

SYNOPSIS

Project made by:

1. Mihir Kelkar
2. Sumedh Sen

Title : Crowdly - A predictive crowd estimation tool for Central Railway

Abstract : Every person travelling by trains faces the issue of excessive crowd. The population explosion in recent times has aggravated this problem. This can be resolved by the introduction of Machine Learning (ML) in the existing technologies. Our system titled “Crowdly” integrates ML algorithms and PHP scripts to provide a solution to this issue.

Objective : To predict the number of people at a particular station between a given duration.

Methodology : The user is provided with an interface consisting of the following inputs:

1. Station
2. Month
3. Date
4. Time Interval

Once the user provides fills all the fields with the desired inputs and presses the submit button, the PHP script provides the input to the Python file. The Python file having a joblib file which consists of the trained model, uses this file and predicts the number of people for the entire day. It returns all these predictions to the PHP script. The PHP file filters this data and generates a graph with the help of Javascript. All these values are then plotted on the graph as the predictions for the entire day. It also provides a single desired prediction requested by the user in a separate space.

Model Selection : Initially, two sets of models were selected namely: Regression models and Neural Networks. Neural Networks proved ineffective for predicting the number of people. However, two regression models provided satisfactory results. The two models were : Random Forest Regression and XGBoost. Out of these models, XGBoost proved to be more effective with lower RAM consumption, less execution time and a better accuracy.

Accuracy :

Measured using 10-fold cross validation.

Neural Networks : 40%

Support Vector Regression : 56%

Decision Tree Regression : 74%

Random Forest Regression : 88%

XGBoost : 90%

Finalized Model : XGBoost

Technologies Used :

Front-End : HTML, CSS3, Hybrid combination of Bootstrap and Material Design Lite, Javascript

Back-End : PHP, Python

Databases : MySQL, Microsoft Excel