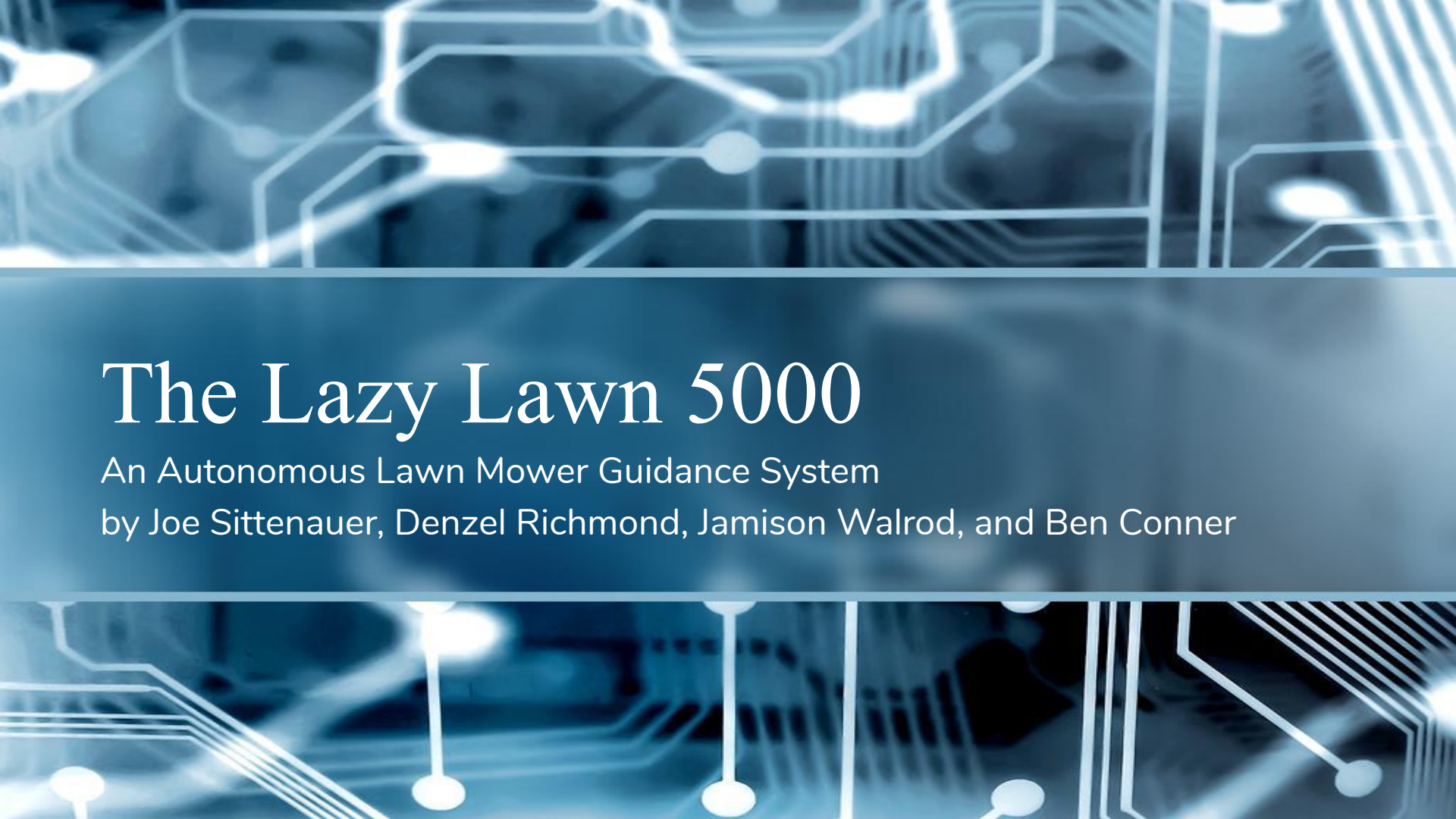

The Lazy Lawn 5000

An Autonomous Lawn Mower Guidance System

by Joe Sittenauer, Denzel Richmond, Jamison Walrod, and Ben Conner

What Is It?

- A mesmerizing device that will have you sitting back, enjoying your weekends, instead of having to mow the lawn.
- A sensation sweeping the galaxy to compete with other Roomba lawn mowers.

What Needed to Happen?

Design Requirements - Part 1

- Cost up to $1000, but no more than $1500
- Autonomous/move independently
- Sensors need to be able to detect the wire

Design Requirements - Part 2

- Components need to fit to the lawn mower
- Easy access kill switch
- Long battery life
- Capability of moving on rough terrain

What Could Have Happened?

Alternative Designs

- Infrared sensors
- GPS location
- Visual tracking
- Electric lawn mower

What Did Happen?

Software

- Python 3
- Autodesk Inventor
- Cura

Hardware

- Raspberry Pi 3 B+
- Elderly lawn mower
- Encoders
- Motor drivers
- Inductive wire sensor

Video 1

Design Issues

- The stop button if pressed again after it is stopped will go at full speed.
- The sensors are hyper or hypo sensitive and will go off at will. Leading to false positives and negatives.
- The raspberry pi will also randomly decide to jitter, to resolve it must be rebooted.

What Could Be Done in the Future?

Post-Deployment

- Lazy Lawn 5000 kit in retail stores and online
- Varying mechanical parts per lawn mower model
- Assortment of replacement parts

Upgrades

- Storm cover
- LCD display
- Could be redone in C instead of python.
- Mower engine should charge the battery