Predicting Road Accident Severity

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Introduction

This project is about predicting how severe a road accident might be — slight, serious, or fatal.

We used real-world data to find patterns, trained machine learning models,and created a dashboard to visualize the results.

Our goal is to help improve road safety and support better traffic planning.

Project Overview

Goal

Predict accident severity: Slight, Serious, Fatal

Benefits

- Enhances traffic police planning
- Raises awareness about road safety.
- Improves emergency responses

Dataset Details

Source

Kaggle – Road Accident Dataset

Size

307,973 records

Features

21 variables per record

Target Variable

Accident_Severity

- Slight
- Serious
- Fatal

Data Preprocessing

- Fixed Missing Values
- Converted Categories to Numbers
- Extracted Time and Date Features
- Encoded Target Variable

Project Objectives

- Clean and Prepare Data
- Analyze Key Factors
- Predict Severity with ML
- Visualize with Power BI
- Present Clear Findings

Methodology

1

Collect Data

Kaggle source

2

Clean Data

Fix missing and errors

3

Explore Data

Identify patterns

4

Select Features

Key variables

5

Train Models

Logistic Regression, Random Forest, KNN

6

Evaluate Results

Accuracy and precision

7

Visualize Insights

Power BI dashboard

8

Deployment

flask and streamlit

9

Prepare Presentation

Machine Learning Models

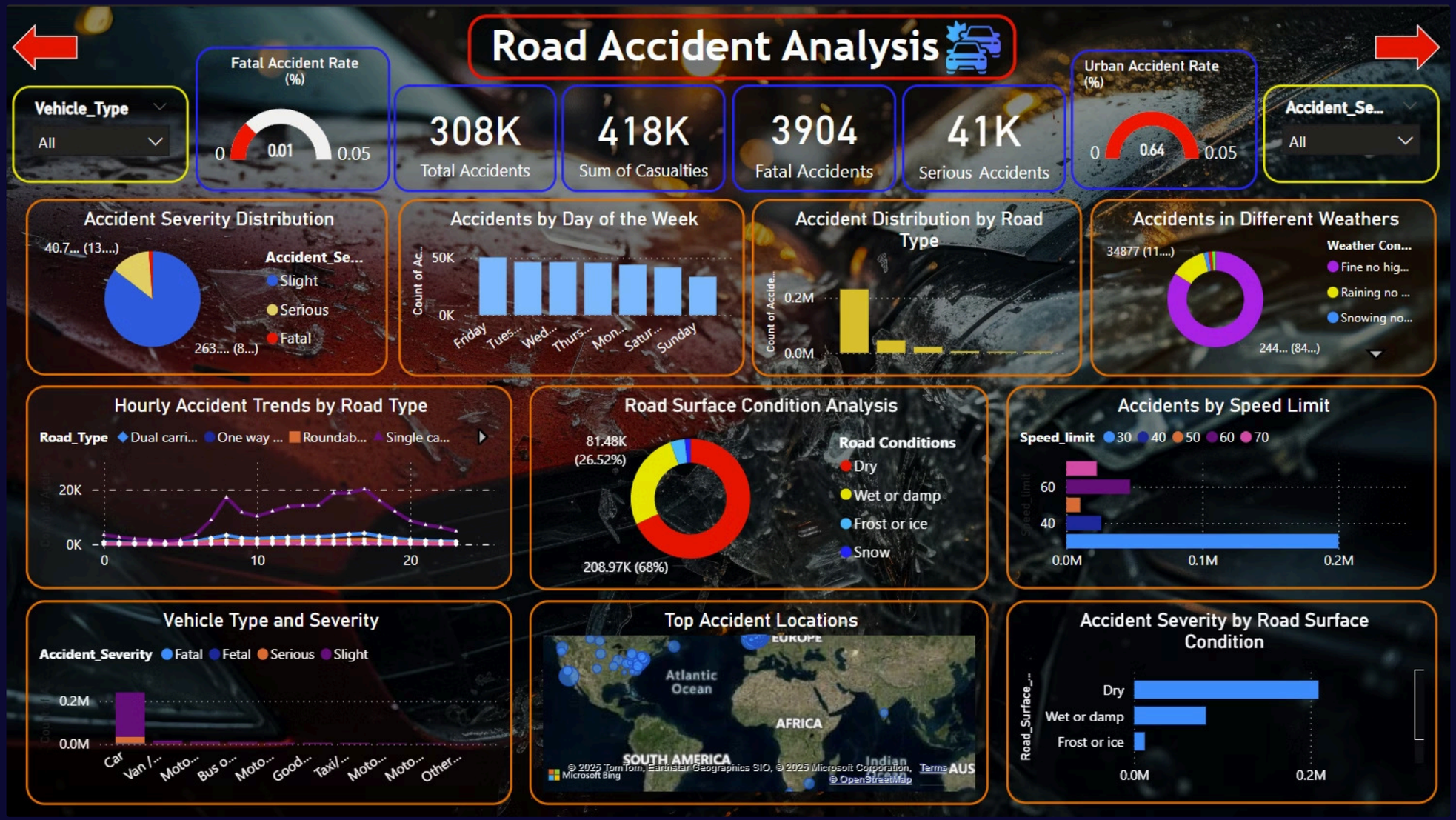
Classification Models Used :

- Logistic Regression
- Random Forest
- Decision Tree
- KNN
- SVC

Goal accuracy: 80%+

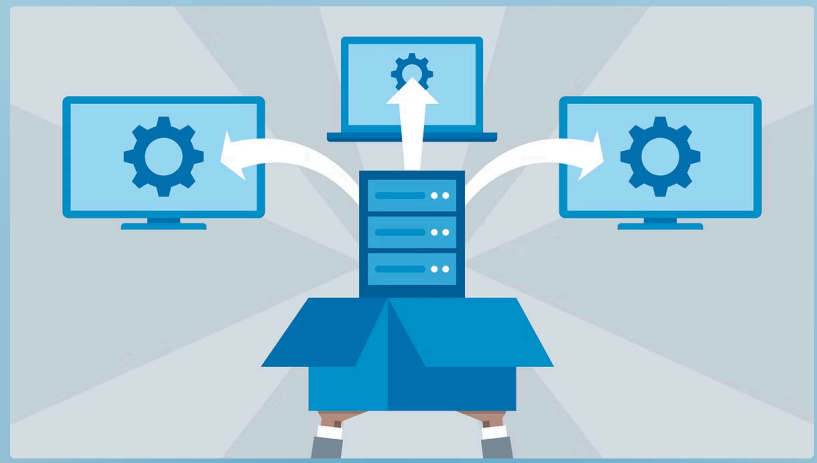
Power BI Dashboard

- Interactive accident trends
- Impact of weather and road type
- User-friendly interface



Deployment

- **Flask** used to deploy ML model as a simple web app.
- **Streamlit** used for building an easy, interactive user interface.
- Users can input accident details and see severity predictions live.
- Hosted locally for demo purposes.



References

YouTube

[Machine Learning Intro]

ChatGPT

Guidance and support

Kaggle Dataset

Source data for analysis

Conclusion and Future Work

Predictive Modeling Boosts Safety

Future: Add Real-Time Data

Collaborate with Traffic Authorities

Thank You

Questions & Discussion