

Space Dog

Theme: Aerospace

The primary goal for the project is to design a space rover to overcome difficulties in logistics and delay in operation. Furthermore, this project also aims to address a lack of companionship for astronauts during long periods of space expedition.

The three core aspects are perception, reasoning and actuation. By utilizing an ultrasonic sensor and a pair of photoresistors, our rover is able to prevent obstacle collision and navigate it towards light. Additionally, our rover implements a PID control loop where the error is the difference in voltage between the two photoresistors, and that allows us to determine which direction to steer in. Finally, this allows our rover to function as convenient as well as conservation. It reduces the mass an astronaut may need to carry as well as reduces the amount of potential gear left behind, reducing pollution.

On startup, the robot will attempt to lock onto a light source by rotating in circles until a certain light threshold is detected by the photoresistors. Following that, our path planning algorithm that incorporates the ultrasonic sensor and photoresistors kicks in and allows it to follow said light source.

Video Demo:

https://drive.google.com/file/d/1tOKhiTIC0Hi3Hmj8hL0Bkb0xA3tErlf_/view?usp=drive_link