Electrical Team Members: Rhett Chrysler (Captain), Petr Markov, and Josh Verdell
Mechanical Team Member: Scott McGill
Advisor: Dr. Jeff McCullough

Objectives
- Solar panel analysis and power harvesting
- Very-low power computing
- Efficient electrical to mechanical conversion and propulsion
- Problem solving, algorithm development, and course strategy

Rules
- No batteries or fuel may be used as a source of energy
- 250 Watt Halogen Lamps are mounted as energy sources
- Must charge and travel around the track within a three minute time limit
- Passing through and over obstacles provides bonus points

Hardware Design
- Single-crystal silicon solar cells were used for power harvesting. Each cell was 4cm x 5cm and approximately 0.014" thick with a power output of 0.5V, 500mA per cell.
- Small, high efficiency DC motors were used for the drive system which included interchangeable gear boxes for adjustments in torque and speed.
- A capacitor bank was used to store the collected solar energy serving as a replacement for traditional batteries.

Playing Field
- Ramp:
  - Each of the 3 faces are 12" long by 16" wide and the angles are 30 degrees
- Height obstacle:
  - 16" wide on the inside, 8" tall on the inside
- Width obstacle:
  - 8" wide on the inside

Scoring
- 1 point - move the vehicle completely past the starting line
- 5 points - each lap completed
- 25 points - each height obstacle completed
- 25 points - each length obstacle completed
- 50 points - each ramp obstacle completed

Control Design
- Source Code written in C language using the CodevisionAVR compiler and implemented with an Atmel AVR microprocessor.
- Ultrasonic range finders served as the basis of the navigation system sampled at low rate for minimum power consumption.

Results
- The robot was able to travel an average of two and a half laps scoring 161 points per three minute run.
- After three rounds of competition, the team finished 9th place out of 43 teams.