

Robot Cooperation Through Stigmergic Communication

There are five agents having different programs which are moving through the network of robots. The functionalities of these five agents are as follows:

Agent 1: Whenever it finds a robot in state S0, it starts moving the robot forward until an obstacle is detected by the robot. As soon as it finds the obstacle, it makes the robot to turn towards WEST. After the robot turns to WEST, the agent again makes it to move forward in a straight line until the robot detects a black colour surface. At this point, the agent changes the state of the robot to S1 and moves away.

Agent 2: This agent catch holds of the robot in state S1. It makes the robot to move straight over the black surface. When the robot crosses the black surface to enter into the white surface, it makes the robot move forward 50 steps and then turns the robot towards NORTH. Beyond that the robot moves forward in a straight line till it detects an obstacle. At this point, the agent changes the state of the robot to S2 and moves away.

Agent3: This agent checks whether a robot is in state S2. If so, then it starts executing an obstacle avoidance algorithm till the robot goes away from the vicinity of the obstacle. After which, it aligns the robot towards NORTH. Further, it changes the state of the robot to S3 and moves away.

Agent4: This agent looks for a robot in state S3. After finding such a robot, it makes it to move forward in a straight line until a black surface is detected. On such detection, robots turns towards EAST. After turning, the agent starts executing a black line following algorithm. It continues to execute so until a yellow colour surface is detected. At this point, the agent changes the state of the robot to S4 and moves away.

Agent5: Agent 5 completes the last part of the puzzle. It gets a robot which is in state S4. It makes the robot to turn towards SOUTH. After turning, the robot moves in a straight line until an obstacle is detected. Once the obstacle is detected, it makes the robot to go near to the obstacle and grab it using claws. Further, the robot turns towards EAST, moves forward 50 steps and releases the object from its claws.