Traffic Intensity Prediction and Recommendation

Domain: Machine Learning (ML), Web Application Development
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Agenda

1. Brief / Scope
2. Motivation
3. Requirement Specifications
4. About the Dataset
5. Project Modules
6. Use Case Diagram
7. Activity Diagram

Brief/Scope

- Web application design and implementation of Traffic Intensity Prediction and Recommendation, a Machine Learning (ML) project
- For prediction purposes of the intensity of traffic at a particular junction and recommendation of possible solution to overcome congestion at that junction
- Application is based on a to-be-trained ML algorithm on which the provided data is predicted against
- Several ML algorithms will be reviewed and studied for future enhancement of the project

Motivation

- Expressions of increased traffic:
  - Reduction in traffic speeds, (increased journey times)
  - Increased fuel consumption
  - Environmental pollution
- Factors:
  - Acceleration of urbanization,
  - population growth,
  - Unimproved road conditions, bring great pressure to urban traffic management
- Can help:
  - Assist route planning
  - Alleviate congestion, etc

Continued

- Growing available traffic related datasets provide us potential new perspectives to explore this problem
- Goal:
  - To predict intensity of traffic over given period of time and recommend if solution to overcome congestion is necessary or not and show how many districts needed how many treatments.

Requirement Specifications

1. A Desktop Computer
2. A web browser
3. Java
4. Python
5. FLASK
6. Node.js, npm
7. MySQL

About the dataset

- Type: CSV or XLSX file
- Contains features
  - Junction Name
  - Date-time
  - Number of Vehicles
- A single row of csv data represents:
  - Number of vehicles at the junction at given date-time
- Can be:
  - Hourly data,
  - Daily data,
  - Monthly data

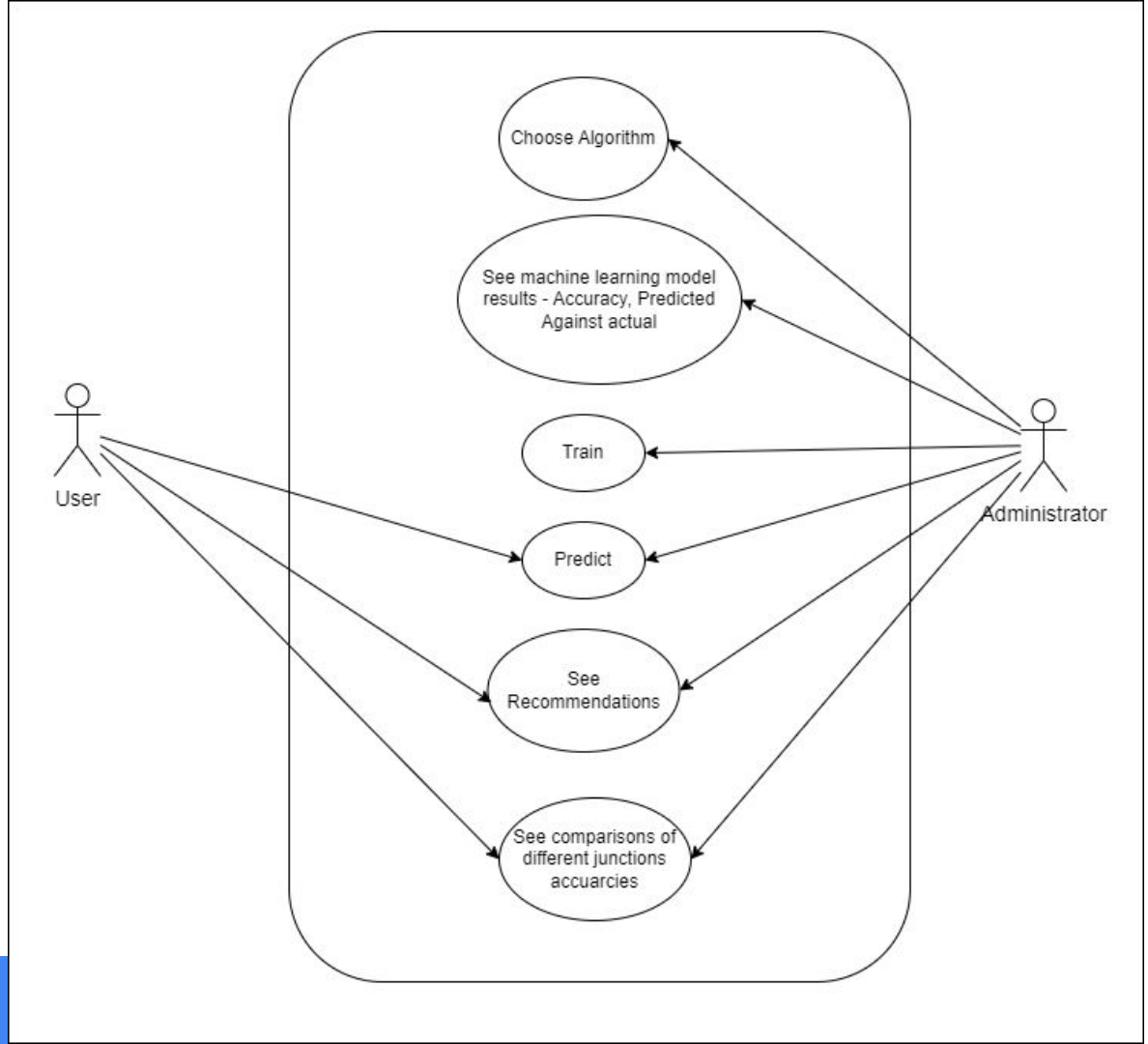
Downloaded from Kaggle
https://www.kaggle.com/datasets/fedesoriano/traffic-prediction-dataset

DateTime	Vehicles	Junction
2014-11-01 00:00:00	15	Vidya Nagar
2014-11-01 01:00:00	13	Vidya Nagar
2014-11-01 02:00:00	10	Vidya Nagar
2014-11-01 03:00:00	7	Vidya Nagar
2014-11-01 04:00:00	9	Vidya Nagar
2014-11-01 05:00:00	6	Vidya Nagar
2014-11-01 06:00:00	9	Vidya Nagar
2014-11-01 07:00:00	8	Vidya Nagar
2014-11-01 08:00:00	11	Vidya Nagar
2014-11-01 09:00:00	12	Vidya Nagar
2014-11-01 10:00:00	15	Vidya Nagar

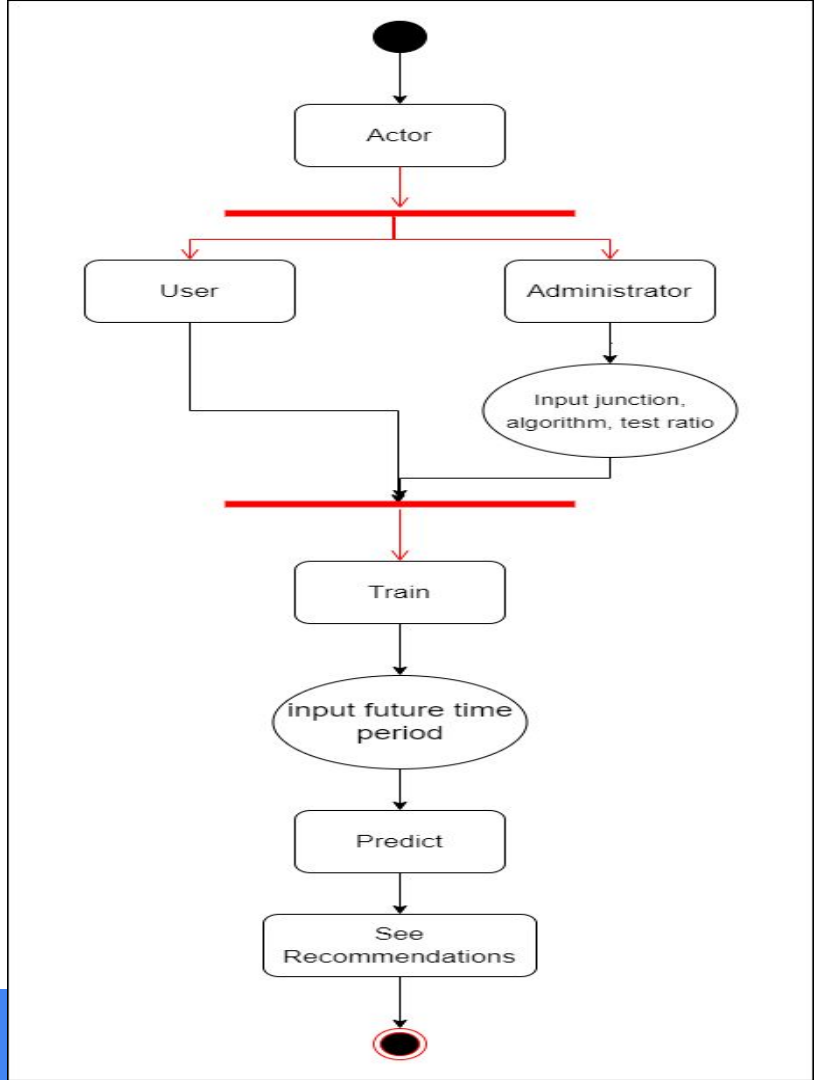
Project Modules

1. Web Programming
   a. Process of creating and designing web applications.
   b. Writing, Markup and Coding
   c. Also commonly known as Full Stack development
      i. Front-end development
      ii. Back-end development

2. Machine Learning
   a. Core Part
   b. Helps visualize and build prediction models after training (learning) on provided data.
   c. Feed the ML algorithm an immense amount of data and have the computer make predictions, etc.



Use Case Diagram



Activity Diagram

Software Requirements

1.

Thank You