FAMU-FSU College of Engineering

Pole Health Detection Sensor
Florida Power and Light
Team 301

Overview

- Team Introduction
- Background
- Project Scope
- Customer Needs
- Design Requirements
- Functional Decomposition
- Next Steps
- Summary

Team Introduction

Corie Cates
Project Manager

Alonzo Russell
Hardware Engineer

Leonardo Velazquez
Software Engineer

Thomas Williams
Hardware Engineer

Background

- Current Pole Inspection Process

  - 18 Steps

  - Inspected every 8 years

  - 2 million poles in Florida

- Safety Concerns

  - Lineman incident

Project Scope

- Motivation:
  - Improve safety and reliability
  - Reduce resources needed to inspect poles
  - Increase inspection efficiency
- Goal:
  - Automate and simplify pole health
    inspection process

Customer Needs

1. Automate sounding process

2. Travel length of pole

3. Portable

4. Easy to use

Design Requirements

1.1 - Detect voids in southern pine wood utility pole

2.1 - Climb to the height of telecommunications line

2.2 - Keep tension while climbing

3.1 - Weigh less than 50 pounds

3.2 - Operated by a single person

4.1 - Rechargeable battery

4.2 - Display important information to user

4.3 - Kill button

Functional Decomposition

Level 0:

Module	Pole Health Detection Robot
Inputs	- Input Signal - Power - User Input
Outputs	- Void Detection - Movement
Functionality	Detect and measure internal decay in a pole

Functional Decomposition

Level 1:

| Module	Movement
Inputs	- User Input - Power
Outputs	Vertical Movement
Functionality	Take user input and traverse pole to specification utilizing vertical and rotational movement to create an accurate reading of pole health

Functional Decomposition

Level 1 Continued:

Module	Sensor
Inputs	- Power - Input Signal
Outputs	Void Detection
Functionality	Take audio input signal to detect voids in pole

Functional Decomposition
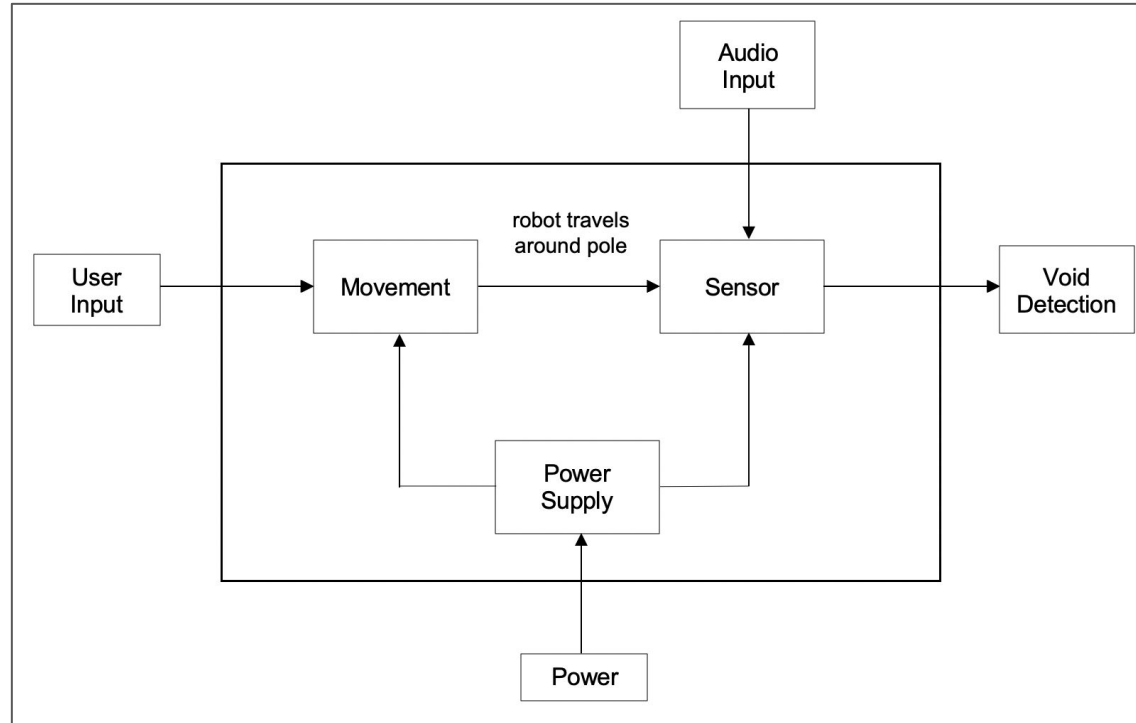
Next Steps

1. Concept Generation

2. Concept Selection & Design

3. Bill of Materials

4. Order Parts

5. Begin Building Prototype

6. Test and Revise Prototype

Summary

- Automating and simplifying the pole inspection process

- Working with ME Team to build pole climbing robot with health sensing

  capabilities

- Needs to be portable and easy to use

- Concept will be chosen by next presentation

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Questions?