PROJECT MEMBERS

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WIKI - https://github.com/hsean/ECE-411-Practicum/wiki/Resources

PROJECT IDEAS

Automatic Pet Feeder - The pet feeder would be a food dispenser for either cats or dogs. It would allow a user to choose the times of day to dispense food, as well as the amount of food to dispense. The food would be held in a tub above a food bowl and controlled through either a LCD display and buttons or a phone app.

Light Up Soccer Ball - Place LEDs into a foam indoor soccer ball that will light up different colors based on the force or acceleration of the ball. It will also display different light patterns in flight or upon colliding with something. The PCB will be inserted into the center of the soccer ball with batteries. The LEDs will be sunk into the outside of the ball and wired through to the center.

Self Leveling Device - It is a device (Tray) that can hold objects (cup, laser..etc) and balance them while the device is moving. 3 linear actuators in a triangle form are placed on the tray and moves to balance the tray based on mathematical calculations. Accelerometer will be the sensor used in this device to measure the gravity and track the tray balance level (tilt level) to adjust the actuators balancing the tray.

Mountable Light Switch - Device to mount over a light switch that allows the user to be able to operate the light switch via clapping or through a timer that will automatically turn on or off the light at certain times. It will use a servo to flip the switch on or off, and have a microphone to get user input (clap sounds). Perhaps the user will be able to program the timer through some sort of phone app to turn on/off the lights at specific times.

DECISION MATRIX

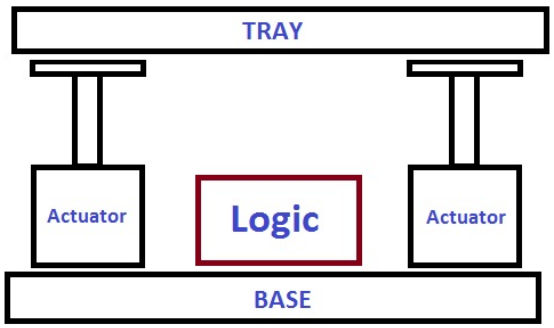
Idea	**Rating system (1 - 3: optimal to suboptimal)**			**Result**
	Difficulty	**Cost**	**Originality**	
Automatic Pet Feeder	2	3	2	2nd
Light Up Soccer Ball	2	1	2	3rd
Self Leveling Device	3	3	1	1st
Mountable Light Switch	2	2	1	4th

We initially came up with a list of ideas through some brainstorming sessions. Each member of the group then listed their top 5. This came down to the pet feeder, light up ball, and self leveling device being the favorite ideas. We then voted for our favorite which resulted in a tie between the pet feeder and leveling device. After some discussion and a coin flip we decided to go with the leveling device as our final project choice.

PROJECT PROPOSAL - SELF LEVELING DEVICE

Project Description -
We want to make a self balancing device. It will use accelerometers to determine the position of a table and actuators attached to the sides of the table to level it. When turned on, it should constantly attempt to balance the table, regardless of the position of the rest of the device.

Our preliminary ideas have a square table with one actuator on each side. The microprocessor will read input from one or more accelerometers on the base of the device and output to a servo controller which will control the legs of the table and keep it balanced. We will use a lookup table of accelerometer angles to actuator positions to reduce the number of computations and adjust the legs according the the angle of tilt in each direction.



Requirements -
- Must be able to keep tray balanced
- Device must be able to support an appropriate amount of weight

Deliverables -
One working prototype of a self balancing table.