**GNG1103 Project**

Group A12

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The purpose of this document is to determine and organize potential needs for a beach cleaning robot known as Bowie. Currently Bowie operates primarily in the Ottawa region, and is being tested regularly to see what can be improved. Because one of the primary goals of the organization that makes Bowie is to keep costs down, and production as simple as possible, our goal, is to determine what we as a group can provide to make Bowie more effective while keeping costs low and production simple.

Currently Bowie is at a stage where he can semi-effectively complete his job within a small area. In order to scale up his design to be more effective, some significant additions/modifications should be made. Amongst ourselves, we agreed upon a small handful of potential needs that could be filled to allow bowie and other similar robots to clean beaches across Ottawa, and eventually the entire nation.

An improvement that we could see being made to Bowie, is being able to traverse through bodies of water. The reasoning for this, is because a significant amount of waste is left in the ocean and other bodies of water. If Bowie was able to work above water, it could potentially have a significant positive impact on the surrounding environment

Another potential improvement we could provide is in the way Bowie observes and interacts with the surrounding environment. Currently, Bowie is very slow when it comes to observing the environment around him and in order to increase his efficiency, it is important to aim to improve upon the technology already in place.

As Bowie is intended to be a community robot, there is a good reason to provide Bowie with a place to stay overnight on the beaches that it will be patrolling. This could potentially allow Bowie to be more self-sufficient, as he wouldn’t need as much human interaction to continue operating for long periods of time.

Bowie currently doesn’t have a way to recognize nearby wildlife without external help, and adding such a mechanism would let bowie operate more effectively on his own. This could potentially save Bowie from damage done from animals, potentially saving on the cost. It could also stop Bowie from hurting surrounding wildlife.

Allowing Bowie to operate at night could allow Bowie to operate during a time when less human activity could hinder his ability to perform his job.

Bowie currently needs a lot of assistance to continue operating for long periods of time. From getting stuck frequently, to replacing batteries, there is a lot of room for improvement in that sense. As such, there is a need to make Bowie more self-sufficient.

**Problem Statement:**

With Bowie not being able to operate at night or being able to fully operate 24/7 without the aid of humans, There is a need to make Bowie able to operate with less human interaction, provide better reading of his surroundings and improve upon its interactions with the community around him.