Self-Sustaining, Solar Power Robot

Bi-Weekly Report

Accomplishments

During the first few weeks of the project, we were able to accomplish a number of goals which we considered important.

1. Learned how to cooperate as a team
    - Split tasks into smaller groups
    - Researched and reported findings to each other
    - Helped us to get acquainted with working styles of team members
2. Create proposal
    - Allowed us to better understand requirements of the project
    - Created questions we needed to get answered
    - Presented to class
3. Created parts list
    - Picked out major components necessary for project:
        - Robot (Boe Bot)
            - Microcontroller
            - Able to expand
        - Solar panels
            - High efficiency 1”x1” individual cells
        - Batteries
            - Small NiMH that holds sufficient charge
            - Multiple to create custom pack
        - Battery Charge Circuitry
            - Use controller to prevent overcharging, reverse current
        - Photo Sensors
            - Basic sensors in arrangement over panels
            - 3 or 4 to get direction
4. Simple methods for implementing charging
    - Hook up panels to battery directly - original idea, now scrapped
    - Use charge controller as intermediary for safety
5. Different methods to check charge on batteries
    - Use meter to get readings
    - Resistor in parallel with batteries to get charge reading

Issues

There were also a number of issues that we encountered which must be resolved to make further progress.

1. Charge circuitry uncertain
    - Must create safe way to charge

    - Using TI charge controller seems like right path, must create circuit
2. Voltage/capacity measurement method
    - Must create detailed design of charge measurement
    - Might be able to use charge controller, but may need to manually create circuit
3. What should the interesting behavior be?
    - Chases car with LED
    - Sing a song

Goals

A number of goals will help to direct our foreword movement in the project. Since goals are not separated from the issues, a few of the following are obvious.

1. Design charge control circuitry
2. Design detailed charge measurement method
3. Decide interesting behavior
4. Get parts
5. Test parts for specs and tolerances