Project Title: **Cubic Hand**
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EECS 249A Project Charter, Fall 2014

Project Goal
This project will create an interactive display of LEDs and allow it to be manipulated with hand gestures and movements using a data glove.

Project Approach
The project will model the turning on and off of LEDs as a state machine based on the position and movement of a data glove. The goal will be to accurately monitor data glove's orientation and movement and actively update the status of the LEDs based on information collected from the bend sensors and the accelerometers of the data glove.

Resources
Our plan is to use either the mbed FRMD KL25Z or the Arduino Mega as the processor driving the interactive LED display and reading data from the data glove through a Wifi connection. The data glove will likely have built-in Wifi, and the processor will interface with a CC3000 Wifi module to read sensor data from the data glove. The most likely candidate for the LED display will be the NeoPixel LED strips. The first goal is to implement an LED display that can individually address each individual LED and be controlled and accessed from an external device such as a computer over Wifi. The second goal is to interface with the data glove and be able to read sensor data from it. From this, we will process the information to interpret hand gestures and decide what LEDs to turn on and off in the LED display.

Schedule
- October 21: Project charter (this document)
- October 28: Finalize plans of LEDs and Data glove
- November 4: Have a model for the data glove and LEDs
- November 11: Processor should be able to control the LEDs
- November 18: Data Glove communication with the board
- November 25: Glove is able to control the LEDs
- December 5: Test and Verification of the System begins
- December 16: System is working with final requirements
- December 17: Final presentation and demo
- December 19: Video and project report completed.

Risk and Feasibility
There are some unknowns in this project. The data glove will almost definitely exceed the budget for the project and will take some time to ship. The glove may turn out to be difficult to interface with our software. The timing of the LEDs may also be difficult to control and take some time to implement successfully. The LED cube will also take some time to create, but using the NeoPixel LED strips will make it more feasible in less time.