ECE 511 Project Proposal - Fall 2014
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Our group proposes constructing a tracking solar panel array. Our “Sun-Chaser” will maximize the operation of the the solar panel array by following the sun. The MSP-430 will be used to read the voltages being generated by two solar panels oriented slightly askew from each other. If the readings from the panels are different, then that condition indicates the sun is no longer pointing directly at the array. The MSP-430 will reposition the array until the readings match.

The hardware and features we plan to use are:

1. 2x Solar Panel - with a voltage probe circuit feeding the A/D on the MSP

2. DC Motor - controlled through an H-bridge and used to move the sun-chaser in azimuth

3. 4x 7-segment display - will display the current voltage generated in tenths for each of 2 solar panels. Will be connected to the MSP-430 using 4 multiplexed registers.

4. Digital compass - The MSP-430 will read heading values over a serial interface and store them. The values will be used to record the rising angle of the sun in the morning. After the sun sets, the MSP-430 will move the device back to the rising angle in preparation for the morning.

5. Timers - Will be used to sleep the MSP-430 in between reading the solar panel voltages. Since the sun moves rather slowly, sleeping will save energy.

6. Photoresistor - Will sense when the sun has set (or is blocked) and turn off the 7-segment displays and stop reading the panel voltage to save energy.