FAMU/FSU College of Engineering

Department of Electrical and Computer Engineering

Functional Decomposition

Team 301 – FPL Pole Health Detection
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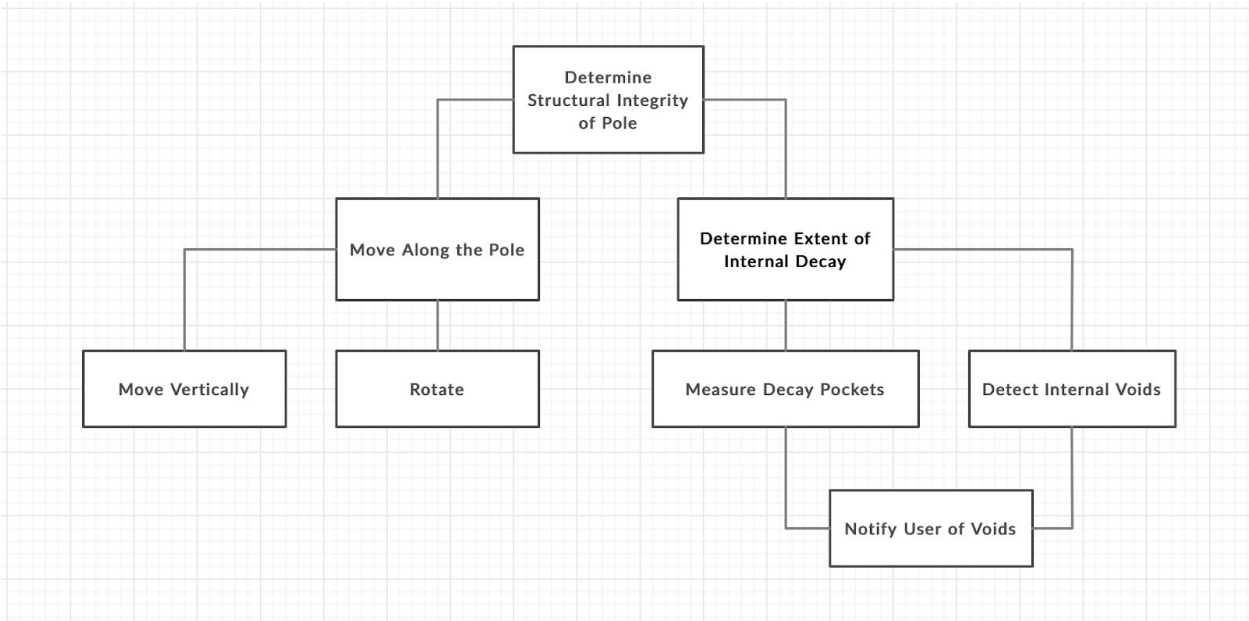
Date:
September 25, 2020

Introduction

The purpose of this project is to produce a pole climbing robot for FPL that has the ability to access the structural integrity of the utility pole. The robot is required to be able to climb the pole from ground level to the height of the telecommunication lines and test areas of the pole for voids in the wood. The following functions and modules were composed based on these requirements.

Function Tree

The following graphic includes the proposed functionality of the robot.

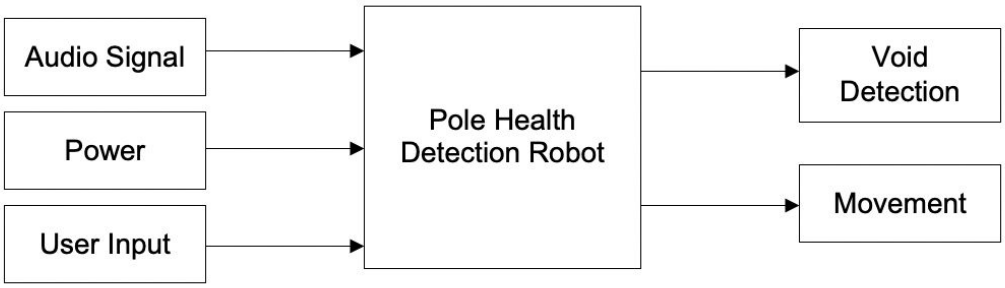


Decomposition Levels

The following tables state the inputs, outputs, and functionality of each proposed module. Additionally, the graphics demonstrate how each module relates to the inputs, outputs, and other modules.

Level 0:

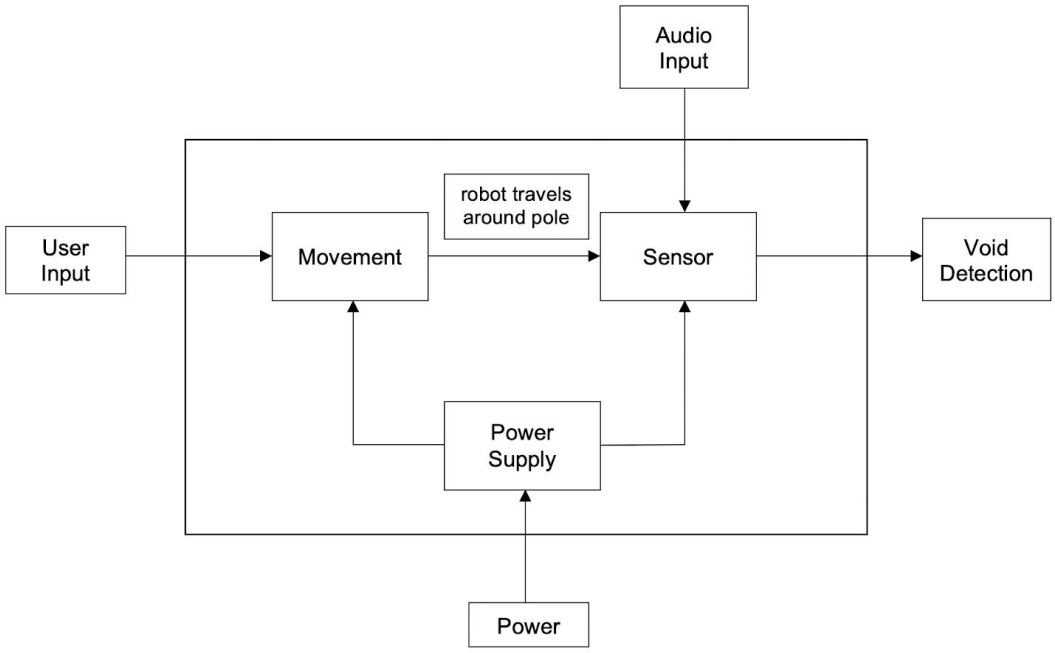
Module	Pole Health Detection Robot
Inputs	● Audio Input Signal ● Power ● User Input
Outputs	● Void Detection ● Movement
Functionality	Detect and measure internal decay in a pole



Level 1:

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

Module	Sensor
Inputs	• Power • Audio Input Signal
Outputs	• Void Detection
Functionality	Take audio input signal and detect voids in pole



Summary

This assignment serves as a way to map out the proposed design into levels of varying detail, as well as identifying the inputs and outputs of the design. These functions include taking in an audio input signal, user input, and power and then being able to move/rotate and detect void spots in the pole. As the robot travels around to different areas of the pole, the sensor will analyze the pole for voids and alert the user when these voids are detected. From there the user will be able to make an assessment whether or not the pole is healthy.