

Solar Tracking System

Project Description: Solar systems such as photovoltaic panels and solar dishes convert solar energy to electricity. Given the variable light direction throughout the day, an automatic tracking system which adjust the panel or dish orientation toward the sun is of utmost importance in maximizing the amount of harvested energy.

You are asked to design a prototype of such a solar tracker system. The payload is a **black plexiglass of 200x100x5mm dimension** to mimic the panel. The light source is assumed to be moving inside the **work space** represented by the gray area as shown in the figure.

There are two modes of operation:

- **Locating mode:** When the system is turned on, the tracker must align with the light source which could be anywhere within the work space in less than **3 seconds**.
- **Tracking mode:** The tracker should be able to track the light source which could move within the work space with a **maximum angular speed of 2 rad/s**.

Deliverables:

- Working prototype
- Report consisting of:
 - Basic design
 - Detailed design
 - Schematics
 - Engineering drawings
 - Firmware code
- Presentation

