Self Cleaning Solar Panel

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EGR314: Embedded Systems Design Project II – Spring 2023

Mobile Environmental Sensing

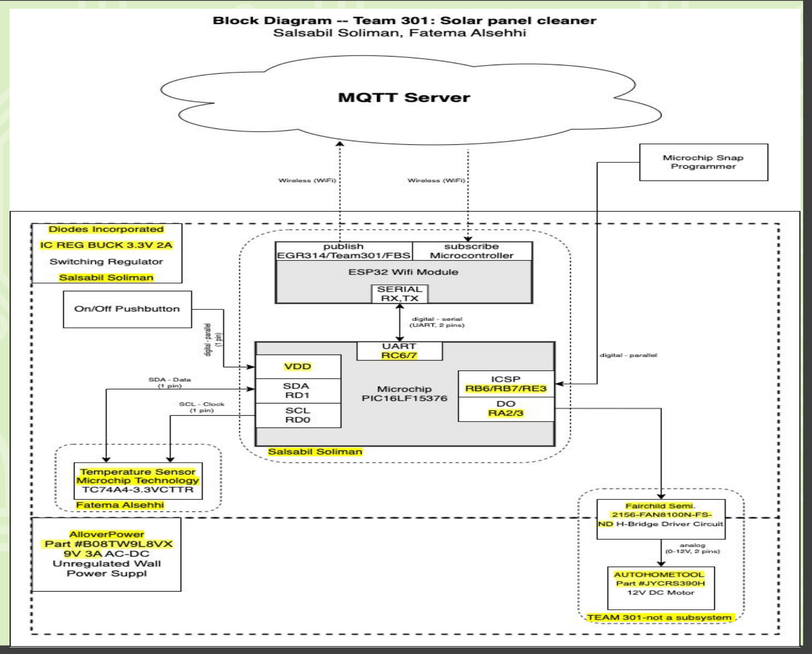
Mission Statement:

We're developing a self-cleaning solar panel system using temperature sensors to reduce maintenance. Our goal is to make solar panel usage practical, reduce energy bills, and benefit the environment. We're committed to delivering a reliable, cost-effective solution that improves our customers' lives.

Customer Need Statement:

Customers need a reliable, cost-effective, and low-maintenance solution for optimizing the performance of their solar panels. A self-cleaning solar panel system that is energy-efficient and environmentally friendly can meet these needs and provide hassle-free access to clean, renewable energy.

Block Diagram:



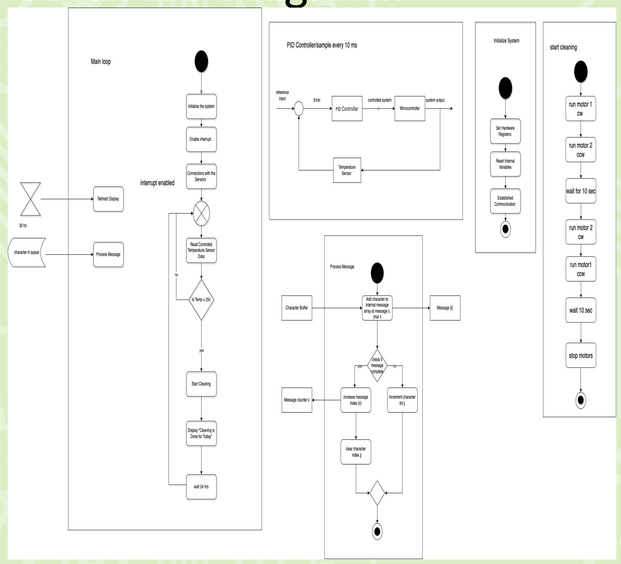
Design Review Top 5:

1. Importance of adding decoupling capacitors and test points
2. Ground symbols have to be pointing downward
3. Adding fuse on the main power bus
4. Adding pull-up resistors on the MCLR for ICSP programing to work
5. Adding interrupts

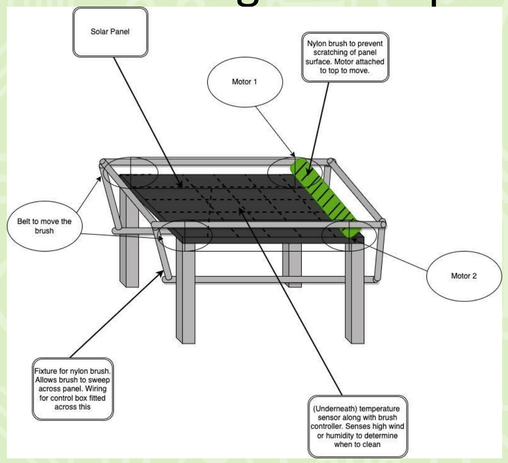
Product Requirements:

- System must sense environmental conditions such as temperature.
- System must communicate with the sensors using either I2C protocol.
- Applications for the motor controller based on the temperature reading.
- The system must be capable of broadcasting environmental data to the internet over WiFi using the MQTT protocol.
- Showing data to the user ex: Oled

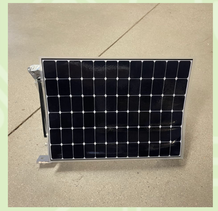
Software Diagram:



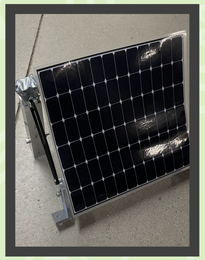
Final Design Concept:



img2



img1



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