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CORETECH LABS

Comprehensive Analysis of Road Traffic Accident

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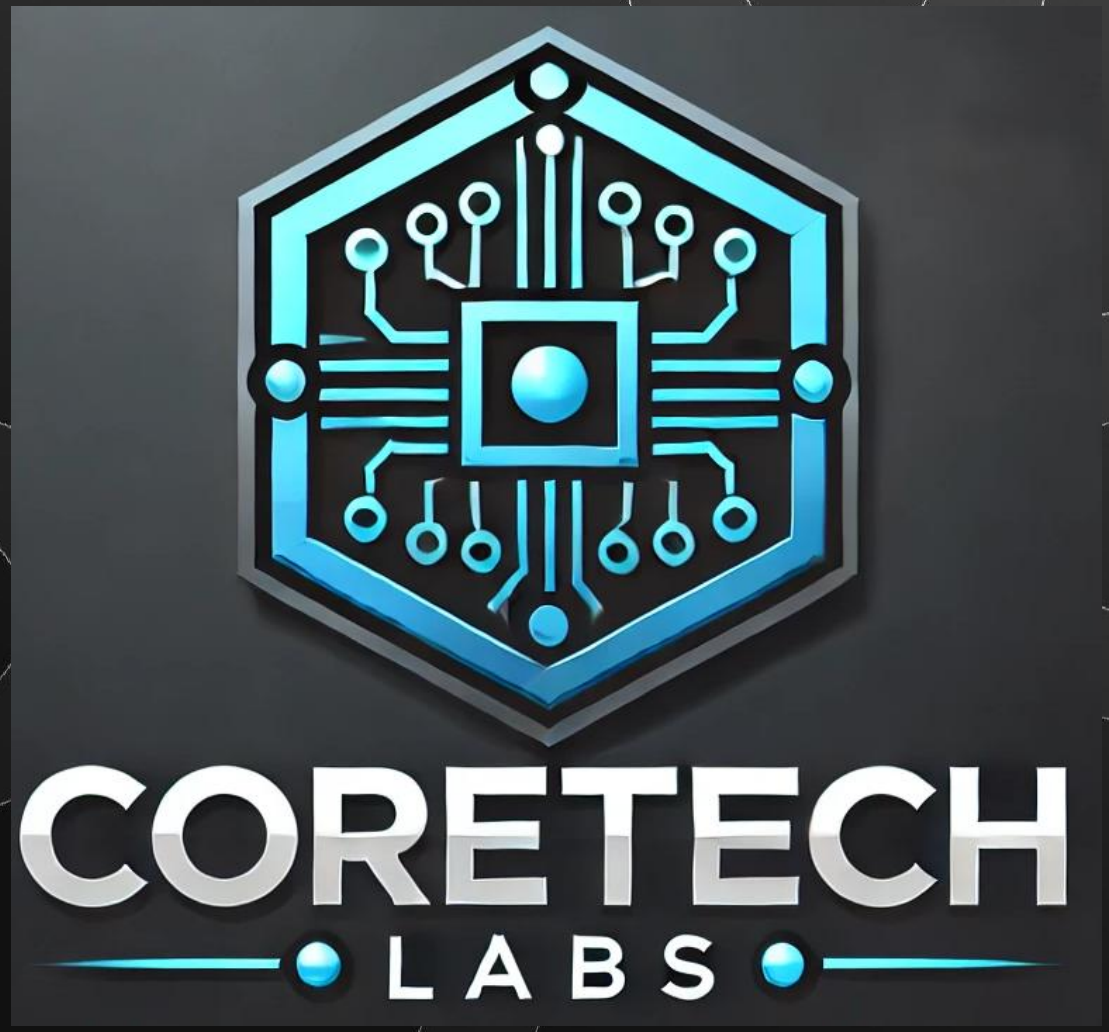
-- Business Introduction --



At **CoreTech Labs**, we are at the forefront of **cutting-edge technology solutions**, specializing in **software development, AI integration, and data-driven innovations**.

Our mission is to empower businesses with **scalable, intelligent, and efficient** digital solutions that drive growth and operational excellence.
With expertise in **enterprise software, and automation**, we help organizations streamline processes, enhance user experiences, and stay ahead in an evolving digital landscape.
Whether it's **custom app development, AI-powered analytics, or IoT solutions**, CoreTech Labs is dedicated to **transforming ideas into reality**.

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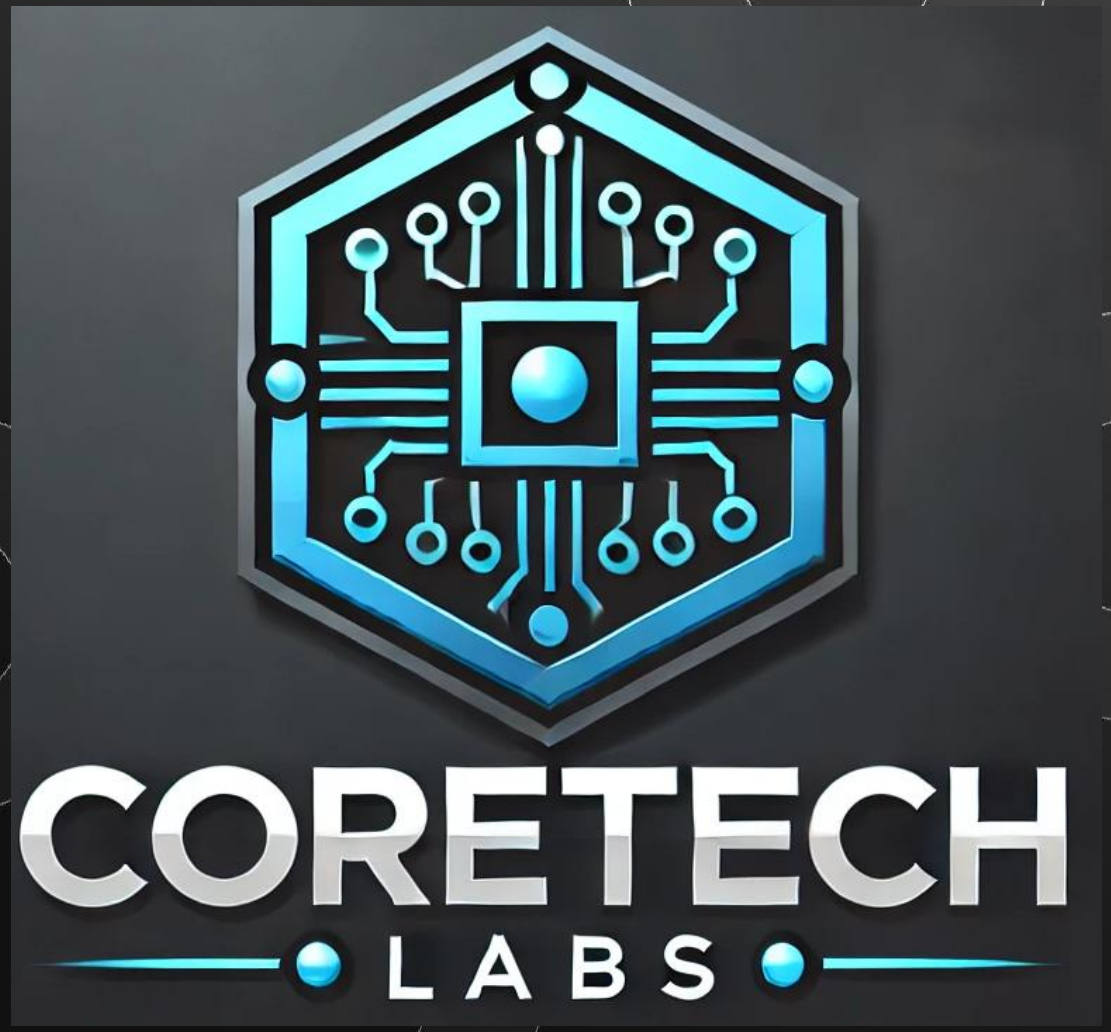

CoreTech Labs provides the following services:

- ✔ **Software Development** – Tailored solutions for web, mobile, and enterprise applications
- ✔ **AI & Machine Learning** – Smart automation and predictive insights
- ✔ **Data Analytics & Business Intelligence** – Turning data into actionable decisions

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-- PROBLEM STATEMENT --

Road accidents remain a critical public safety concern, with multiple factors such as weather conditions, road surface conditions, speed limits, and traffic controls influencing accident severity.

However, raw accident data often exists in unstructured formats, making It difficult for stakeholders to derive actionable insights.

Hence, you have been tasked as a Data Scientist to perform statistical analysis and Create dashboard for better understanding of the data.

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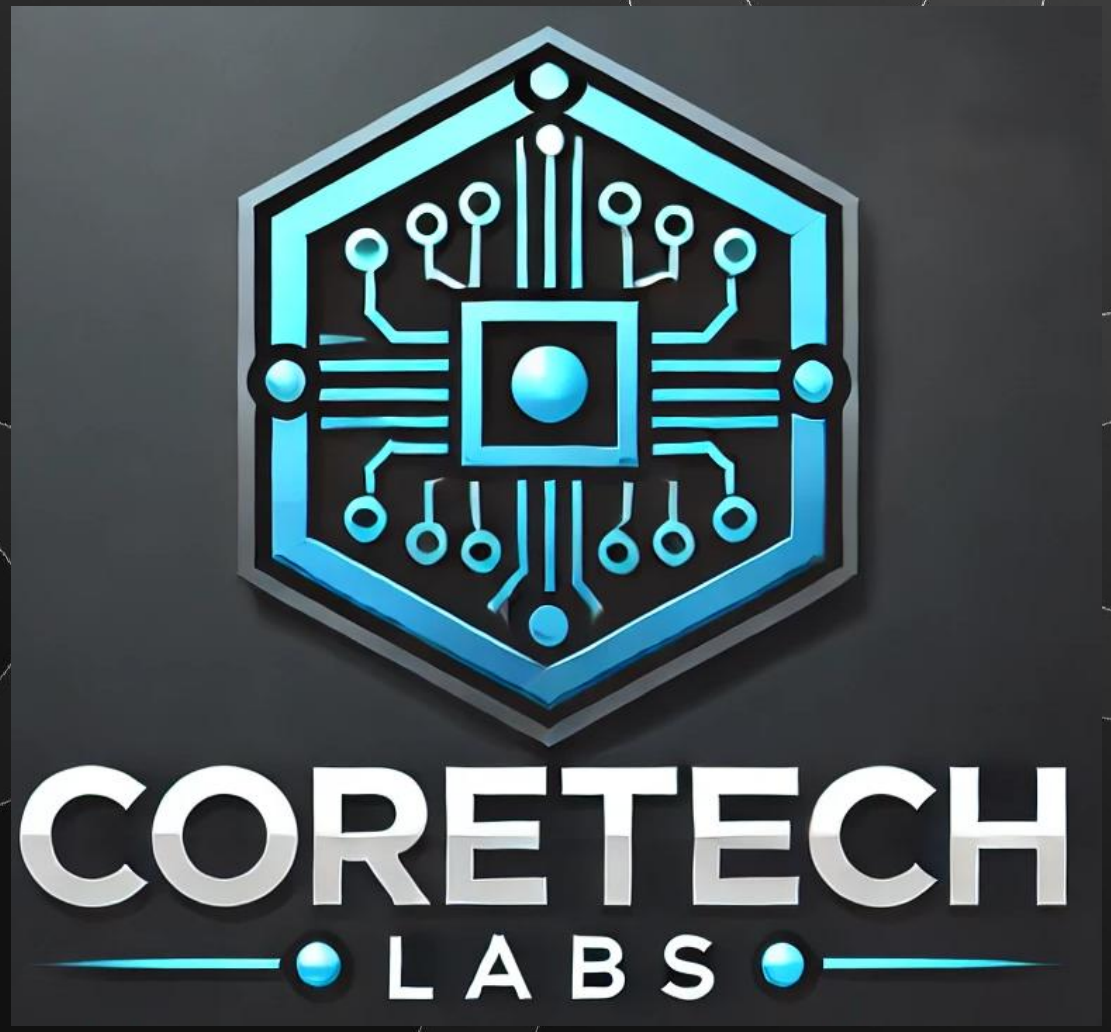

-- Rationale for Project --

- Importance of Analyzing Road Traffic Accidents
- Need for Data-Driven Decision Making
- Addressing Key Road Safety Challenges
- Enhanced Road Safety Policies
- Optimized Resource Allocation

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--Specific Objectives—

To Clean and Standardize the Accident Dataset	• Identify and correct **missing, inconsistent, and duplicate values**. • Ensure proper formatting of **dates, times, locations, and categorical variables.**
To Analyze the Frequency and Severity of Accidents	• Determine the **total number of accidents per year, month, and day of the week.** • Assess the **distribution of accident severity levels (Fatal, Serious, Slight).**
To Identify High-Risk Factors Contributing to Accidents	• Analyze how **speed limits, road conditions, and weather impact accident severity.** • Evaluate the influence of **time of day, light conditions, and urban vs. rural areas.**
To Perform Descriptive Statistical Analysis	• Compute **mean, median, and standard deviation** of key accident-related variables.
To Develop an Interactive Excel Dashboard for Data Visualization	• Create **charts, graphs, and heatmaps** for accident trends and patterns. • Implement **filters and dynamic visualizations** to explore accident data efficiently.
To Provide Data-Driven Recommendations for Road Safety Improvements	• Identify accident hotspots and propose **traffic safety interventions**. • Suggest **policy measures, infrastructure improvements, and public awareness strategies** to reduce accidents.

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-- Data Description --

Accident Index	Unique Identifier for each accident record
Accident Date	The date the accident occurred
Month	Month of the Accident
Year	Year of the accident
Day_of_week	The day of the week
Time	Time of the accident
Accident_Severity	Category of the accident
Latitude	Coordinates of the accident location
Local_Authority	The district where the accident happened
Urban_or_Rural_Area	The area where the accident occurred
Weather_condition	The weather at the time of the accident

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-- Data Description --

Light_Conditions	The Light condition when the accident happened
Road_surface_Conditions	The state of the road at the time of the accident
Junction_Control	Indicates the state of junction control at that point
Junction_Detail	Detail on the junction type
Road_type	Classifies the road
Speed_Limit	The speed limit of the road where the accident occurred
Carriageway_Hazards	Hazards like roadworks, oil spills or debris
Number_of Casualities	The total number of people injured or killed in the accident
Number_of_Vehicles	The number of vehicles involved in the accident
Vehicle_Type	Types of vehicles involved
Police_Force	The police department in that area

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--Deliverables—

Data Cleaning and Processing	Descriptive Statistics of relevant columns	Excel Dashboard	Reporting
• Dataset Cleaning	• Central Tendencies • Range • Skewness	• Relevant KPIs • Apply Slicers	• Power Point Slide • Dashboards • Statistical Analysis • Recommendations