Self-Sustaining, Solar Power Robot

Bi-Weekly Report

Accomplishments

- Mounted and soldered all 42 solar cells
- Mounted and tested the sonar module
- Mounted the six-panel LED
- Mounted two Ethernet inserts on the perf board
- Interfaced all of the components on the overhead perf board via two Ethernet cables
- Added simple object avoidance to our searching algorithm
- Improved our light searching algorithm
- Mounted and interfaced a relay for enabling charging (relay is "normally off" for power and safety reasons)
- Added diodes to our solar charge circuit to protect the solar panels
- Hard wired (i.e. soldered) and cleaned up all of the circuits on the breadboard and the perf board

Issues

- Solar cell outputs vary greatly in different lighting
- Solar array is very fragile; we have broken two cells and are out of spares!
- Our solar panels are not producing nearly the current we had anticipated; the heat from the work light quickly decreases their ability to generate useful power
- Our code has breached 400+ lines and is becoming difficult to manage in a language as primitive as pbasic; no support for concurrent threads; also we are running out of ram storage for variables (only 26 bytes available and we have used 18)

Goals

- Improve power output of solar array, possibly by mounting a fan on the work light to cool the array
- Improve algorithms for light seeking and object avoidance
- Brainstorm a more interesting non-light seeking behavior
- Determine and optimal charge/play time ratio