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C951

NIP2 TASK 2: Disaster Relief Robot

A. The disaster recovery environment I have chosen is a major earthquake that has struck a major city. This scene is of a mostly intact house. I have added both walls and a sofa to the scene as obstacles.

B. It is bubbleRobertoni’s job to survey structures for stranded civilians. buubleRobertoni’s objective in this scene is to find the man stranded in the back room and film him using an attached 360-degree camera that streams video back to rescue crews.

C. Proximity sensors were added to bubbleRobertoni’s left and right sides. This helps bubbleRobertoni to navigate the environment using the walls and cover the entire floor, finding all civilians in need.

D. While bubbleRobertoni is essentially “blind”, it can be aware of its proximity to and follow walls. bubbleRobertoni does not “remember” its environment but is “aware” of its surroundings at any given moment.

E.

* Reasoning: bubbleRobertoni moves forward until a wall is detected. It will then turn to hug the wall on its right side by default. bubbleRobertoni will follow the wall if it can, even around corners.
* Knowledge Representation: While bubbleRobertoni does not “remember” anything, it can sense walls or objects on its nose, left, and right sides.
* Uncertainty: bubbleRobertoni never “knows” what is coming in front of it, or that there is a wall to hug on the left or right before it gets there. Sensors help bubbleRobertoni “know” when it is close to an object or wall on its front, right, and left sides and adjust.
* Intelligence: bubbleRobertoni overcomes uncertainties in each moment by carefully adjusting itself using predefined routines(reasoning) based on its proximity(knowledge) to objects or walls.

F. Reinforced learning could be implemented into bubbleRobertoni, allowing it better make decisions about how to complete its job, including how to drive more straight along walls and rely less on the walls to cover more ground. Advanced search algorithms, in addition to more sensors and cameras, could be implemented to help bubbleRobertoni “see” and navigate the environment more freely and intelligently.

G. Both the CoppeliaSim scene and bubbleRobertoni’s script will be submitted alongside this document.

H. A link to the Panopto video recording was provided in the Links submission option of the assignment page. For redundancy, the link will also be included below:

https://wgu.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=4f8340fd-10af-4779-8885-af0001153350

I. No outside sources were quoted, paraphrased, or summarized.

J. I have demonstrated professional communication in the content and presentation of my submission.