9/7/22:

Start with the fixed axis - then go to single axis (no double axis)

DC power - have a DC-DC converter in between

AC power - have an inverter in between

Display the current status of the system

Switching mechanism between the panel and the battery, battery and load

Dump load for over generation of power from solar panel

Can use the raspberry pi or arduino

Python for GUI and database applications, HDMI from laptop to big screen?

Each system should work with dummy data

Start with perf/breadboard and then maybe PCB

9/14/22:

Pi will write out to csv, GUI will read from csv

DC servo motor

9/16/22:

RPI will be used for the system, ADC for voltage measurements

GUI can be written in python, readme for instructions, animation to show how system works

Database done as csv

Look for relays as switches

DC fan as load

Use buck boost converter with voltage measurement to write an algorithm to keep output voltage level at correct voltage level?

Solar Power:

-Panel takes solar radiation and converts to electrical energy

-Fed into a MPPT charge controller (protect the battery and maximize output power)

-Battery drives a buck boost converter as it discharges and voltage drops

-Provide constant output voltage to the load

Execution:

End of October:

-Complete simulation level design of solar power generation subsystem

-Complete analog measurement and switching functionality for I/O subsystem

-Complete database and portion of the GUI

End of November:

-Complete PCB

-Full functionality of I/O system

-Complete GUI and system animations/display aids

Validation:

-Completely verify and test battery charging and load driving

-Completely verify measurements and control response

-Completely verify GUI is fully interactable with database and user

9/30/2022

Discussion with Dr. Jang about the load and stepper motor.

-Completed Buck-Buck Converter and fully simulated in LTSpice

-Finalized the passive components and settled on our load

-One load will be handheld console for intractability

-Second load with be a fan, servo motor, and few LEDs to show breath of powering capabilities

-At the charge side, …

-Begun PCB design

-Testing battery charge and discharge

-Calibrating the solar panel, want to see performance across incident angle and intensity

-Input range estimated at…

-Regulates to 3.7V w/ 200mA max output + simulation results