ABSTRACT

The main aim of the project is to predict the future temperature in a particular area, specially closed industrial area, using a temperature sensor connected to an Internet-of-Things device, here Arduino Uno.

The sensor fetches the data continuously and sends the data using serial connection and PySerial, to a python program. The program has log-in options as well as a database to store the manager and details of the company. Now using the fetched data and using Algorithms such as ARIMA (Auto Regressive Integrated Moving Average) for machine learning, the program will be able to predict the temperature to the near-future.

This prediction helps in early warning detection systems in case of industries where the main application of the process is concentrated on. The prediction is stored in a database and is again compared with the predicted result to further improve the result.

Whenever there's a breakdown or error in machinery, there can be minute early warning signs that can be too difficult for a normal human to notice. This project helps us to check for it and to help us take preventive measures before a catastrophic failure using the temperature datum.

PROBLEM STATEMENT

There are many industries in the world, which have machines whose operations are crucial and every single second of it's performance count. In such a scenario catastrophic failure or non-optimum performance of the machine can result in huge amount of losses in the economy as well as many sectors depending on the system.

These failures can be anything from core of the Nuclear power plant going into a meltdown state or a processor manufacturing device not in a optimum state or a bioreactor not having the correct environmental factors that they need to continue their operation.

The failures of the machines, can be attributed to many causes which point towards both natural and man-made errors.
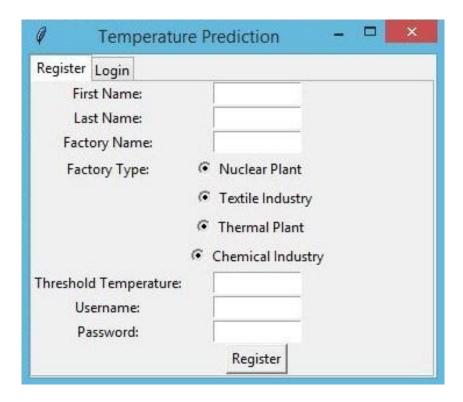
SOLUTION IMPLEMENTED

For most of the time, before a machine failure or decrease in performance occurs there are few minute signs that can be analysed to predict the outcome. Our model takes this statement at it's core and implement a python program using machine learning algorithm, ARIMA – Auto Regressive Integrated Moving Average to predict the future data.

We have used the temperature data from the closed machine environment as a factor for prediction. The temperature values are obtained by a temperature sensor connected to an Arduino Uno, which then passes the data serially to the python program. The program then analyses the data and predict the future values.
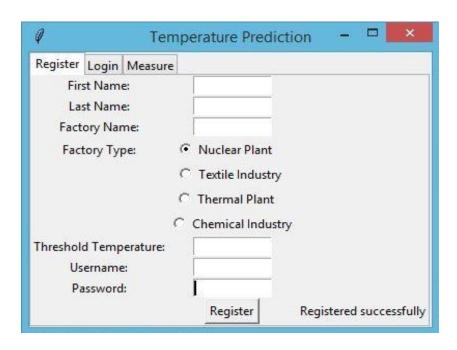
The program also has a database management, for storing information about the user as well as the industry. The database also stores login credentials and the threshold temperature value which if predicted to be reached will create a warning.
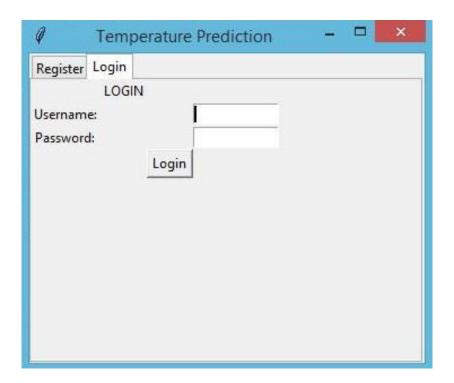
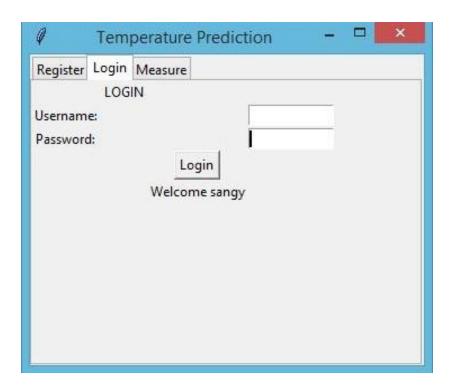# INPUT/OUTPUT SCREENSHOTS:

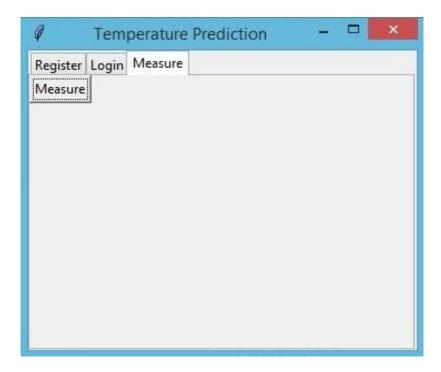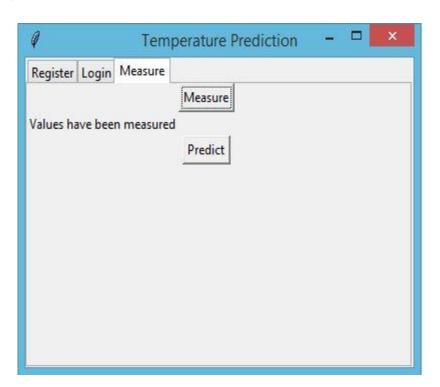Registration Page:

Successful Registration:

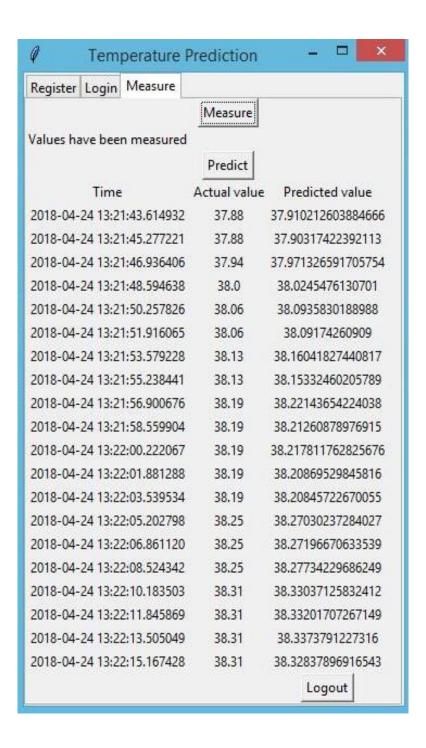Login Credentials:

Successful Login:

Measure Tab:

After Fetching 100 Values:

Predicted Values:

CONCLUSION

The project can have various applications in the industrial sector. Also, this project can be further expanded to include further attributes such as sound, fan speed, voltage and current values. Also, the database of the project stores a value called threshold value, which if it is predicted to be attained by the program can send a alarm or warning to the end user, so that necessary actions can be taken pre-emptively.