The Solar Sun Chaser

Group 3 Progress Report 2

ECE 511 Fall 2014

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Agenda

- Overall Status
  - Introduction Refresher
  - Current Group Status
- Component Overview
  - Solar Feedback System (Joe)
  - Solar Platform (Jason)
  - Programmable Clock & Status Display (Ahmed)
- Task Division
- Plan B

The Solar Sun Chaser

- The MSP430 will be used to continuously reorient a solar panel array towards the sun.
- Repositioning the solar panel throughout the day will maximize the amount of energy collected.
- Photo resistors will be used to determine which direction a stepper motor should move the array.
- Status and the current panel voltage will be displayed on a low-power LCD.

Group Status

- Software integration started
- Spinning platform nearly complete, ready to start mounting MSP430 and components

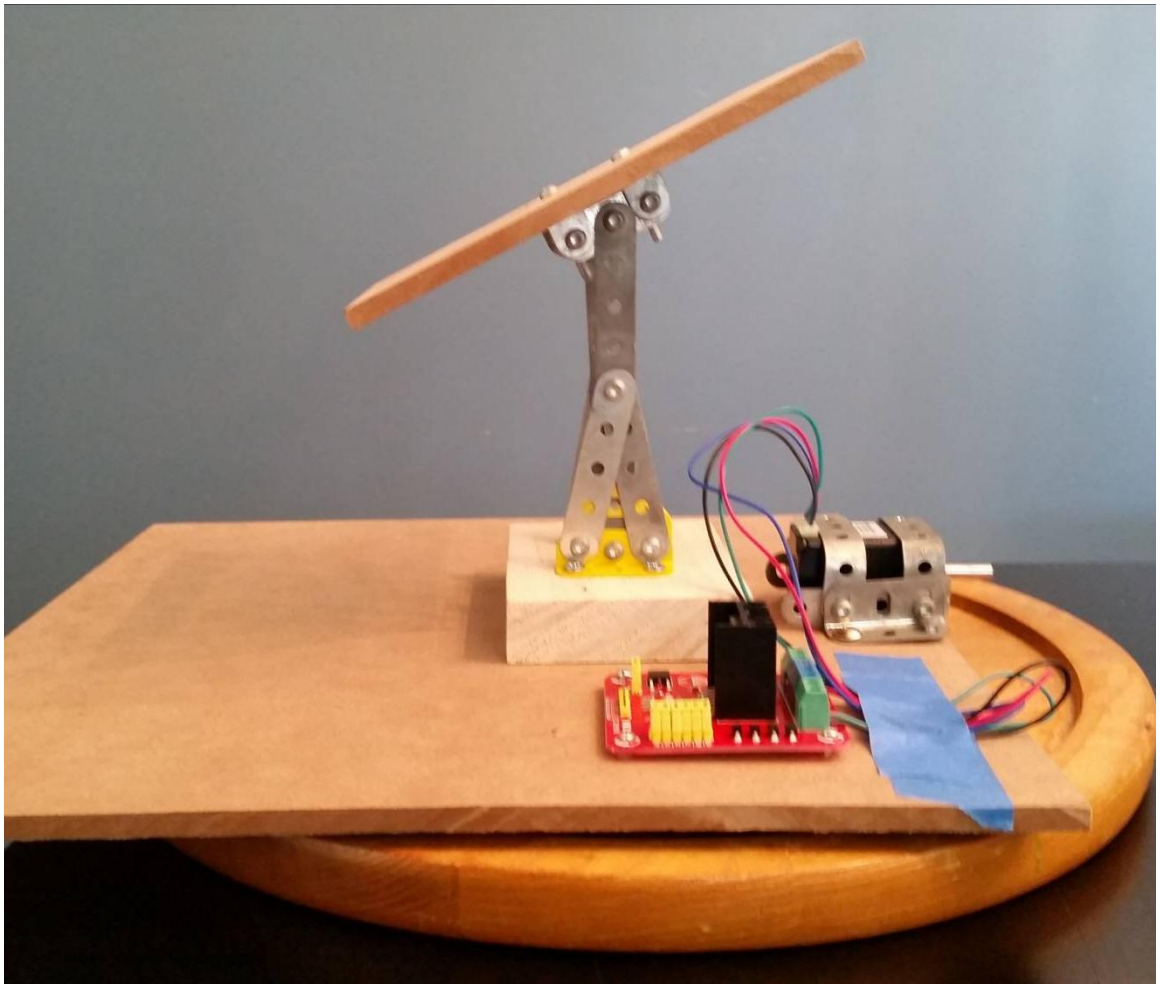
Solar Panel

- Hardware:
  - Connected to an ADC12 input.
  - Wire through a voltage divider circuit to reduce 8.5V output to a safe level for the ADC12
- Software:
  - A timer will trigger an ADC capture
  - The MSP430 will read the value, convert to volts, and store
- Status: Tested
- Problem: Mount and wire to platform

Photoresistors (2)

- Hardware:
  - Connected to Port 6 and two ADC12 inputs
- Software:
  - ADC values read at same time as Solar Panel using the sequence-of-channels capture method in the ADC
- Status: Tested
- Problem:
  - Determine and apply bias offset for each unique photoresistor.
  - Mount/Orient on platform, wire to MSP430

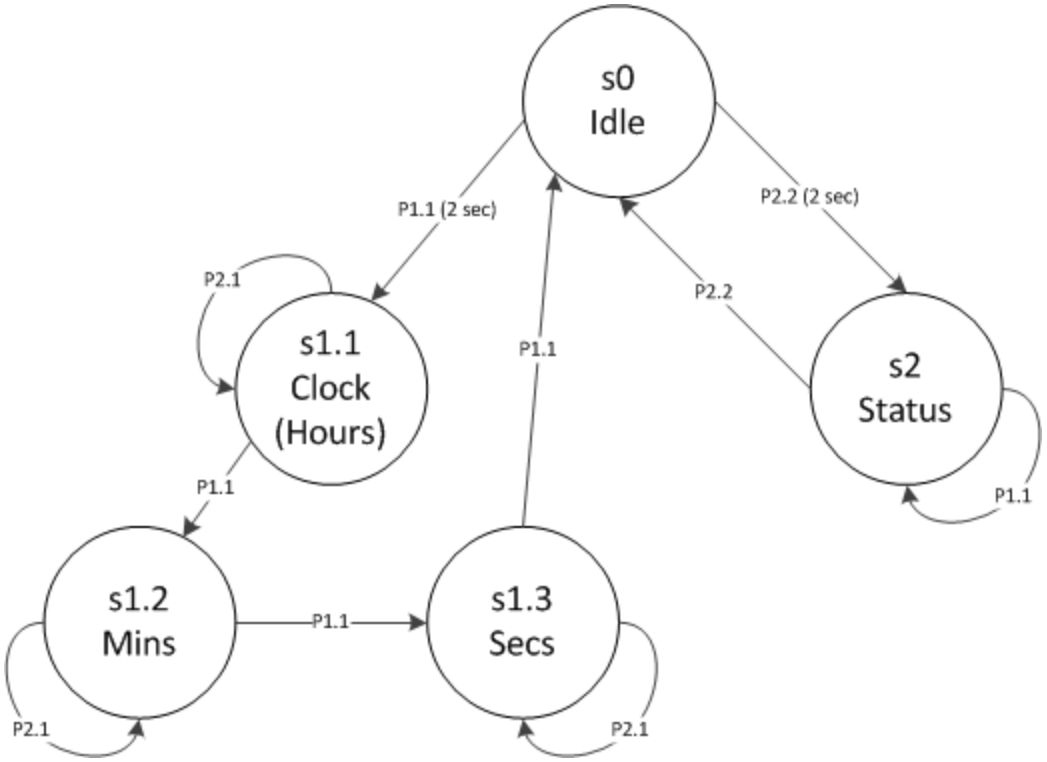
Solar Panel Mount with rotation



Solar Panel Mount and Stepper Motor Status

- Hardware:
  - Stepper Motor and H-bridge mounted to rotating table.
  - Solar Mount and Arm attached to rotating table.
- Software:
  - Program successfully tested to operate stepper motor through H-bridge.
- Status: Untested
- Problems:
  - 60mm wheel and wheel hub needed for stepper motor.
  - Affix Solar Panel to Mount and place micro-controller on table.

Programmable Clock & Status Display



SC1602Z 2-Row LCD

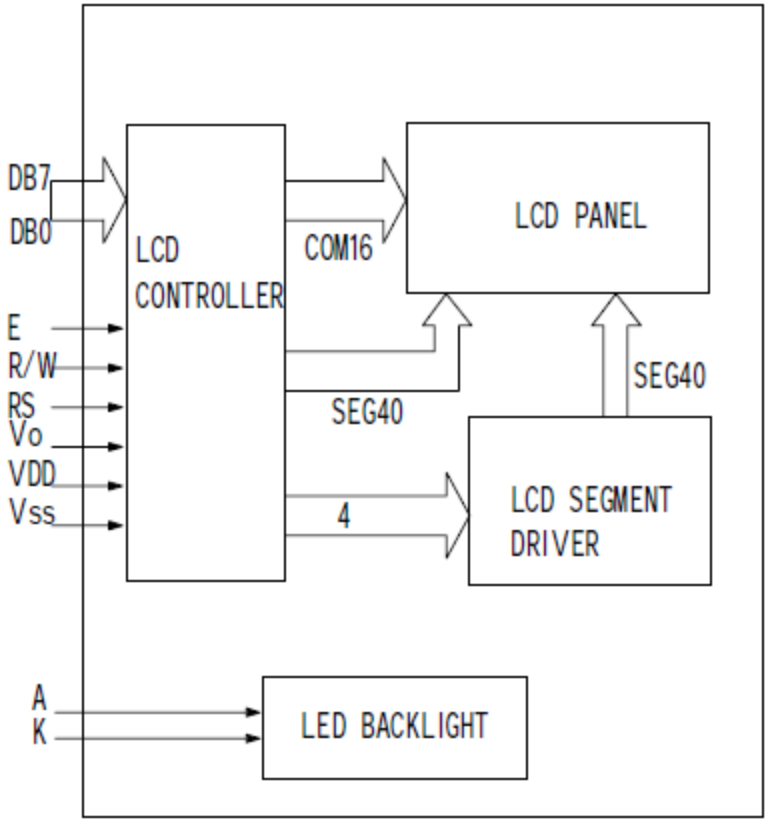
Hardware:

- 4-bit Data, E, R/W, RS
- RTC_A Interrupts with 32Khz ext clk

Software:

- LCD drivers (done)

Status: Acquired



Task Division

	Task Milestones
Joe	Solar Guidance Feedback Control System Development
Jason	Solar Panel Rotation Platform Fabrication
Ahmed	Programmable Clock and Status Display HW/SW Integration

- Independent development stage
- Team integration completed by next progress report
- Dynamic task divisions