Design Project Report on 28-11-2019

TITLE OF PROJECT : Camera Slider with PAN and TILT HEAD

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CERTIFICATE

This is to certify that this report entitled "Camera Slider with PAN and TILT HEAD" is a bonafide report of the Design Project and Case study on "WIRELESS CHARGING"done during 5th semester by S SANDEEP, AASHBI AHAMMED, ABHISHEK B, S AKAS towards the partial fulfillment of the requirements for the award of the degree of Bachelor of Technology (B.Tech) in Electrical & Electronics Engineering during the academic year 2019-2020

Faculty in-charge Head of the Department

Place:

Date:

ACKNOWLEDGEMENT

At this moment of successful completion of our design project based on the topic "CAMERA SLIDER with PAN and TILT HEAD" we would like to express our sincere gratitude to the principal Dr. George Issac, HOD. Dr.Parvathy R, staff in charge Mrs.Veena Wilson and Mrs.Jyothi G K for providing us with this esteemed platform to showcase our work as well as guiding us through every step of the way. We would also like to extend our sincere gratitude to Mr. Mohammed Noufal and the mentors at FAB LAB for providing us with external guidance when we were in need.

ABSTRACT

This is a camera slider having pan and tilt head so that we can control our camera with a joystick in two axes and the sliding movement is done by using a pot. More than a regular camera slider we had included two more movement axes known as PAN and TILT. The camera fixed on the slider can be moved on three axes. The three movements are SLIDE, PAN and TILT. The three of the camera movements are done by using stepper motors driven by belts. We can take completely stabilised videos using this slider even the camera have stabilisation itself. We can offer ultra stability for the camera to shoot videos.

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Chapter 1

INTRODUCTION

This is a completely motorised camera slider having PAN and TILT head. More than regular camera sliders we had included 2 axes extra on this project. Mainly focusing on the stabilisation of camera the movements are done by using stepper motors, and the are driven using belts. The camera sliding movement is controlled using a pot and the other two main camera movements known as pan and tilt are controlled using a joystick. Here we are using arduino nano for our purose.

Chapter 2

COMPONENTS USED

1. Arduino Nano
2. Stepper Drivers A4988 [3]
3. Stepper Motors NEMA 17 [3]
4. Capacitors [3]
5. Resistors [4]
6. Joystick
7. Push Switches [2]
8. Potentiometers [2]
9. Micro Switch
10. Power Switch
11. Power Jack
12. LED [2]
13. 5V and 12V Supply

2.1 Arduino Nano

The Arduino Nano is a small, complete, and breadboard-friendly board based on the ATmega328P; offers the same connectivity and specs of the UNO board in a smaller form factor.

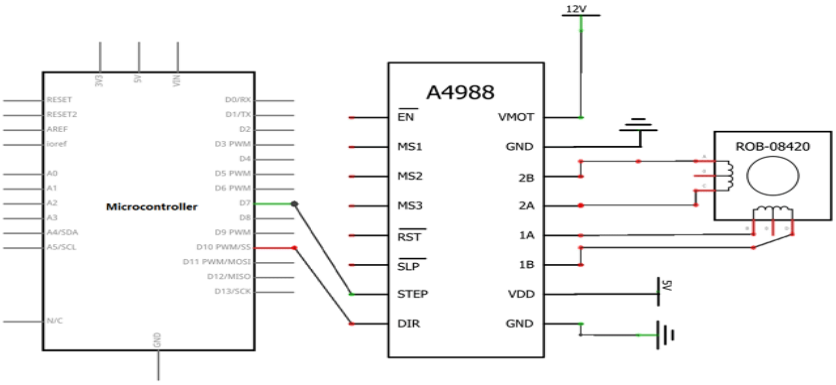
The Arduino Nano is programmed using the Arduino Software (IDE), our Integrated Development Environment common to all our boards and running both online and offline. For more information on how to get started with the Arduino Software.

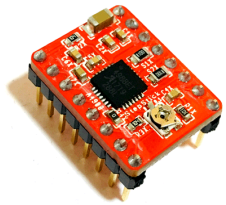
2.1.1 ATmega 328

ATmega 328 has 1KB Electrically Erasable Programmable Read Only Memory (EEPROM). This property shows if the electric supply supplied to the micro-controller is removed, even then it can store the data and can provide results after providing it with the electric supply. Moreover, ATmega-328 has 2KB Static Random Access Memory (SRAM). Other characteristics will be explained later. ATmega 328 has several different features which make it the most popular device in today's market. These features consist of advanced RISC architecture, good performance, low power consumption, real timer counter having separate oscillator, 6 PWM pins, programmable Serial USART, programming lock for software security, throughput up to 20 MIPS etc. ATmega-328 is mostly used in Arduino.

2.2 DRIVER A4988

The **A4988** is a complete **Microstepping Motor Driver** with built-in translator for easy operation. The driver has a maximum output capacity of 35 V and ± 2 A. It can operate bipolar stepper motors in full-, half-, quarter-, eighth-, and sixteenth-step modes.

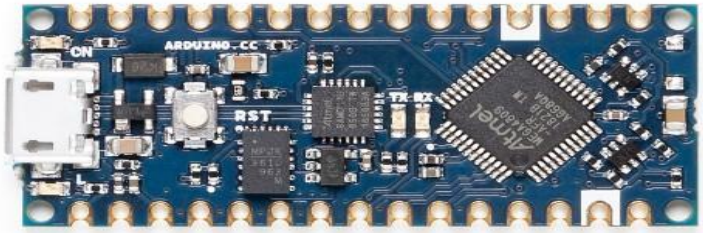

12V
A4988
EN
MS1
MS2
MS3
RST
SLP
STEP
DIR
VMOT
GND
2B
2A
1A
1B
VDD
GND
5V
ROB-08420
Microcontroller

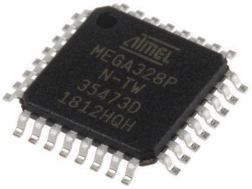


2.3 Stepper Motor NEMA 17

This hybrid stepping motor has a 1.8° step angle (200 steps/revolution). Each phase draws 1.2 A at 4 V, allowing for a holding torque of 3.2 kg-cm (44 oz-in). The motor has six color-coded wires terminated with bare leads that allow it to be controlled by both unipolar and bipolar stepper motor drivers. When used with a unipolar stepper motor driver, all six leads are used. When used with a bipolar stepper motor driver, the center-tap yellow and white wires can be left disconnected (the red-blue pair gives access to one coil and the black-green pair gives access to the other coil). We recommend using it as a bipolar stepper motor and controlling it with one of our bipolar stepper motor drivers or one of our Tic Stepper Motor Controllers. In particular, the Tics make control easy because they support six different interfaces (USB, TTL serial, I²C, RC, analog voltages, and quadrature encoder) and are configurable over USB with our free configuration utility.

Arduino Nano And ATmega 328


ON
ARDUINO.CC
RST


ATMEL
MEGA328P
N-TW
3547JD
1812HQH

Chapter 3

CONCLUSION

The product was successfully finished and it works better.We didn't get the actual outcome from our product like what we thought but now we are much more aware about the product and we are able to improve the product better. The SLIDE movement works very smoother than the other two movements PAN and TILT but the product is still able to shoot stabilised videos.

REFERENCES

- WIKIPEDIA
- GOOGLE
- YOUTUBE
- FAB LAB [FISAT]