Problem statement submission for Senior Design 2019 – 2020

Author / Team members and task:

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3) _Brock Stechschulte _(Software Developer)__

Project Name:

The Assistant Rover

Funding Source:

Ourselves

State the problem:

For those who are unfortunately restricted with their mobility, they can often find it difficult to reach areas of their house for needed items.

Background information:

Anthony and I both have family members who are or have been disabled and are not able to reach different areas of their house. It would be very fulfilling as engineers, to build a rover that could navigate a home using lines placed on the floor to get from point A to point B. The rover will be equipped with sensors that can recognize the lines in order to follow them, as well as proximity sensors that can avoid obstacles on the ground such as clothes and random objects. When the rover reaches its designated room, it will be able to tell the color of different objects (each representing different objects able to be retrieved) and drive up to them. This will showcase its retrieval ability. Then it will follow the lines back to the user representing the delivery of the requested object. This rover will be 3D printed to make initial costs low and broken parts easily replaced.

Benefit of addressing this problem:

The main benefits of solving this problem would be making someone's home safer for them by allowing this rover to navigate and retrieve trivial things that most of us commonly take for granted. If you are disabled and have a tough time moving around, getting up to get your medicine or even a glass of water can be a dangerous task. Another safety aspect would be if you are in need of your medicine and cannot get up to move, this robot could bring this life saving object right to you. Labor saving is another benefit of this product. This could be for a person who just wants the convenience of having a robot that can navigate their house and retrieve common objects. This product will also be cost effective due to the 3D designed and printed chasse of the rover.

MET topics that will be showcased in this project:

Strength of Materials, Robotics, Motion Control, Logic Control, Circuits, Models, Software Development