



## **EDITORIAL TEAM**

### **Patrons**

Assoc. Prof. Dr. Hj. Abdol Samad Nawi

Assoc. Prof. Dr. Khlipah Ibrahim

### **Advisor**

Ir. Dr. Zulzilawati Jusoh

### **Chief Editor**

Nur Idawati Md Enzai

### **Managing Editor**

Dayana Kamaruzaman

### **Editors**

Fatimah Nur Mohd Redzwan

Mazratul Firdaus Mohd Zin

Nurbaiti Wahid

Syila Izawana Ismail

Nooradzianie Muhammad Zin

Najwa Nasuha Mahzan

Ku Siti Syahidah Binti Ku Mohd Noh

Nur Syahirah Kamarozaman



## Extended Abstract FYP projects

### Volume 1 (A1 – A13) 2019

**A1**

#### **VACUUM CLEANER ROBOTIC CAR**

*Nor Ainun Syafiqah Mohd Sazidin, Muhammad Adib Abd Halim, Muhammad Azri Firdaus Mohd Zulkifli*

page 2

**A2**

#### **SAFF STRAIGHT LINE DETECTOR**

*Muhammad Anas B. Mohd Rosli, 'Iffah Athirah Bt. Zaidi, Akmal Najihah Bt. Ibrahim, Dr. Mohd Aziz B. Aris*

page 4

**A4**

#### **CLOUD CONTROLLED WATERING SYSTEM USING BLYNK APPLICATION**

*Mohamad Amirul Farhan Bin Abu Bakar, Luqman Amar Bin Abdul Nasir, Nur Afifah Binti Ali, Wan Ahmad Khusiari Bin Wan Chek*

page 6

**A6**

#### **FOOTSTEP POWER GENERATION**

*Adriana Bt Noh, Muhammad Amir Syakir bin Mohammad Nor, Muhammad Arif bin Rosli, Dr. Mohd Aziz bin Aris*

page 8

**A7**

#### **MOVEMENT SENSOR FAUCET**

*Muhammad Idham Bin Kamarulzaman, Zulhanif Bin Rozali,, Muhammad Iqmal Bin Rosely*

page 10

**A10**

#### **AUTOMATIC WHITEBOARD CLEANER**

*Muhammad Idham Bin Abd Aziz, Muhammad Huzairi Bin Zainuddin, Nur Maizatul Ashikin Bt Mohamed Sukor Mazratul Firdaus Bt Mohd Zain*

page 12

**A11**

#### **SMART CONVEYOR**

*W. M. W. I. W. Ramli, N. A. Bharu, N. F. Zulkefli*

page 14

**A13**

#### **SMART GRASS CUTTER**

*Muhammad Hifzhan Bin Ruslan, Muhammad Ammar Irfan Bin Maznan, Yusri Aizat Bin Mohd Yasir Afkam*

page 16

# SAFF STRAIGHT LINE DETECTOR

Muhammad Anas B. Mohd Rosli, 'Iffah Athirah Bt. Zaidi, Akmal Najihah Bt. Ibrahim, Dr. Mohd Aziz B. Aris  
*Faculty of Electrical Engineering,  
Universiti Teknologi Mara Cawangan Terengganu, Kampus Dungun  
23000 Dungun, Terengganu*

**Abstract-** Saff is all about the important aspect before starting the Solat. But nowadays, most of the Muslim people do not take care enough about the straightness of the Saff before began the Solat. To solve this problem, we came up with the idea to produce a device to enlighten the Muslim people about the Saff. Saff Straight Line Detector is being produce to help the user to know whether the Saff already straight or not. The main component of the Saff detector are IR sensor, Led, potentiometer, IC LM358 and Arduino Uno. IR sensor is the most important component since it will detect the users' feet and send the signal to the LED. When any obstacle is being near to the IR sensor, the amount of voltage at the resistor increase. IC LM358 is used to compare the sensor and references voltages. The input will turn on when the voltage at the non-inverting input is more than the voltage at inverting input of the IC.

**Keywords** - IR sensor, Potentiometer, IC LM358, Arduino (UNO) controller

## INTRODUCTION

Currently, no proper line indicator for Saff before Solat has been proposed. So, therefore the project is being produce. Most 'Imam' and 'makmum' do not care about the Saff alignment, so with this project we can awaken them about it. The main objective of this project is to indicate the Saff in proper line before Solat. This is to make it easier for the user to make sure the Saff already straight, without the need to check it several times. This device will inform the user when the Saff is already in a straight line by refer to the LED. The infrared sensor will on first, and the sensor will detect the obstacle. When it senses the obstacle, the LED will light up the red color. This will happen when the obstacle is all in the same distance. Then it will specify whether the Saff in straight line or not. The proper line of Saff can be indicate when all the LED is light up. For the scope of this project, it is suitable for 'surau kolej' because the range for the IR sensor is not that big. So, the quantity of the user for this project is limited.

## METHODOLOGY

In this project, IR sensor is used to detect an obstacle. Then it will send the signal to the LED. The users' feet will be as the input in this project. When all the input is in the straight line, the IR sensor will detect it and all the LED will light up. To indicate the obstacle in a straight line, we set the potentiometer to a fix distance. The process of flow chart is for the situation that occur in the Saff Straight Line Detector which is the IR sensor will detect the obstacle and light up the LED. From this flow chart, the IR sensor will on first. When there is an obstacle nearer, the sensor will detect it. LED then will light up the red color. The IR sensor then will specify whether the Saff is already in straight line or not. If yes, we used the Arduino controller to turn off the LED. But if not, the LED will still light up and the IR sensor will repeat the process of the detection of obstacle until the Saff become perfect straight line.

## RESULT AND DICUSSION

The result that we obtain by inventing this Saff Straight Line Detector project is that it would achieve our objective which is to design and build a prototype of a Saff detector to indicate the Saff in proper line before Solat. It can be observed that when the obstacle is nearer the IR sensor, the LED will light up. The IR sensor will only detect the obstacle when it is in a distance that already been set up by using potentiometer. So, with this project, we will get the result when the IR sensor detected the users' feet and light up the LED. The distance will be set at the potentiometer and the IR sensor will detected the feet when it is in the range of the distance. When all the LED is light up, it indicated that the Saff already in straight line. So, the users just need to look at the LED as their references before starting the Solat.

## CONCLUSIONS

As a conclusion, this new device can be implemented at the place where the Muslim will do their Solat especially the Mosque as it is the most common place for the Muslim. It can conclude that our project can help users easier to know and confident about the straightness of the Saff before they are performing Solat. Our project will refer to the LED light when the Saff already in proper line. By this way, the users will be aware of their Saff. So, by doing this project we hope that we can solve the problem for the users.

## REFERENCES

- [1] IEEEXPLORE.com, 'Multi-sensor fusion strategy to obtain 3-D occupancy profile', 2005.<https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1569225>.
- [2] IEEEXPLORE.com, 'MIDI Gestural Control of a VST Plugin Using an IR S ensor', 2007.<https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4127251>.
- [3] IEEEXPLORE.com, 'An IR Proximity-Based 3D Motion Gesture Sensor for Low-Power Portable Applications', 2015.<https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7217802>.
- [4] IEEEXPLORE.com, 'Single-Package Motion Gesture Sensor for Portable Applications', 2013.<https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6689698>.
- [5] IEEEXPLORE.com, 'Touchless Positioning System Using Infrared LED Sensors', 2014.<https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6887946>.