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IOT Dashboard and Automation

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Abstract: A IOT dashboard is an application that is used for retrieving real-time data from different sensors and visualizing data through different graphical and interactive techniques, and also to act on data storage and IOT devices.
This paper discusses about the tool we developed followed by description of tabs/section in the dashboard.

I. INTRODUCTION

The IoT is the worldwide organization of actual items — that is, "things" — that are implanted with sensors, fundamentally to impart and trade information with different gadgets or frameworks over the Internet.
The quantity of IoT-gadgets is dramatically rising. While there are as of now around 27 billion gadgets on the lookout, researchers anticipate that this number should significantly increase until 2025.
These IOT gadgets collects huge amount of raw data from environment.
Understanding, analyzing, processing and visualizing the data in real-time is extremely useful for users. This demanded the need to build user interface to display the data in a meaningful way. This interface is called as 'IOT dashboard'.
An IoT dashboard is the UI inside an IoT stage that empowers users to monitor and communicate with associated gadgets through graphs, outlines and different devices and UI components. Dashboards permit you to deal with each part of your associated gadgets as well as gain viewpoint on your current circumstance through representation of your gadget information.
There are a few explanations behind building IoT dashboards:

1) Automatically improve approaching information with location, time, climate, temperature, and other outer elements.
2) With the assistance of IoT Dashboards, users and administrators can (from a distance) monitor and control resources and processes and, safety requirements, users can access and control a environment from anyplace in the world;
3) Monitor hardware and software execution to reduce working expenses, as well as lower support costs by pre-empting failures and limiting downtime;

II. PROBLEM STATEMENT

IOT system can have following problems:

1) Raw data collected from sensors which is not understood by humans/users
2) Lack of Analytics/Insights
3) Manual tasks involved in the whole process

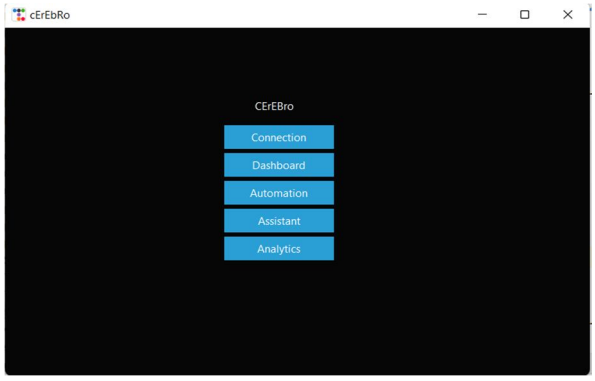
III. PROPOSED WORK

In this paper, we are going to buid IOT dashboard using Python's tkinter library. This board assists users in getting information about IOT system.
Features included in this IOT Dashboard are:

1) *Connection:* This section helps in connecting dashboard with the IOT system. There are so many protocols which helps in transferring sensor's data to IOT dashboard. Some of them are MQTT, DDS, AMQP, Bluetooth. Mostly we will use MQTT protocol to connect IOT with dashboard.
2) *Dashboard:* This section helps in displaying sensor's real time values to users with graphical representation. Sensors capture raw data from environment, this data then refined and displayed to users.
3) *Automation:* This section helps in automating manual tasks involved in IOT. Manual tasks such as sending mails, alerts, storing data into database, report generation etc.
4) *Assistant:* This section contains chat bot and voice bot which helps in users getting info about IOT system by voice and text chat.
5) *Analytics:* This section helps in getting insights on the data collected by sensors.

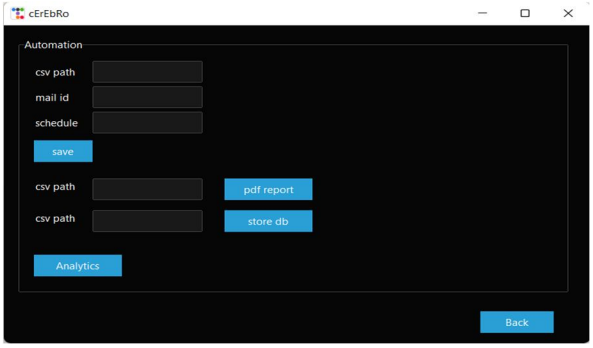
Some snapshots of IOT Dashboard

a) Home tab

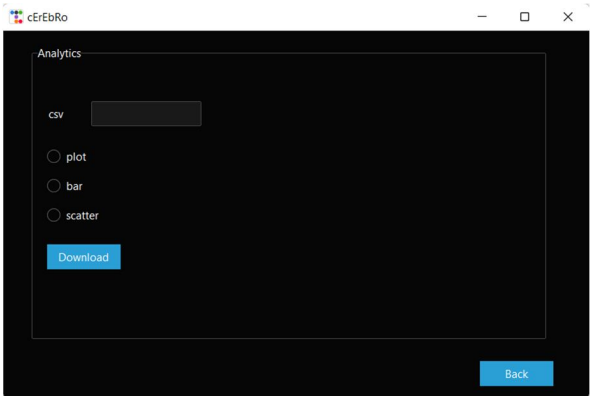


b) Dashboard tab

c) Automation tab



d) Analytics tab



IV. CONCLUSION

The proposed work can give IOT interface to Humans. Data are collected, organized and represented to Humans through Dashboard. This makes life easier to humans by avoiding manual work of collecting, analysis and sharing of sensor's data.

As a future work we can add more features and technologies like AI, ML, Computer vision etc can be integrated to make the dashboard even more understandable and attractive.

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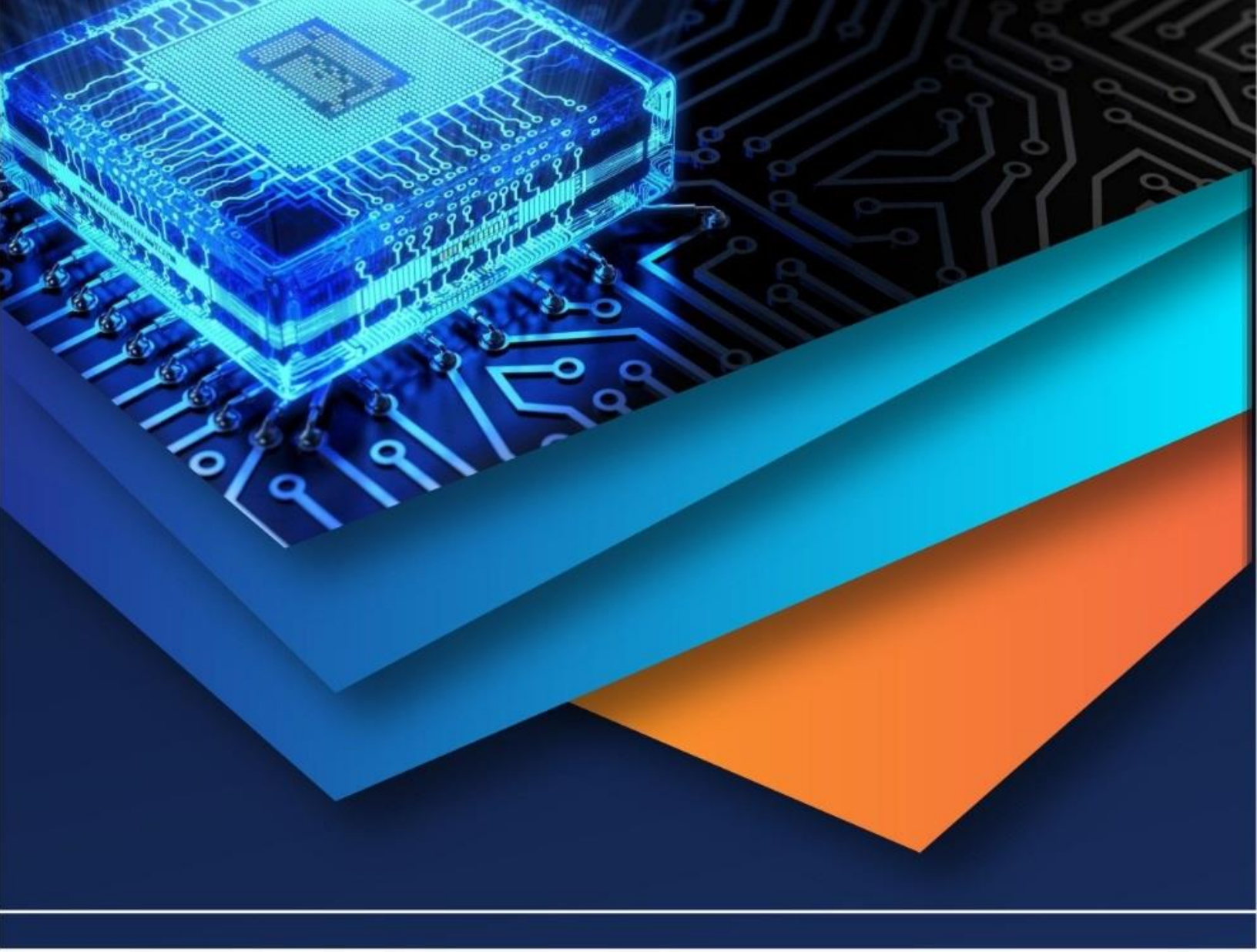

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