CubeSat Project - *Proposal*

• Introduction:

CubeSats are miniature satellites, which are characterized by their standard size of 10 cm x 10 cm x 10 cm. CubeSats provide students with hands-on learning opportunities in aerospace engineering. It enables new users from across different disciplines to contribute their ideas and unique skill sets to small satellite design. Standard satellites are expensive and take a long time to build. Hence, CubeSat is not only a means to get a hands-on experience in the space industry but to actually contribute to it.

• Purpose:

To monitor weather patterns by measuring temperature and humidity, which will help in understanding the deviations in weather abnormalities and examining the effects caused by climate changes

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• Goals:

- Designing Payload: Develop and integrate payload for the CubeSat that utilizes various sensors to collect valuable data.
- Create a Graphical User Interface (GUI): Develop a user-friendly GUI to visualize real-time data from the CubeSat, including orientation and data collected from it.

• Specifications:

The CubeSat's payload is divided into three major components. The first component is the RF Transmitter-Receiver (RF-TF) module, which establishes communication link between the satellite and the user, ensuring real-time data transmission. The second part is the data collector, which utilizes sensors to measure pressure, humidity, and temperature in the CubeSat's surrounding environment. The final component includes orientation sensors, such as the magnetic sensor, altitude sensor, accelerometer, gyroscopic sensor, and GPS. These sensors work collaboratively to determine the CubeSat's orientation and position in space, allowing its visualization. Together, these components create a comprehensive system that enables efficient data collection and communication for various applications. Last but not the least optimizing the design, the primary structure of CubeSat according to our payload.

• Milestones:

1. Sensor Testing and Calibration: Ensure all sensors are tested and calibrated by 26/10/2024.
2. Basic GUI to present: with submission of project
3. Project Completion Date: Commit to completing the project by 9/11/2024.