

Memo

To: Professor Pisano
From: Katharina Golder, Bryan James, Robert Ling, Yanni Pang
Team: 10: Shazamboni
Date: 4/12/2022
Subject: Final Test Report

1.0 Introduction

There was an initial final testing for Team 10 Shazamboni on Tuesday, April 5th, and a follow-up retest of the final testing on Tuesday, April 12th.

The same two tests were shown on both days. The first test involved driving the Shazamboni with the Shaz App. The Shaz App was connected to the Shazamboni via an Ad Hoc and driven via a user interface in the app. The user was able to control the machine and maneuver the device forwards, backwards, through turns, and full 360 degree spins. The user was also able to see a live stream video in the Shaz App.

The second test consisted of two ultrasonic sensors working to stop the machine when it is too close to obstacles. When the user controls the vehicle with the Shaz App, the machine would stop itself when an object is detected by either of the ultrasonic sensors and turn the other way.

2.0 Equipment and Setup

2.1 Driving the Shazamboni with Shaz App

The Shazamboni came fully assembled with the 12V 24Ah LiFePO4 battery, two working ultrasonic sensors, two rear 12V 200 RPM DC gear motors, camera, and the various fuses, 470 Ω and 330 Ω resistors, and wires in order for the system to function. Additionally, the Shaz App was already running on the Android phone using *Android Studio* ready for the user to use and control the Shazamboni.

2.2 Ultrasonic Sensor testing with Driving

The setup for the second test is exactly the same as the setup for the first test: Driving the Shazamboni with Shaz App.

3.0 Measurements

2.1 Driving the Shazamboni with Shaz App

Description	Did it work? (y/n)
The live stream video is displayed on the Shaz App	Y
The Shazamboni can move forward via the Shaz App's joystick	Y
The Shazamboni can move backward via the Shaz App's joystick	Y
The Shazamboni can turn left via the Shaz App's joystick	Y
The Shazamboni can turn right via the Shaz App's joystick	Y

2.2 Ultrasonic Sensor testing with Driving

Description	Did it work? (y/n)
The Shazamboni stops when detecting an object within 20 cm	Y
The Shazamboni reverses direction when in an obstacle is detected	Y
The output of the script shows detection working	Y

4.0 Conclusions

Overall, the final testing was successful. The team was able to show the Shazamboni being controlled by the Shaz App successfully. All the driving features were shown – the Shazamboni was able to move forward, backward, turn, and spin by using the joystick on the Shaz App. The live stream video from the machine was also streamed onto the app with very minimal lag.

Additionally, the implementation of both ultrasonic sensors was successful. When the Shazamboni was driven up to walls and obstacles, the machine would stop itself when it detected an object, reverse itself, and stop again. In short, all the features of the electrical and computer components of the Shazamboni were achieved and shown working correctly during the final testing.