data
    - Debouncing module for button data
    - Drift compensation for gyroscope data
- Communicate via Bluetooth instead of hard wiring

Video (lcarter)

- Filtered x, y, z coordinates from video estimate to gameplay module
- Processing done with <300 ms delay

Gameplay (lolzhang)

- Alpha blended lightsaber blade projection
- Dynamic, alpha blended sprites on screen (moving or appearing/disappearing)
- Player score is displayed on screen

Stretch Goal

Sensor Data (rsyang)

- Have handle completely wireless - on-board power supply (e.g. battery) and corresponding regulators, if needed
- Work on adding color to quadcopter for image detection

Video (lcarter)

- Interface with the quadcopter by adding another differently-colored ball x, y, z feed to gameplay module.
- Processing done with <100 ms delay (imperceptible delay)

Gameplay (lolzhang)

- Ability to change lightsaber color
- Preloaded images used as sprites
- Add in quadcopter gameplay

Quadcopter (rsyang)

- Get quadcopter to force land once it is hit by the lightsaber