

1.) Purpose

- a. The reason I decided to do this study is to make a robot navigate its environment autonomously.
- b. The project is important because there are some jobs that are difficult and require full autonomy.
- c. An autonomous robot can have a big impact on a community by cleaning streets at night which would prevent infectious germs.

2.) Problem

- a. The process of training a Neural Network to understand city streets. Maybe having several different trained Neural Nets to function together in completing one task.
- b. NYC city and other big city streets are not pleasant for early morning commuters due to late night drinkers and trash dumps.

3.) Methods used

- a. Janitors in public restrooms with heavy traffic improve the quality of the facilities along roadways.
- b. In my robot project I used a mobile robot with an arm to pick up objects in a room. The robot used two Neural Nets. One net navigated the room while the other picked up objects and placed them into a bin.

4.) Results

- a. Using a robot in a simulated environment, I was able to train two neural nets to pick up an object and place it into a container. Using a similar method a robot can be trained to use different objects to clean an environment such as big city streets and subways.

5.) Conclusion

- a. This study definitively answers the question of being able to train a robot to do a job that would improve the quality of life in big cities.