

Shared Knowledge of SLRC Competitors

Overall Task: -

Robots are designed to achieve various tasks. Every robotic competition give task to competitors. Teams which do less errors win competitions. Task of a competition divided among group members according to their desires. However overall method which is used to complete given task is depends on the ideas given by the team members. Main task can be broken down to subtask and the robot also can be divided to such as actuators, sensors, PCBs, and programme. Both two team said that they divide everything among group members effectively.

Root Design: -

Both two teams have held brainstorming session to get an idea about ruff idea. They have decided about number of actuators mechanisms, overall size of the robot, processing unit and power supply unit. Robot design are divided to PCB design, Hardware design, Programming, maze solving algorithm.

Hardware Design: -

After deciding basic design, the robot is designed with CAD software. They introduced many computers aided modelling software. Both teams have used SOLIDWORKS. Some 3D models can be downloaded through internet. Motors, servos, Arduino board can be downloaded. Grab CAD is a such a website. Team velox said that each part should check with prototype separately after don CAD modelling. They have redo this process several times for the arm mechanism. Circuit Breakers have designed each basic part separately and assemble sub parts. They have assembled each sub assembly to design CAD design of the robot.

Algorithm: -

Each team have design unique algorithm to achieve given task they have decided sensors according to their algorithm. As an example, team velox used only one coulure sensor considering cost effectiveness, but team circuit breakers used three colour sensor considering time efficiency. So, these to team have different algorithm to solve the maze. Algorithm also can be divided into subtasks. They introduced method to implement the code as a group using Microsoft visual studio code. Circuit breakers have used SMT board which is used for professional level application. Therefore, they have faced a lot of difficulties while seeking internet resources.

PCB Designing: -

Both two teams recommended Printed circuit boards to reduce number of jumpers. They designed double layer PCB. PCBs are designed computer aided software. They mount each component to the PCB and the MCU boards. They said that there is many professional software for PCB designing. Altium is recommended because it gives tool for make 3D model of pcb and assemble with SOLIDWORKS cad design.

Debugging: -

After completing robot, it should run several tests runs for tuning and error fixing. Both teams use displays, buzzer, and LED indicators to identify robot status. Before completing they have simulated their programmes using virtual platforms. PID tuning and other things done at this stage.

Conclusion: -

Full task can be completed by dividing into subtask. They said that everything should be done according to time frame. Team leader should lead the team to complete above task so, he must understand about every subtask. How ever they said we should learn from our failures as well as other persons failures.