



# Bluetooth Based Internet of Things (IoT) Device Controller

İpek AKGÜN

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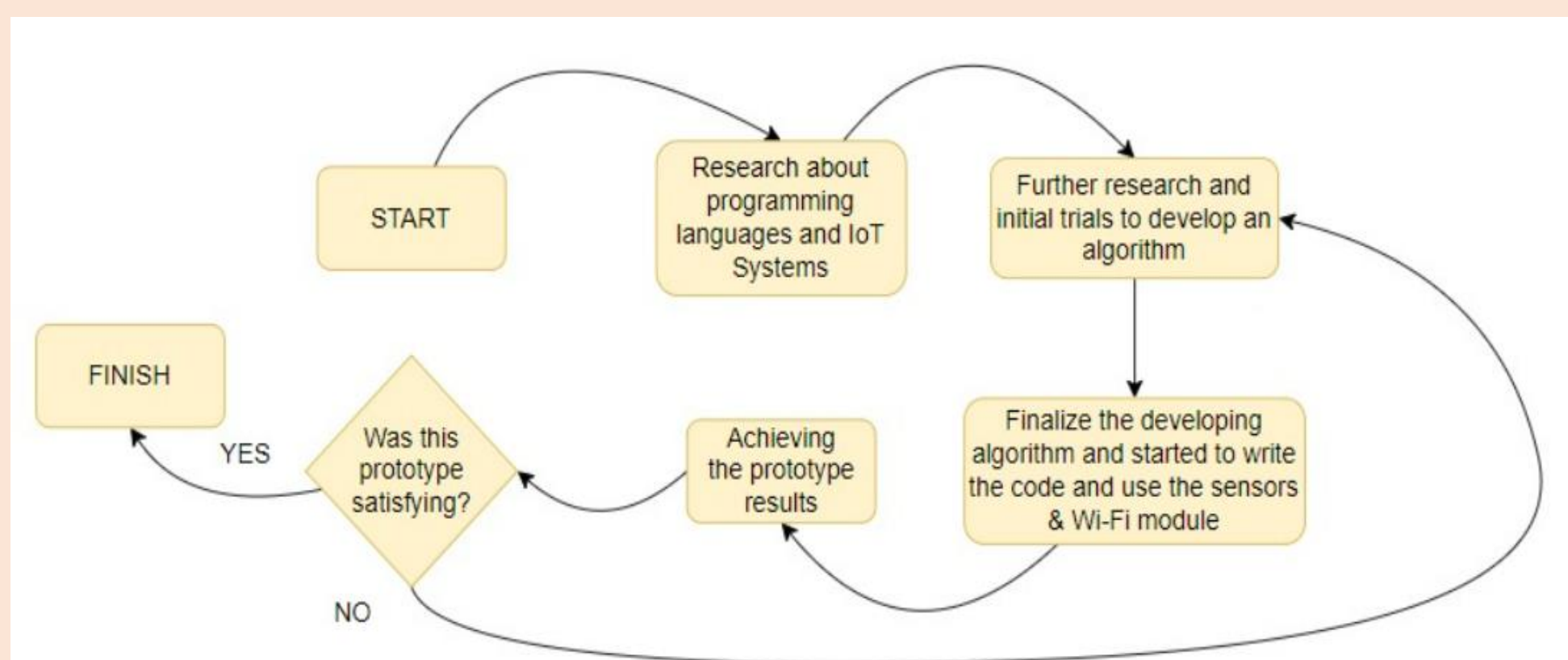


## Introduction

- ❖ Internet of Things (IoT) has become one of the most important technologies of the 21<sup>st</sup> century. IoT technologies are widely used in solving infrastructure, health and environmental problems.
- ❖ The project “Bluetooth Based IoT Device Controller” aims to create an internet-connected sensor unit that can detect a room’s conditions. With this study, it was aimed that people can follow their health and well-being even when they are away from their homes and relatives.
- ❖ This unit has multiple specifications like
  - Gather and process all sensor data from environment
  - Internet connection to send the information to a cloud platform
  - Collecting data and updating platform continuously
- ❖ This project was coded in STM32CubeIDE development platform.

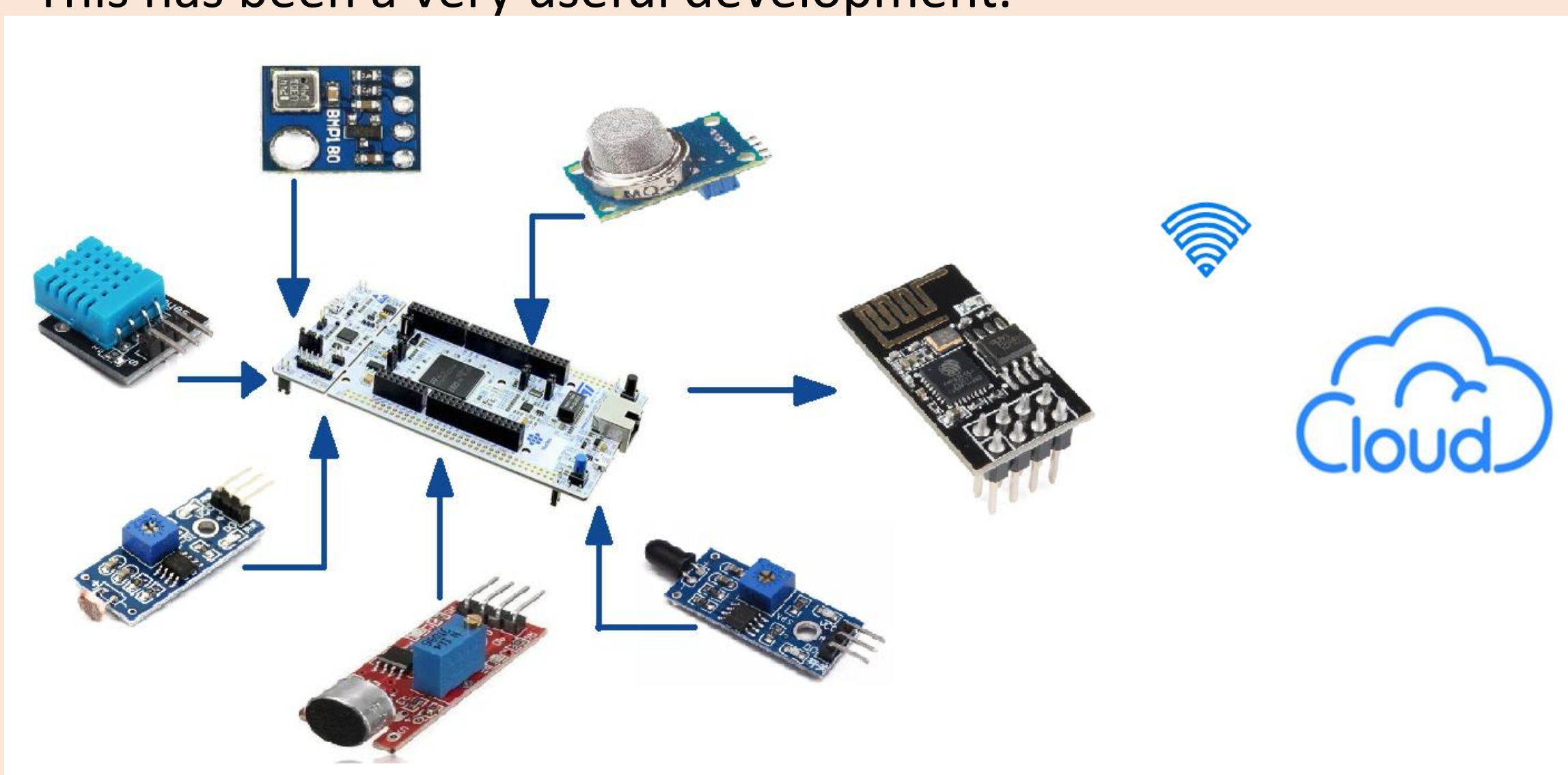
## Design Process

- ❖ Design process for the project required a lot of trial and error.
- ❖ Components that are used for the project should be chosen carefully, after lots of research I decided to use Nucleo Board of STMicroelectronics.
- ❖ Sensors were selected from those with the best balance of cost and accuracy.



## Solution Methodology

- ❖ There were many problems at this project development process.
- ❖ One of them was adjusting the sensors. Necessary adjustments must be made correctly to prevent false alarms.
- ❖ Since the selected IoT Platform allowed data transfer every 15 seconds, the data read in between was lost. In order to prevent this from happening, an algorithm was developed and every data read was recorded and processed.
- ❖ In the IoT platform, the information in the channel could only be accessed with an account login, so I needed an interface. While searching for a suitable method, I saw that there is a GUI where the data flow can be followed by having only the channel ID and 'API key' information with the interface offered by the platform. This has been a very useful development.



## Application Areas

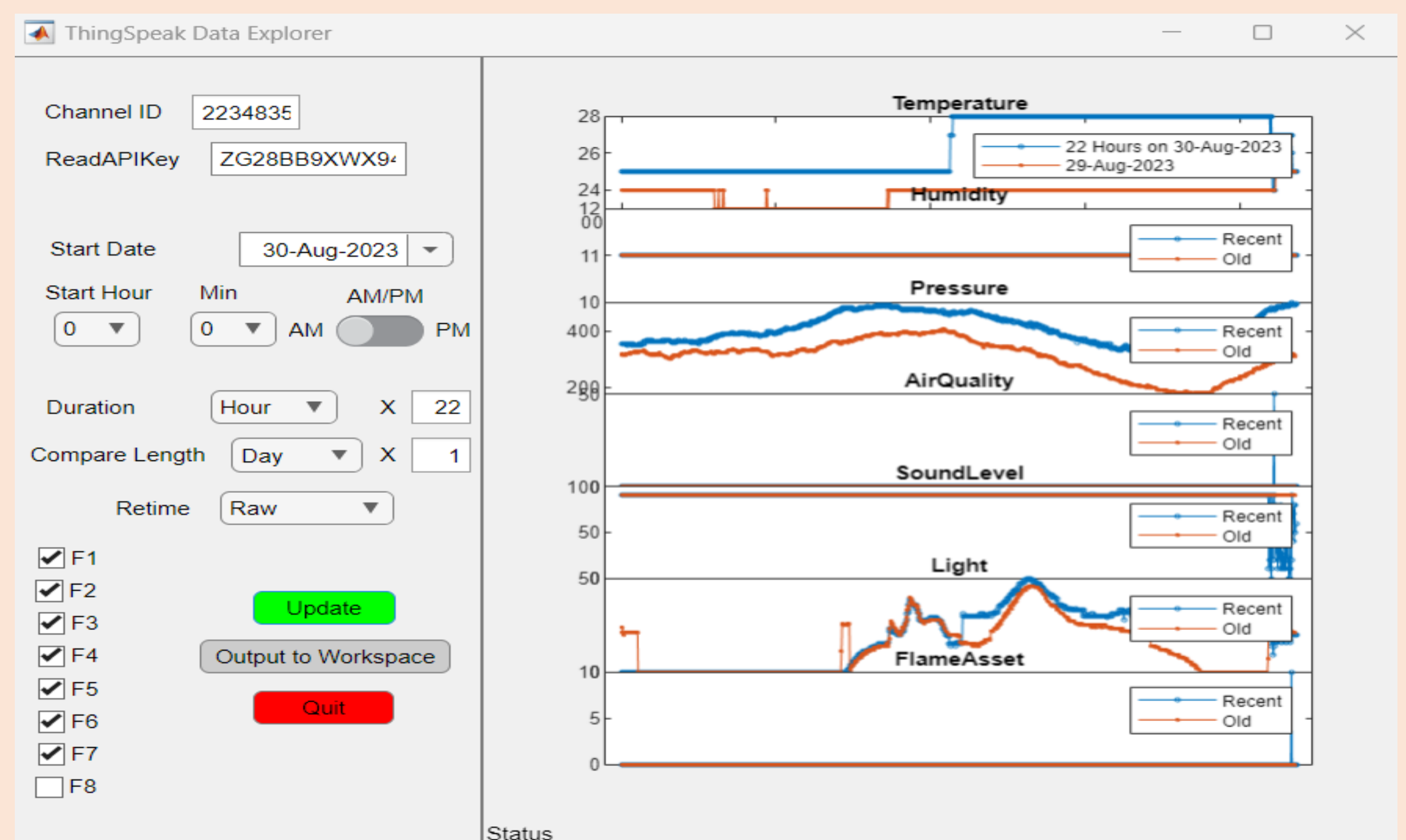
- ❖ This project can be used in very wide areas like many IoT projects developed.
- ❖ It can be used by parents who want to monitor the play/living areas of their young children, relatives who want to be sure of the well-being of their relatives with health problems, and it can also facilitate the security/compliance follow-up of large companies.

## Results and Discussion

- ❖ Below pictures, from Thingspeak IoT platform, temperature, humidity, sound level, pressure, gas and flame presence and light level information can be seen.



- ❖ After the implementations, sensors collect the data from the environment continuously.
- ❖ Results can be read and saw from platform and the GUI. When the unit interferes with its environment from the outside, the changed data can be observed on the platform and in the GUI.
- ❖ When a light source is turned on in the environment, when the music is turned on/off, when there is a wind breeze from the window or when a gas presence is felt, the sensors detect this and send this information to the platform.
- ❖ Data can be seen from the GUI too. This interface also allows us to compare the current data with the data of the previous day/time.



## Acknowledgements

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