Pueblo Community College

TDAS

Space Grant Rover Challenge

ABSTRACT:
The purpose of this project is to design and build a functioning rover that is capable of reaching a beacon in unlevel terrain. The basic design of the rover primarily consists of the body, arms, and wheels. All of the major components of the rover are to be 3-D printed with a low quantity of infill. Although the rover had not yet been entirely assembled, there is an intention to add durability as well as mobility to the rover through the use of suspension systems on the arms of the rover. It is intended that the rover is able to receive transmitted waves from the beacon and to move towards it through the use of specially programmed stepper motors. If the function of the rover operates ideally, as designed, then it would maintain a large degree of movement and should approach the beacon despite a relatively small size with primarily plastic components.

MISSION OVERVIEW:
To build and design a functioning rover using 3-D printed parts.
To program rover parts in order to receive beacon transmissions
To achieve efficient rpm of rover through the sandy terrain

CHALLENGES ENCOUNTERED:
- Hardware malfunction (improper motors)
- Coding errors
- Time constraints
- Turning and motion

DESIGN:

HARDWARE
- Stepper Motors (4)
- Arduino Uno
- Motor Driver
- 7.4V Battery
- Xbee
- Accelerometer
- IR sensors