Smart Stand Based Arduino

[1]**Prof. Savita Patil,** [2]**Shweta Ballal,** [3]**Mrinal Gawade,** [4]**Vinay Kadam,** [5]**Saurabh Walke**

[1]Professor, Electronics & Telecommunication, Bharati Vidyapeeth's College of Engineering, Maharashtra, India
[2,3,4,5]Student, Electronics & Telecommunication, Bharati Vidyapeeth's College of Engineering, Maharashtra, India

Abstract - **Covid-19 brought the world on its knees starting from 2020 restricting outdoor movement and starting a brief era of work from home. This work from home culture relies heavily on video calling for communication. Also, online video platforms have boosted the need for video recording which requires video recording and uploads. The problems with video calling and video recording include maintaining phone alignment and position. User needs to either hold phone in one arm to record or place on a stand on the desk which can record video from bottom up showing users face chin up and ceiling in background. Another issue is face lighting along with charging issue created by charging cable length limitation and sound quality due to placing mobile from a distance there is sound distortion and mic for good communication.**

Keywords: Covid-19; LCD; Battery Sensor; Solar Panel; Arduino.

I. INTRODUCTION

COVID-19 brought the world on its knees starting from 2020 restricting outdoor movement and starting a brief era of work from home. This work from home culture relies heavily on video calling for communication. Also, online video platforms have boosted the need for video recording which requires video recording and uploads. The problems with video calling and video recording include maintaining phone alignment and position.

User needs to either hold phone in one arm to record or place on a stand on the desk which can record video from bottom up showing users face chin up and ceiling in background. Another issue is face lighting along with charging issue created by charging cable length limitation and sound quality due to placing mobile from a distance there is sound distortion and mic for good communication.

The video calling/video recording stand is made using a strong round base with a steel rod for durability with a soft light dimmable led. The rod allows for height adjustment of the mobile phone holder as per user desires. The smartphone holder also allows for alignment adjustment. The stand has an LED panel mounted on top of the stand for lighting. The LED

brightness can be dimmed by using a variable resistor pot provided on the bottom of stand.

1.1 Objective

COVID-19 brought the world on its knees starting from 2020 restricting outdoor movement and starting a brief era of work from home. This work from home culture relies heavily on video calling for communication. Also, online video platforms have boosted the need for video recording which requires video recording and uploads.

1.2 Materials & Methods

The stand consists of a power input socket with an adapter having a long wire to provide dc supply to the stand. The input power is passed through voltage convertor to power the LED and through a separate voltage converter to bring it to 5V and supply it to the USB port.

The USB port can be used to power the mobile phone through charging cable. The gesture control Bluetooth speaker and Mic is used for good sound quality to avoid the distortion and have a smooth communication. For the baterment of two way communication. The main Component is consist of LCD, Arduino, Light Sensor, Relays.

II. BLOCK DIAGRAM & DESCRIPTION

In a given Figure: 1 Show's a Block diagram of Smart Stand. There are total two sections.

Input Section

- Arduino UNO
- Light Sensor
- Mobile Holder Sensor
- Solar Panel & Battery

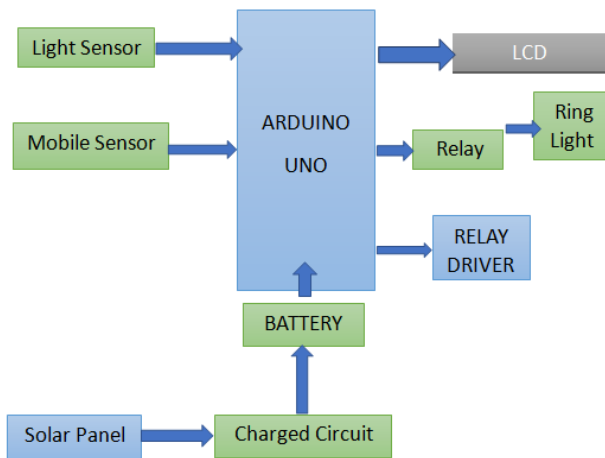*Output Section*

- LCD
- Relays
- Ring Light

2.1 Block Diagram

Figure 1: Block Diagram of Smart Stand Based Arduino

2.2 Input Section

Arduino UNO

- Arduino UNO is a low-cost, flexible, and easy-to-use programmable open-source microcontroller board that can be integrated into a variety of electronic projects.
- This board can be interfaced with other Arduino boards, Arduino shields, Raspberry Pi boards and can control relays, LEDs, servos, and motors as an output.
- The Arduino Uno is one of the best Arduino boards for beginners. It's extremely user-friendly while allowing for exceptional connectivity.

Light Sensor

- The light sensor is a passive device that converts the light energy into an electrical signal output.
- Light sensors are more commonly known as Photoelectric Devices or Photo Sensors because they convert light energy (photons) into electronic signal (electrons).

Battery 18650

- This type of battery is very common in applications such as laptop battery packs, flashlights, electric vehicles, cordless tools and various other devices that require portable power.
- An 18650 battery is a lithium-ion battery.

2.3 Output Section

LCD

- LCD (Liquid Crystal Display) is a type of flat panel display which uses liquid crystals in its primary form of operation.
- LCD uses a liquid crystal to produce a visible image.
- Liquid crystal displays are super-thin technology display screens that are generally used in laptop computer screens, TVs, cell phones, and portable video games.

Relays

- Relays are switches that open and close circuits electromechanically or electronically.
- Relays control one electrical circuit by opening and closing contacts in another circuit.

Ring Light

- The main function of the ring light is to lessen shadow and diffuse light evenly on the subject.
- A ring light is nothing but a flash-light which is mounted in a circle. The hollow circle of the light helps you place your mobile phone or camera.

III. CONCLUSION

The stand solves all problems associated with video calling and video recording including height adjustment allowing for a face aligned video calling with proper lighting and nearby charging port so low battery doesn't disturb your video call/recording and a proper sound.

This will help to reduce use of electricity and will help us to be more portable and flexible in our day to day life. Gives the user of a freedom to share his/her content or attend seminar, meetings hassle free.

REFERENCES

While making this project, we referred to several books, technical magazines, websites and visited some technical exhibitions. We have listed these references below.

Books:

[1] Needham, Joseph. (1986). Science and Civilization in China: Volume 4, Physics and Physical Technology; Part 2, Mechanical Engineering. Taipei: Caves Books Ltd. Page 229.

[2] Sarton, George (1959). A History of Science: Hellenistic Science and Culture in the Last Three centuries B.C. Cambridge: Harvard University Press. pp. 349–350.

Vinay S Kadam, Department of Electronics and Telecommunication, Student in Bharati Vidyapeeth's College of Engineering, Navi Mumbai, Maharashtra, India.

Papers:

[3] D. Stojcsics, A. Molnar, "Fixed-Wing Small-Size UAV Navigation Methods with HIL Simulation for AERObot Autopilot", IEEE 9th Int. Symp. on Intel. Sys. and Inf. (SISY), pp. 241-245, 2011.

[4] J. G. Ziegler and N. B. Nichols: Optimum Settings for Automatic Controllers, Trans. ASME, Vol. 64, 1942, s. 759-768.

[5] G. Baldwin, R. Mahony, J. Trumpf, T. Hamel, T. Cheviron Complementary Filter Design on the Special Euclidean Group SE. 9th European Control Conference on behalf of the EUCA, Kos, Greece, 2007.

Technical magazines:

[6] Electronics For You

Websites:

[7] https://en.m.wikipedia.org/wiki/Gimbal

[8] http://fab.cba.mit.edu/classes/863.16/section.Harvard/people/Liu/Gimbal/Gimbal.html

[9] https://www.indiegogo.com/projects/atom-a-pocket-sized-3-axis-smartphone-gimbal

AUTHOR'S BIOGRAPHIES

Prof. Savita Patil, Department of Electronics and Telecommunication, Lecturer in Bharati Vidyapeeth's College of Engineering, Navi Mumbai Maharashtra, India.

Shweta S Ballal, Department of Electronics and Telecommunication, Student in Bharati Vidyapeeth's College of Engineering, Navi Mumbai, Maharashtra, India.

Mrinal K Gawade, Department of Electronics and Telecommunication, Student in Bharati Vidyapeeth's College of Engineering, Navi Mumbai, Maharashtra, India.

Saurabh S Walke, Department of Electronics and Telecommunication, Student in Bharati Vidyapeeth's College of Engineering, Navi Mumbai, Maharashtra, India.

****