**Project Ideas**

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Idea 1:

The first idea we had was to create an RFID home identification system. This project would consist of us creating a receiver PCB where it would be able to scan an RFID when someone with an RFID chip walks through the door. After the PCB receiver detects the ID (different for each user), the circuitry would communicate wirelessly with speakers and some light switches to communicate a custom “welcome home” message along with turning on the lights in the house. The receiver also senses the RFID when the user leaves the home and communicates a “good bye” message and turns off the lights in the home.

Idea 2:

Another idea we conceived was a midi controlled “drum set.” We would have multiple electronic pads that act as sensors, outputting data each time they are struck. They would then be processed into midi data, which can then be output as drum samples. We ultimately decided not to pursue this project due to the mechanical difficulties of creating a drum set. The rocket avionics system also seemed more interesting to us.

Idea 3:

Yet another idea for the project was to design a shoe that could act as a guitar volume pedal. This would involve installing a flex sensor in the sole of a flexible shoe, and having a processor control the attenuation of a guitar signal through a voltage controlled volume control. In this, the sensor is the flex sensor, and the output would be the variably attenuated guitar signal.

Idea 4:

The idea we decided on was a rocket avionics system for small model rockets. After we design a working version, we plan to create sellable kits which others becoming interested in amateur rocketry can use. On the system, we will have sensors for attitude and acceleration during flight, which will be processed on board and stored in an SD card. The system and card will be retrievable after flight, and can then be processed on a computer and displayed visually.

**Project Decision Matrix**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Difficulty | Skill Coverage | Cost | Required Time | Meet Requirements? | Fun | Weighted Overall |
| RFID Home | 6 | 3 | 7 | 9 | Yes | 4 | 7.85 |
| Midi Drums | 4 | 4 | 8 | 7 | Yes | 6 | 8.95 |
| Flex Shoe | 7 | 7 | 3 | 4 | Yes | 6 | 9.25 |
| Tiny Avionics | 7 | 5 | 6 | 6 | Yes | 9 | 10 |

Scales range from 0 for least and 10 for greatest.

Weighted Overall Equation: 10-.6\*(AVERAGE(Difficulty,Skill Coverage, Cost, Required Time)+.4\*Fun