Group 3: LED Snake Cube Requirements

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Summary:

Port and modify the classic game snake to be played on an LED cube. The snake is controlled by a retro game controller, where the buttons control the up and down motions and the D-pad controls the motions inside each plane of the cube. When the snake lands on the target LED, it grows and speeds up slightly. Once consumed, the target LED changes location, away from the snake. The game continues until the snake runs into itself or into a wall.

Functionality:

* Snake game must be played on the cube
  + Processor must respond to controller input
  + LEDs must respond to processor output
* Gameplay
  + Game ends if snake hits wall or touches self
  + Snake speed up between 1.25 and 1.5 times faster per achieved goal.
  + Snake starts with a size of one space and grows by a space per achieved goal.
  + Buttons control up-down movement and a D-pad controls the movement within the x-y-plane.

Performance:

* Accuracy
  + The controller must have at least a 95% correct input rate.
* Must be battery powered.

Economic:

* Total cost should be under $125.

Manufacturability:

* Must have at least 2 PCB layers.
* PCB must have an area between 9cm2 and 900cm2.
* Must have no linear dimension smaller than 2cm or larger than 30cm.
* Must be hand assembled.

Documentation:

* Must use Github.
* May use Google docs