Health Monitoring System of Pilot Using IoT Wrist Band

USER MANUAL

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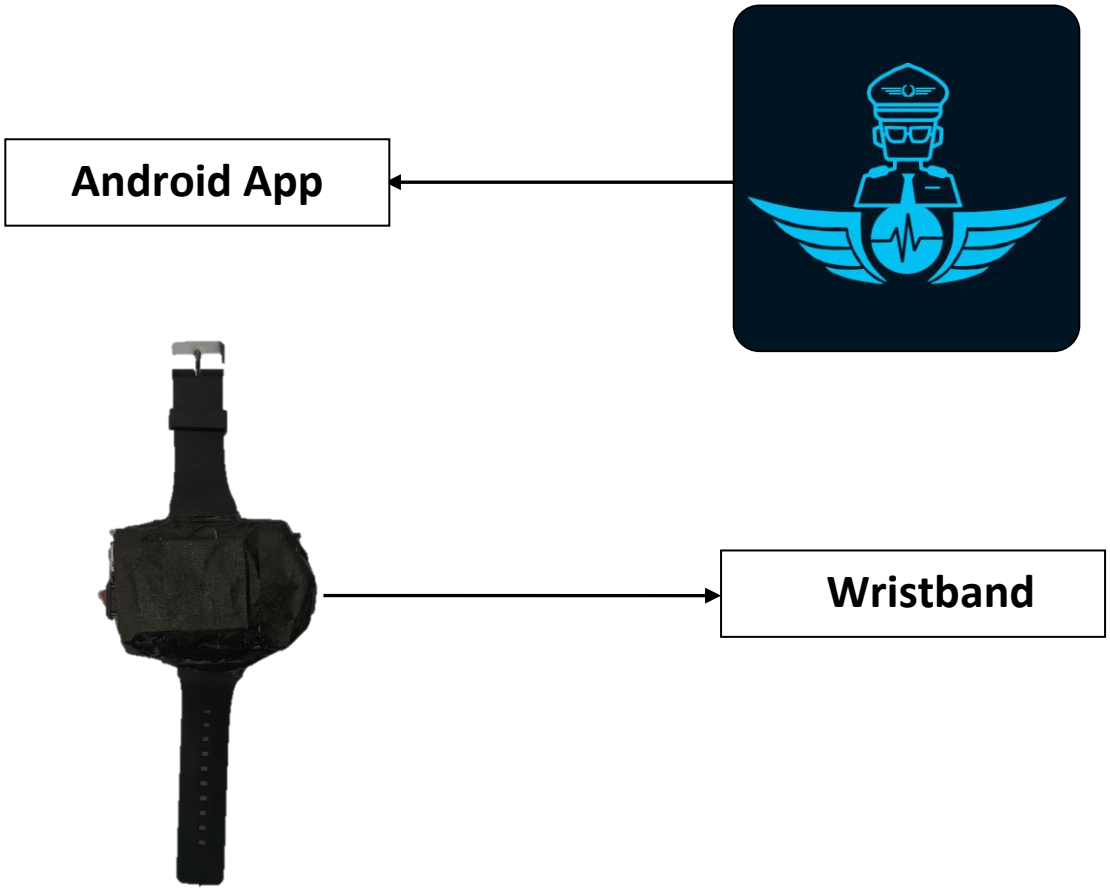
TOOL DESCRIPTION



1.0 GENERAL INFORMATION

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In present world, the safety and security of the pilots and valuables are given top priority. At present there is health checking system for pilots before getting on a flight. But on flight there is no such checking and monitoring system.
So, to add a new dimension to the field of safety and security of the pilot we intend to develop a system that can analyze the on flight status of a pilot. In this paper our main focus is to introduce the user to the detail of our system so that they can use it more efficiently without any hindrance.

1.1 System Overview

Our project includes a digital wristband and a mobile app. Data analysis will be done by taking reading from the smart wristband of the pilot. By analyzing the data, signal will be given based on the health condition of pilot flying the aircraft. There will be given standard readings based on which normal, moderate and acute abnormal condition will be checked and necessary signals will be given to the pilot to take necessary actions. For emergency cases online health officials will be connected.

1.2 Organization of the Manual

The user's manual consists of the following sections:

1) General Information: General Information section explains the purpose for which the tool is intended.
2) System Summary: System Summary provides a general overview of the system. It outlines the uses of the system's hardware and software requirements, System's configuration, user access and risk factors.
3) Using of System: Using of System section will have a detailed description of system functions.

2.0 SYSTEM SUMMARY

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In the health monitoring system of a pilot only the pre-flight inspection is done. But there is no provision for the on flight inspection. So, we intended to develop a system to analyze the pilot health during flight to provide necessary advice for any impromptu situation.

2.1 System Configuration

Health Monitoring of a pilot using IoT wristband operates on mobile devices integrated with hardware tool. It is for Android operation system. This application requires Bluetooth in order to integrate with the hardware so that hardware along with the app can run simultaneously. Data is collected from the watch by radio frequency and sent to ATC tower. In ATC tower data fetched from the wristband will be shown in LED display. Data saved in database can be seen using internet from the app and based on the data necessary actions will be taken to save lives of pilot and the aircraft.

2.2 User Access

Health Monitoring of a pilot using IoT wristband has mainly two group of users.

1) Pilot
2) Air traffic controller or authorized admin to evaluate the condition of a pilot during flying.

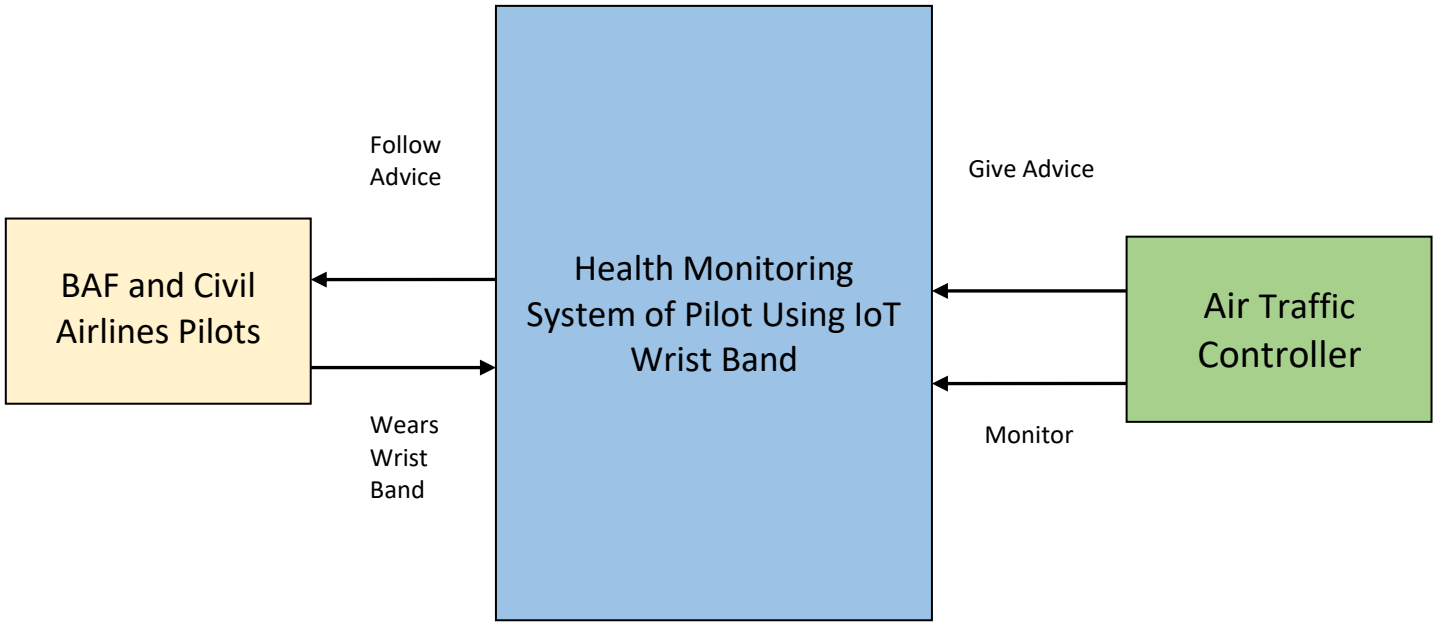

Figure-1: Users of Wrist Band

3.0 USE OF THE SYSTEM

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3.1 Wearing Wristband and Logging On

Wristband is worn by the pilot and a user ID and password is required for the pilot during flying and authorized admin to log onto the database server.

3.2 Connecting to Radio Frequency

After login is successful, the data collected from wristband will be sent to ATC tower .In ATC tower data will be visible in LED. Air traffic controller will monitor through android app.

3.3 Selecting Log in as Pilot/ATC login option

Here, the user will have two choices. Pilot will log in as pilot and will choose the Log in as pilot option. The air traffic controller will choose the ATC log in option to monitor pilot's health.

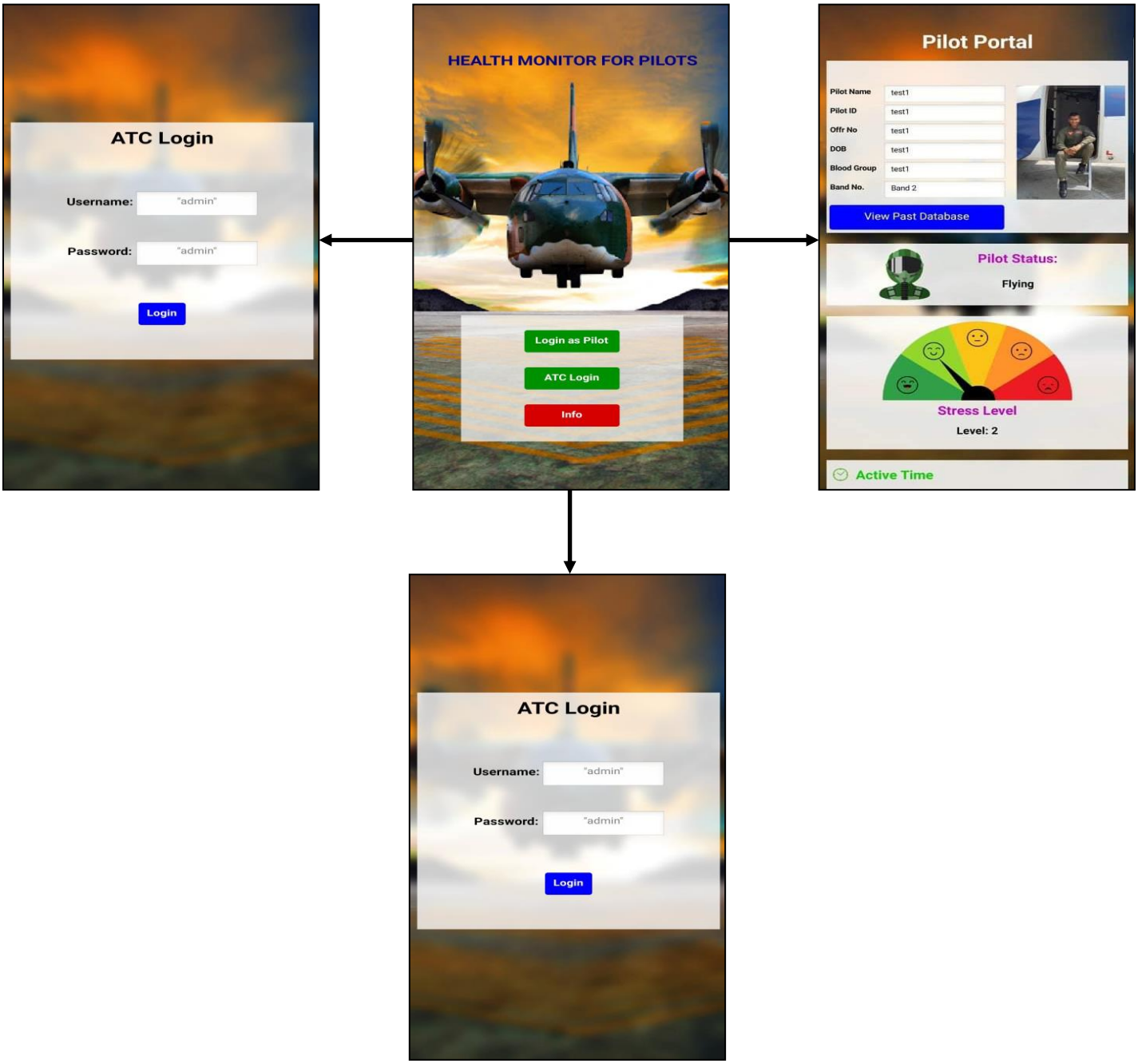


Fig-2: Navigations for pilot/Air Traffic Controller

3.3.1 Pilot Portal Page

If the user had chosen the Login as pilot option previously, then this page will be shown, showing the physical condition of a pilot during flying. Only after assigning by Air traffic controller, this page will be visible by pilot.

3.3.2 ATC Login Page

If the user had chosen the ATC Login option previously, then this page will show up containing username and password for security verification of the authorized personnel.

3.3.2.1 ATC Management Portal

This page will appear if the user is authorized. From this page a new pilot can be assigned. From here pilot info can be seen by choosing one particular band.

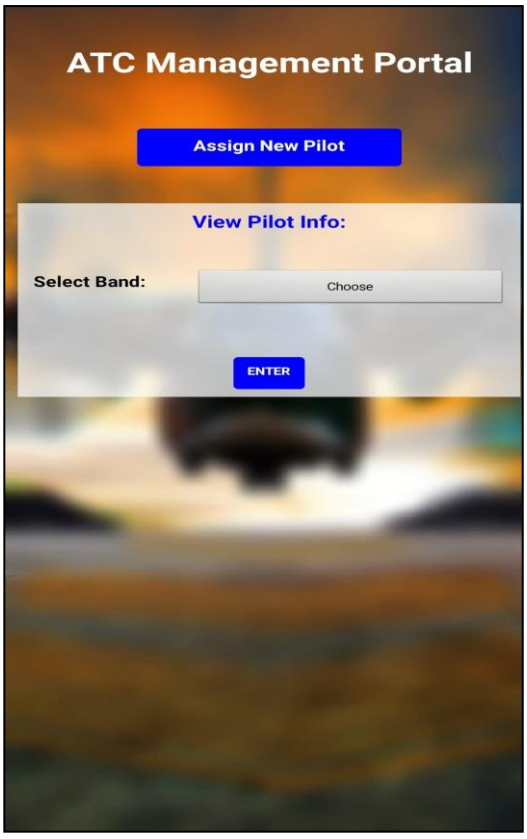


Fig: ATC Management Portal

3.3.2.2 Assign New Pilot

This page will appear if the user selects the Assign New Pilot option in the ATC Management Portal page. All basic information need to have an entry and an id and password will be issued for pilot.

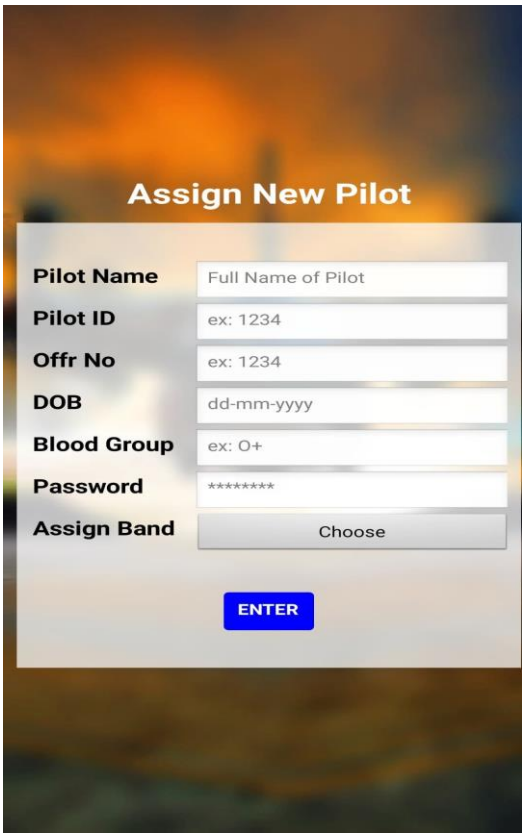
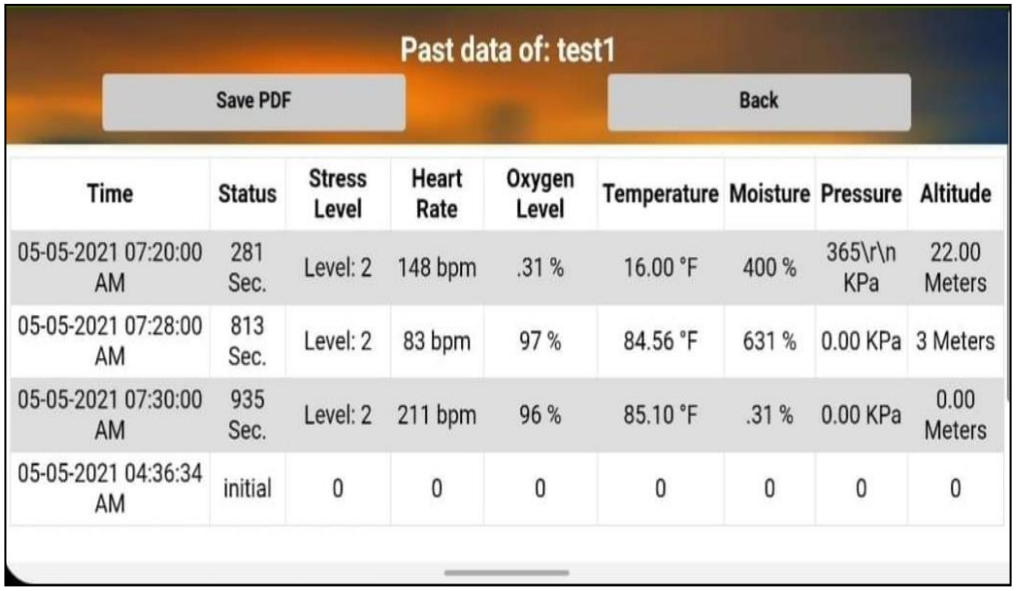


Fig: Assign New Pilot

3.3.2.3 Past Flight Data

This page will appear if the authorized personnel chooses one particular band and selects view pilot info option.



Time	Status	Stress Level	Heart Rate	Oxygen Level	Temperature	Moisture	Pressure	Altitude
05-05-2021 07:20:00 AM	281 Sec.	Level: 2	148 bpm	.31 %	16.00 °F	400 %	365\r\n KPa	22.00 Meters
05-05-2021 07:28:00 AM	813 Sec.	Level: 2	83 bpm	97 %	84.56 °F	631 %	0.00 KPa	3 Meters
05-05-2021 07:30:00 AM	935 Sec.	Level: 2	211 bpm	96 %	85.10 °F	.31 %	0.00 KPa	0.00 Meters
05-05-2021 04:36:34 AM	initial	0	0	0	0	0	0	0

Fig: Past Flight Date

4.0 RISK MANAGEMENT

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There are some risk precautions should be considered.

Risks of Project					
Risk ID	**Risk Description**	**Mitigation Plan (what to do to avoid the risk occurring)**	**Contingency Plan (what to do if the risk occurs)**	**Impact (what the impact will be to the project if the risk occurs)**	**Likelihood of occurrence (e.g., %, or high / medium / low)**
01.	Inaccuracy of data	Prior checking of equipment's	Check equipment's regularly	Receiving of inaccurate data	Medium
02.	Connection loss	Proper fixation of wearable devices	The devices to be fixed correctly	Connection loss will make the whole system shut down	Medium