

## Abu Dhabi Polytechnic Project Competition 2023

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### ➤ Title:

### Pilot's Awareness Sensor System (PASS)

### Authors

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### Abstract:

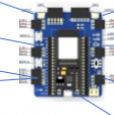
Nowadays, accident in aircraft has increased due to Pilot losing their focus or unconsciousness, and these situations can lead to the loss of passenger and Pilot. So, we come over with a solution to solve thesis types of accidents and ensure that all the passengers are safe. The key is the Pilot's Awareness Sensor System (PASS), connected to new software to control the plane remotely from the ground. There will be a connection between the Pilot and the sensor so it will feel fast, energize the auto landing to the nearest airport, and another sensor will act as a GPS to guide the aircraft and ensure it lands safely or is controlled by an emergency ground pilot remotely from a simulator. It is a sensor that detects and senses the body temperature, monitors heart rate and blood pressure, detects breathing, measures brain waves, sends glucose-level alerts, and feels sleepiness based on monitoring ECG, BCG, and SCG signals. In the future, the planes will sense your biology that can feel your heart rate, blood pressure, and other biometric responses in the aircraft's computers, better to determine when you're exhausted or overwhelmed with distracting media. The new technology will be installed in aircraft's electronics with a complex sensor structure that can provide centralized information regarding the physiological signals (Electroencephalogram—EEG, electrocardiogram—ECG) of the pilot/passengers

and their location with indoor temperature changes, employing the Internet of Things technology. Thus, transforming the plane into a sensor connected to the wan network connection will help highlight and create a new perspective on Pilots' mental and physiological conditions, which is helpful for specific applications, such as health management and more effective intervention in case of accidents. These plane sensor structures will allow a higher real-time detection rate of potential dangers. The approach uses the detection, recording, and transmission of relevant health information in the event of an incident as support for e-Call or other emergency services, including telemedicine. We are trying to say that these features can be implemented in the Airplane pilot's seats to ensure their health during long flights and manage any situation before it happens. To ensure the Pilot's health during long flights and manage any situation before it happens. If the Pilot got failed to stay awake or passes out, direct the sensors will activate the emergency landing by energizing the auto-landing and autopilot, which will be connected to another sensor outside the plane to detect the nearest runway by a satellite installed in all airports to guide the aircraft where to lands safely. An airplane has a GPS shown in the cockpit instruments; during an emergency, when activated, a map will point to the nearest airport, then the autoloading will decline gradually when it reaches the close point.

**Pilot's Seat**



**ECG Sensor**

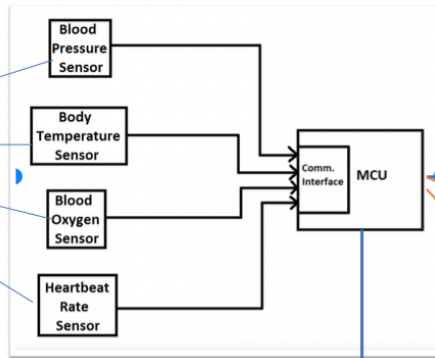


**Blood Pressure Sensor**

**Body Temperature Sensor**

**Blood Oxygen Sensor**

**Heartbeat Rate Sensor**



**Interface connection**

**Autopilot**

**Auto-land**



**Ground Pilot & Simulator**



**Software of aircraft's system**



**Wan network connection**