Project Information

I. Intro

The purpose of this project is to implement a 2D game that is portable, efficient from both the software and hardware side. The inspiration for the project is derived from previous user experience on mobile gaming devices such as android phones, Sony PSP, and Nintendo DS, except our group wanted to have a device that is not necessarily restricted to proprietary software and drivers and other associated licensing issues. So our target audience is all age groups of people who indulge in video games, but mainly an expandable platform for game development and personal use. <<For Game Description see README.md >>

II. Parts

Beaglebone Black Rev. C	~$53.00
4DSystems Beaglebone Black LED 4.3 inch Cape	~$79.00
Leap Motion Controller	~ $80.00 (borrowed from Faculty)
Actual Total Cost:	~ $132.00

Note: Running stock standard configured Debian Linux on Beaglebone Black

<<more info about software requirements documented in README.md >>

III. Challenges / Issues

Initially the plan was to use Blob Detection Library for processing and a Logitech web cam compatible with the Beaglebone to communicate hand gestures or (number of fingers) to navigate player within the game. However the input lag was too high. For more details go to the branch in repo entitled "game_with_blob_detection_input" and navigate to the issues tab on the right.

So our plan changed we decided to implement input using 3 different input types.

1) Standard buttons on Beaglebone LED cape.
2) Leap Motion Detection
3) Playstation 3 Controller

Some challenges encountered while migrating game to Beaglebone

- Setting up Beaglebone for the first time (ssh with xdisplay over usb and internet sharing is unreliable and not fully functional between mac osx Yosemite and Beaglebone, package dependency errors etc.

- running processing 32 bit application on ARM architecture encountered many linking errors, processing applications do not officially have ARM support. Had to find and symlink to shared libraries in system path.

- Phageater exported as a 32-bit app running over a java 7 soft-float ARM runtime. Compensated for poor performance by overclocking cpu from 300 MHz to 1GHz (max settings) to handle running the game on max resolution through the LED Cape (resolution: 480 x 272) while running VNC connections just to virtualize display instead of using a mini hdmi adapter.
- Testing standard key mappings between Mac and LED Cape Buttons

  [still in progress until Wednesday May 13,2015]
- Configuring ps3 controller to connect to Beaglebone via usb and xboxdrv driver in absence of default connection via Bluetooth adapter for Beaglebone Lastly, interfacing the ps3 controls through game control plus processing library
- Configuring the Leap Motion to work on both Beaglebone through processing application

IV. Project Review

In the future we could use libraries and frameworks with ARM compatibility, and expand the project to webservers. For example, we could record the score of each player to a scoreboard online or a local scoreboard hosted on Beaglebone.