Autonomous robots for transportation of inventory in a warehouse

1.   What are you planning to do? (Maximum 100 words)

The aim of our project is to automate the loading, unloading and transportation of inventory in a warehouse. These tasks will be allocated to a swarm of robots. The robots will then receive instruction when an object has to be unloaded and transported, and then will find the shortest distance to the destination. Then the inventory item will be carried by the robots to its destination.

2   How are you going to execute it ? (Maximum 100 words)

We are going to model the environment of a warehouse and then deploy some robots in the environment. We will keep track of the robots that are free and those that are not. When a new task comes in, it will be assigned to a free robot. It will then find the shortest path to the destination using a pathfinding algorithm. On its way, it will be able to detect obstacles i.e, walls and other robots using computer vision algorithms and then will choose an action that will help it to avoid the obstacle. It will unload the object once it reaches the destination.

3   What are the tools/components you require ? (Maximum 100 words)

The whole project can be simulated in CoppealiaSim. It is a robot simulator platform where each object in the simulated environment can be controlled. The simulator has a script interface to control almost all parts of the simulation. We will develop path-planning, obstacle avoidance algorithms and integrate it with the simulator by using the script interface. We will be using various python libraries like OpenCV for implementing the algorithms.

4   Have you started your work? If yes do you have any results? (Maximum 100 words)

Yes, we have modelled a sample environment for testing and implementing a path-planning algorithm. The algorithm is still a work in progress.

Group No. with names of Group members: GROUP 7

Aditya Shaji - adithya_b170218ec@nitc.ac.in
Anandhu C C - anandhu_b170292ec@nitc.ac.in
Asna P - asna_b170311ec@nitc.ac.in
Athul P - athul_b170509ec@nitc.ac.in

Name of Guide : Dr.Praveen Sankaran