LawnBot: Affordable Autonomous Lawnmower

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Abstract

Consumer lawn mowers available for purchase all are burdened by their high starting investment cost, unexpected costs of maintenance, as well as being difficult to use on rough uneven terrain. The objective of this project is to design and construct an autonomous robotic lawn mower that will utilize an internal system to detect the boundaries of the yard, and mow the lawn at consistent levels, regardless of terrain. Autonomous vehicles have seen a rise as Artificial Intelligence (AI) models have begun training on real-world data sets. These systems can also translate to an autonomous system for lawn mowing as well, using user inputted data to act precisely. This project intends to develop a high powered lawn mower for a fraction of the cost. Through the use of radar and different proximity sensors located around the robot, the project will be controlled via an automated ground station software that will run as needed as well as an option to be remotely operated. The robot will be given either a set of instructions by the user to perform its task or be given a predefined setting and execute that function using machine learning modeling handled by the microcontroller. In addition, the lawn mower will be lightweight and portable in order to improve efficiency and decrease potential labor costs. The overall intention of this project is to create an autonomous lawn mower within a constrained budget of $500 and analyze the benefits and constraints of its usage compared to consumer models.

A block containing a list

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- **Mauris tempor** risus nulla, sed ornare
- **Libero tincidunt** a duis congue vitae
- **Dui ac pretium** morbi justo neque, ullamcorper

Eget augue porta, bibendum venenatis tortor.

A highlighted block

This block catches your eye, so **important stuff** should probably go here.

- **Fusce dapibus tellus** vel tellus semper finibus. In consequat, nibh sed mattis luctus, augue diam fermentum lectus.
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Aenean tincidunt r

A block containing an enumerated list

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1. **Morbi mauris purus**, egestas at vehicula et, convallis accumsan orci. Orci varius natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.
2. **Cras vehicula blandit urna ut maximus**. Aliquam blandit nec massa ac sollicitudin. Curabitur cursus, metus nec imperdiet bibendum, velit lectus faucibus dolor, quis gravida metus mauris gravida turpis.
3. **Vestibulum et massa diam**. Phasellus fermentum augue non nulla accumsan, non rhoncus lectus condimentum.

Fusce aliquam magna velit

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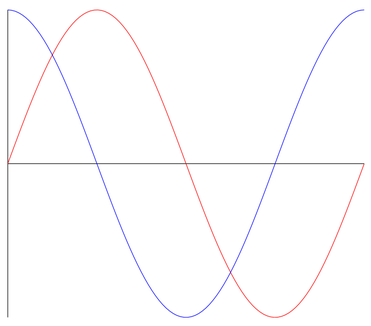

Figure 1. Another figure caption.

Nam cursus consequat egestas

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A highlighted block containing some math

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$$\int_{-\infty}^{\infty} e^{-x^2}\,dx = \sqrt{\pi}$$

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A heading inside a block

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Another heading inside a block

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First column	Second column	Third column	Fourth
Foo	13.37	384,394	α
Bar	2.17	1,392	β
Baz	3.14	83,742	δ
Qux	7.59	974	γ

Table 1. A table caption.

References

[1] Claude E. Shannon.
A mathematical theory of communication.
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