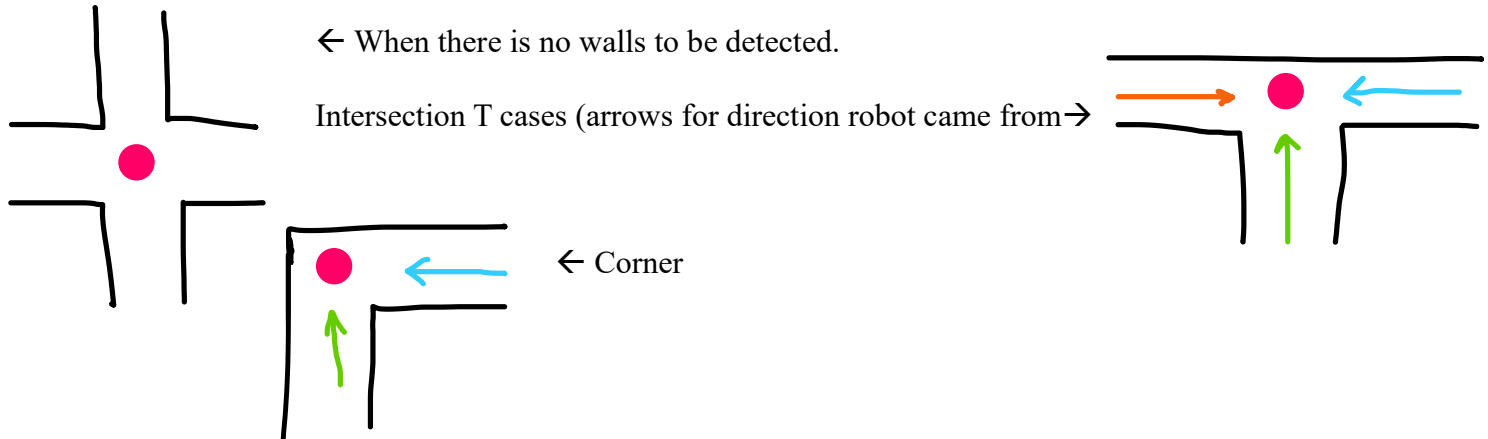


Brain Storming – CSCI Project

- Robot needs to go to all stations (stations = dead-ends), dead-ends have 3 walls and only 1 opening.
- If there are two walls then it is a passage
- If there are 3 walls then it is dead-end and light sensors need to store data for this specific station.
- This does not always apply



- An algorithm is needed, it should allow the robot to map out the maze and mark each dead-end.
- There are 9 maze-solving algorithms on the provided link.
- Might work algorithms:
 - Trémaux's Algorithm
 - Dead-end Filling (keeps track of dead-ends)
 - Recursive Algorithm
 - Maze-routing Algorithm
 - Shortest path Algorithm
 - Hand on Wall Rule (limit is that for the case of a "roundabout", the robot will keep looping this roundabout).
- Algorithms that will not work for this task:
 - Random mouse Algorithm (may not be implemented in Webots).
 - Multi-agent Maze-solving (more than one robot in the maze working together)

The dead-end filling algorithm fills all the dead-ends (so it stores them) and then finds the correct ways. It is not useful to solve an unknown maze as this method looks at the entire maze at once. For this project, keeping track of the dead-end will be good. Upon closer inspection of the algorithm, it was noticed that at each step of the process preserves the topology of the maze, the result cannot contain any dead-ends so it will not stop soon. This method would be perfect for a maze with no loops as the one solution remains, otherwise, every possible solution remains and cannot eliminate any possibility.