**Introduction:**

1. **Me :-**

* Hello, my name is Nunavath Hari Shankar and I am currently a first-year Batchlor of Technology student in the Electrical Engineering department. I come from Hyderabad, Telangana. Nice to meet you!.

**Hobbies :-**

* Watching tech videos (short and simple) from youtube and Udemey, Playing badminton, Spending and hanging out with my friends is a mandatory..

**Motivation :-**

* As a technology enthusiast, I'm always on the lookout for the latest gadgets and innovations that can make our lives easier and more efficient. Whether it's the latest smartphone, smart home devices, or cutting-edge software, I love exploring how technology can improve our daily routines. Recently, my interest in technology has led me to discover the exciting world of drone flying. The idea of controlling a flying machine using a remote controller and capturing stunning aerial views is simply exhilarating. The more I delve into the world of drones, the more fascinated I become. The combination of technology and aviation has sparked a new level of excitement and curiosity in me, and I can't wait to see where this passion for drone flying will take me.

1. Currently I am applying for Software and Electrical module because ……

**The reason why :-**

* Firstly, drone and UAV technology relies heavily on both software and electrical components. As a member of a drone or UAV related club, I would have gained hands-on experience working with and understanding these components, which can translate well to the skills required for a software and electrical module.
* Additionally, drone and UAV related clubs often involve working in teams to build and operate the aircraft. This experience would have help me to develop my skills in collaboration, communication, and problem-solving, which are all highly valued in software and electrical engineering roles.
* Finally, the use of drones and UAVs is becoming increasingly prevalent across a wide range of industries, from agriculture to infrastructure inspection. As a result, having experience in this field can demonstrate my understanding of cutting-edge technology and its applications, which will make me a valuable asset to a software and electrical team.
* Overall, my experience in a drone and UAV related club is relevant to my application for a software and electrical module, as it demonstrates my experience working with the technology and your ability to collaborate effectively in a team setting.

**My previous skills and experience :-**

* I recently completed my EE1103 course ( Introduction C language) as a part of my curriculum in my semester and later I realized there are not much OOPs (Object Oriented Programming) language. As I haven’t completed my C++ but have a good idea that how it works.
* And I recently started learning as I already completed my C language it is not that much tough but coz of some other circumstances I couldn’t complete it. But I am good enough in it.

**Previous Module :-**

* Previously I applied for Abhiyaan Software module because of that I earlier learned basics of ROS(Robot Operating System). I am able to do first question easily.

**My current POR’s :-**

* I am currently Technical Affairs Secretary for Cauvery Hostel ( currently for Mandakini Hostel ).
* And expecting to be a member in software and electronical module in SAE Aerothon ( Already working on it)

**Skills hoping to take from project :-**

* Drone Operation
* Drone Maintenance
* Aerial Photography and Videography

1. **My POV :-**

* The RQ-4 Global Hawk is an unmanned aerial vehicle (UAV) that is primarily used for military and intelligence gathering purposes. It is designed to fly at high altitudes for long periods of time and can perform a variety of missions, including reconnaissance, surveillance, and target acquisition.
* One of the key technologies used in the RQ-4 Global Hawk is Synthetic Aperture Radar (SAR). SAR is a type of radar system that uses the motion of the antenna to create high-resolution images of objects on the ground. Unlike traditional radar systems, which can only detect the presence of objects, SAR can provide detailed information about the size, shape, and texture of the objects.
* SAR works by transmitting a radio signal from the antenna on the drone towards the ground. As the signal reflects off of the objects on the ground, it is picked up by the antenna and recorded. By measuring the time it takes for the signal to travel to the ground and back, SAR can calculate the distance to the objects on the ground.
* The RQ-4 Global Hawk's use of SAR technology is particularly helpful in its scenario because it enables the drone to capture high-resolution images of the ground, even in difficult weather conditions or at night. SAR can also penetrate through foliage and other obstructions, allowing the drone to gather information on hidden targets or structures. This makes it a valuable tool for intelligence gathering and surveillance missions.
* In summary, the use of Synthetic Aperture Radar technology in the RQ-4 Global Hawk provides the drone with advanced capabilities for intelligence gathering and surveillance missions. It allows the drone to capture high-resolution images of the ground, even in challenging conditions, and provides detailed information about objects on the ground.
* **The summary :-** In summary, the Synthetic Aperture Radar technology used in the RQ-4 Global Hawk provides the drone with advanced capabilities for intelligence gathering, surveillance, and reconnaissance missions. It allows the drone to capture high-resolution images of the ground, even in challenging conditions, and provides detailed information about objects on the ground, making it a valuable tool for military and intelligence operations.

1. There are several different types of quadcopter architectures, each with its own set of advantages and disadvantages depending on the scenario. The main types of quadcopter architectures are:

* X-configuration: The X-configuration is a popular quadcopter architecture where the motors are arranged in an "X" pattern, with two motors pointing forward and two motors pointing backward. This configuration provides good stability and agility, making it suitable for aerial photography, racing, and acrobatics. However, it is less efficient than other configurations, as it requires more power to maintain stability.
* H-configuration: The H-configuration is another popular quadcopter architecture, where the motors are arranged in an "H" pattern, with two motors on the front and two on the back. This configuration provides good stability and is more efficient than the X-configuration, making it suitable for applications such as delivery and surveillance.
* “+” -configuration: The Plus-configuration is a quadcopter architecture where the motors are arranged in a "+" pattern, with one motor on each arm. This configuration provides good stability and is easy to control, making it suitable for beginners and educational purposes. However, it is less efficient than other configurations and has limited maneuverability.
* Y-configuration: The Y-configuration is a quadcopter architecture where the motors are arranged in a "Y" pattern, with one motor pointing upward and three motors pointing downward. This configuration provides good stability and is efficient, making it suitable for applications such as inspection and mapping.
* In summary, the best quadcopter architecture for a particular scenario depends on the specific requirements and use cases. For applications such as aerial photography, racing, and acrobatics, the X-configuration may be the best option. For applications such as delivery and surveillance, the H-configuration may be the most suitable. For beginners and educational purposes, the Plus-configuration may be the best choice. Finally, for applications such as inspection and mapping, the Y-configuration may be the most appropriate. It's important to carefully evaluate the specific requirements and use cases before choosing a quadcopter architecture.
* One important consideration is the selection of high-quality components, such as motors, propellers, and flight controllers. Using reliable components can improve the overall performance and reliability of the quadcopter.

1. Arduino boards are open-source microcontroller-based hardware platforms designed for prototyping and creating interactive electronic projects. They feature various input and output pins that can be used to connect to sensors, actuators, and other electronic components, and can be programmed using the Arduino programming language, which is based on C and C++. Arduino boards are popular among hobbyists, students, and professionals due to their ease of use, accessibility, and a large community of users who share projects and provide support. They provide a flexible and versatile platform for building electronic projects, including robotics, home automation, and IoT applications.

* The newer boards have architecture of ARM Cortex M – series.
* Arduino Leonardo and Portenta H7 boards are both microcontroller-based hardware platforms that can be programmed using the Arduino IDE. However, there are some key differences between these two boards in terms of their specifications and capabilities.
* Difference between them :
* Processor: The Leonardo board is equipped with an ATmega32U4 microcontroller with 32 KB flash memory and 2.5 KB SRAM, while the Portenta H7 board features a high-performance STM32H747XI microcontroller with 2 MB flash memory and 1 MB SRAM.
* Architecture: The Leonardo board uses an 8-bit AVR architecture, while the Portenta H7 board uses a 32-bit ARM Cortex-M7 architecture, which is more powerful and efficient.
* Input/output pins: The Leonardo board has 20 digital input/output pins, 7 of which can be used as PWM outputs, and 12 analog input pins. The Portenta H7 board has 120 digital input/output pins, including 54 PWM pins, and 24 analog input pins.
* Connectivity: The Leonardo board has a USB port for communication with a computer, as well as a UART, SPI, and I2C interface. The Portenta H7 board has several connectivity options, including Wi-Fi, Ethernet, Bluetooth, and CAN interfaces.
* Power consumption: The Leonardo board has a relatively low power consumption, with an operating voltage of 5V and a maximum power consumption of 40mA. The Portenta H7 board has a higher power consumption due to its more powerful processor and additional features, with an operating voltage range of 3.3V to 5V and a maximum power consumption of 1A.
* Form factor: The Leonardo board has a small form factor, measuring 68.6mm x 53.4mm, while the Portenta H7 board is larger, measuring 102mm x 54mm.
* In every aspect the Portenta is better in terms of performance and long lasting

But there are some things where leopnardo takes edge out from Portenta. Like:-

* Power Consumption
* Cost
* Size
* Simplicity.