Autonomous Tour Guide Proposal

Project group 6

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The project proposal for group 6 is for a robot that can autonomously discover the layout of a new location, and then act as a guide for the human wearing the linked smart watch. This would be a take on an autonomous search and rescue or reconnaissance drone. The idea would be that the controller would wear the linked smartwatch, release the robot into a new building or location to search and map. After sufficient time the controller would be able to ask the watch to take him or her to a particular location within the building. The robot would then find its way back to the user, and would lead the user to the desired location.

The robot would be controlled by a smartphone. The smartphone would send a continuous stream of images to the backend analytics server. The backend analytics server would attempt to compare these images to online image repositories in an attempt to identify the objects and locations in the images. As objects and locations are identified, their location will be saved. After a sufficient area has been mapped, and some objects and locations have been identified, the user's smartwatch will be notified.

Once notified that the area has been sufficiently mapped, the user can verbally ask the smartwatch to take the user to one of the identified objects or locations. The smartwatch will use a direct link to talk with the robot using wifi or bluetooth or some other useable link. Using location and signal strength information, the robot will attempt to find the wearer of the smartwatch. Once the robot has located the wearer of the smartwatch, the robot will audibly inform the user. Once the user then gives the verbal command to start, the robot will begin to lead the user to the desired object or location within the building.

An example could be to utilize the robot to find a trapped person within an office building after an earthquake. The robot could be released to map the remaining structure. If a human body is identified, the user could ask the robot to lead the user and a rescue team to the human body. Or a more simplified example could be to release the robot into a new house, and then have the robot lead the user to the refrigerator so the user could get a drink.

This project is a very large and complex undertaking, and it is anticipated that it will not be able to be completed in full by the end of the semester. However, this project will allow the team to gain exposure to numerous new technologies with a focus on big data analytics and wearable device and robotics integrations. The work will be prioritized to focus on the important big data analytics and device integrations, with additional features given lower priority.

Bibliography: