

Workshop Outline for Beam Robotics

Robosoft Systems @brings to you Swarm Robotics © an intermediate robotics workshop designed & manufactured by Robosoft Systems ® . This workshop presents a unique combination of mobile robots, embedded system design . The main focus of this workshop is to introduce algorithms for line following ,obstacle avoiding, grid navigation and synchronising multiple robots using various methods of communication.

The workshop syllabus includes...

Day 1:

Theory session: 2Hrs

Hands on session: 4 Hrs

Testing of various solar engine: 1Hrs

(Excluding lunch & other breaks)



Hands on session

Familiarization with the kit & bot (approx 1 Hrs)

Participants will check out all the components provided by us & try to identify each one of them.

Exploring electronic components (30 min)

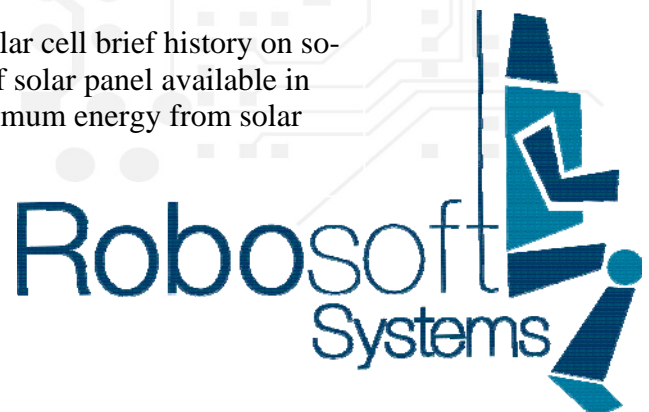
This session is very unique as it is both theory & lab session will be conducted together for effective understanding as the participants will be going through the electronics component provide the functioning of the component will be explain to the participant while they can concur with the tutor by use of bread board & testing them

Motor (approx 30 mins)

Participants will attach wheels to the motor on the kit with the solar panel. Here they will be thought about the pager motor and why it is used. As the pager motors are core less motor, enough emphasis will be given to explain on the parameters to be taken into consideration while selecting a motor for solar robotics.

Solar cell (approx 30 mins)

Participants will be thought about the functioning of the solar cell brief history on solar technology. They will be thought about various types of solar panel available in market and basic comparison of each. How to extract maximum energy from solar cell by various methods.



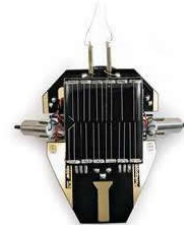
Building and testing of 2 Solar Engine on the robot main board (approx 2.5 Hrs)

Now participants start building solar engine. Here the tutor will help and explain the participants on building and understanding various types of engine by help of circuit diagram displayed on projector. After they have made the engine they will get to test each engine before they start to make other one. (Motors and solar panel will be common components in the solar robot and the engine development kit)



End of day one

Participants will perform experiments as home work at home



Day 2

Building a Photovore (approx 2 Hrs)

Here we will discuss the working of a Photovore, a solar-powered, light-seeking, obstacle-avoiding robot. This Photovore is a capable little robot that is powered entirely by solar energy, has light-sensing directional optics (eyes), and a pair of obstacle avoidance sensors. The pair of infrared detectors on the robot give it a very directed phototropic or light-seeking behavior, making it trace outlines around shadows, and be attracted to the brightest sources of light.

After this basic discussion the participants will be shown how to use one of the solar engines discussed above with the light sensing and obstacle avoiding circuitry

Open group discussion (approx 2 Hrs)

Participant will be cleared with all their doubts regarding the experiments which they had performed at home or in class and clear their queries about the kit & the CD content provided to them.

If some of the participants who could not complete rigging up their entire solar engine we will be covered in this session.

Here they will also be explained about the various competition being conducted in Beam Robotics all over India.

Running the robot photo-popper (approx 1 Hrs)

The participant will attach the motors and solar cell on the solar robot and try to run it in the sun (depends on weather) also in 500 watts halogen light