
Practicum

Top Three Project Ideas

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1 Project Ideas

1.1 Project Idea #1 - HVAC Controlled Fan for a Server Room

Description: A temperature sensor will take in temperature values and delivers this information to a microcontroller. This microcontroller will then use arithmetic to determine the amount of voltage that will go on the output. This output voltage will drive a fan.

Sensor: Temperature Sensor

Controller: ATmega32U4-AU

Actuator: Fan

1.2 Project Idea #2 - Solar Light Sensor

Description: A solar panel will induce current and charge a battery. The controller will check voltage values from the previous 15 minutes to determine whether or not to start a motor that will change the angle of the solar panel(s) to find the next optimal position.

Sensor: Solar Array

Controller: ATmega32U4-AU

Actuator: Motor for realignment of solar panel(s)

1.3 Project Idea #3 - Dancing Lights (Sound Frequency to LED Visualizer)

Description: A microphone will be connected to multiple bandpass filters with specific frequency ranges. These filters will be connected to input pins of the ATmega32U4-AU. The ATmega32U4-AU will be programmed to take the voltage input from the bandpass filters and determine which LED strips to light up on the Neopixel LED strip.

Sensor: Microphone

Controller: ATmega32U4-AU

Actuator: Neopixels

2 Conclusion

As a group, we have decided that the **Dancing Lights (Sound Frequencies to LED Visualization)** project will give us the right amount of challenge for a 10 week project. We have equal amount of electrical and computer engineering majors in the group, so it was essential to have both analog and digital components.