3/23/2017

Lecluse, Herm H.

mINOR i&r

Test Plan

Internet of Trash



Contents

[Introduction 3](#_Toc478559925)

[Hardware Requirements 3](#_Toc478559926)

[Scope 3](#_Toc478559927)

[Objectives and Tasks 3](#_Toc478559928)

[Objectives 3](#_Toc478559929)

[Tasks 3](#_Toc478559930)

[Pre-Testing 3](#_Toc478559931)

[Testing 3](#_Toc478559932)

[Post-Testing 5](#_Toc478559933)

[Control Procedures 5](#_Toc478559934)

# Introduction

This test plan contains information about how to test different sensors to calculate an accurate distance to a specific object. The sensors will be tested by mounting them to the top of a box. This box will then be filled with varying amounts of materials. The output of the sensors will then be collected and stored by an application. The criteria that the sensors are going to be tested on are:

* Accuracy of the measurement
* Reliability of different situations
* Consistency of the measurement
* Effects of different materials on the measurement

# Hardware Requirements

To execute these test, the following equipment is needed:

* Arduino Uno / The Things Uno
* Raspberry Pi 3
* Infrared Sensor
* Laser Sensor
* Ultra-sonic Sensor

# Scope

The test plan will not include any other sensors than listed in the introduction of this document. This test is purely to demonstrate a small scale use of the sensors in a prototype.

# Objectives and Tasks

## Objectives

This document describes the test process that will be performed for testing the distance measuring equipment for the Internet of Trash group and the test results. The following research question will be answered: What is the best way to measure a container’s fill-level?

## Tasks

### Pre-Testing

This task is the preparation of the test setup. A large cardboard box will be used to test the sensors in. The sensors will have to be connected to the Arduino and attached to the inside of the box. The Arduino will be connected to the Raspberry Pi.

### Testing

* Testing of the Laser sensor
* Testing of the Infra-red sensor
* Testing of the Ultra sonic sensor

The aforementioned criteria will be tested in the following manner:

* Accuracy will be tested by comparing the measured distance versus the actual distance to an object.
* Reliability will be tested by using different shapes of trash inside the box.
* Consistency will be tested by repeating every experiment multiple times.
* The effects of different materials will be tested by using different materials to simulate trash. These materials are paper, glass, tin cans, plastic, wood and cotton clothing. A test will also be performed with nothing in the box as a control test.

### Post-Testing

In this task, the tests results will be reviewed with these from the control test. Evaluation takes place here as well. The result of the test will be determined here. The sensor with the most reliable results will be chosen. The research question will be answered in this phase.

# Control Procedures

The results of these tests will be stored and monitored.

Mike Schatorjé will keep an eye out for this reporting. He is responsible for this activity, as in this deliverable will show the results and what kind of problems occurred during the testing.