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# Risk and Weightage based Route Prediction System Using Machine Learning: A review

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*Abstract* - **Transportation is the key context ingredient in modern life. Optimised route prediction is the vital aspect for commercial enterprises and individuals also. Proper route prediction not only helps to save time, fuel, and money, it additionally prevents accident, air pollution. Operational efficiency like uncertain event and incident can be cause for delay delivery, reaching late in destination that cause also the revenue loss for organisation and individual also. According to the 2019 Urban Mobility Report in 2017, congestion caused urban Americans to travel an extra 8.8 billion hours and purchase an extra 3.3 billion gallons of fuel for a congestion cost of $166 billion. Trucks account for $21 billion (12 percent) of the cost, much more than their 7 percent of traffic. The average auto commuter spends 54 hours in congestion and wastes 21 gallons of fuel due to congestion at a cost of $1,010 in wasted time and fuel. [1]. Nowadays drivers are using different Map software and GPS(Global Positioning System) to choose the appropriate route but sudden changes like climate variation , road congestion due to social gathering ,road construction work etc. are difficult to incorporate in existing map software. With the development of Intelligent Transportation Systems (ITS) and Internet of Things (IoT), transportation data has become more and more ubiquitous. This triggers a series of data-driven research to investigate transportation phenomena. Among them, Machine learning theory is considered one of the most promising techniques to tackle tremendous high-dimensional data. Machine Learning models are able to predict more accurate rote in transportation systems. This paper deeply analyses existing route prediction systems and different technology used in those systems. The Authors will focus on improving this route prediction using a machine learning model.**

***Keyword - Machine Learning, route Prediction, Supervised learning, unsupervised learning. Deep learning.***

## I. INTRODUCTION

Mobility is one of the major dimensions of smart city design and development. Accurate route prediction is a challenging job. Many Car rental Companies, logistic service providers, courier delivery service providers etc. are losing their revenue due to lack of accurate route prediction.

Especially medicine delivery, food delivery (short distance and long distance) correct route prediction creates high impact in those businesses. Navigating tools like Google Maps or Waze show the time needed for our trip, calculate ETA and create the most optimal route based on road conditions and predicted traffic. Multiple logistics-related businesses heavily rely on the accuracy of these calculations. Those are existing systems able to provide very short time prediction. To solve all those problems needs accurate rote prediction. To get correct route prediction, we need to analyse a lot of data like historical data ,weather data, social media data, news media data, real time data, RCRS(Road condition reporting System) need to analysis. Along with that shortest distance also needs to be measured.

In the paper authors reviewed different Machine learning techniques and applications of Route Prediction. In Section 2 reviewed Machine Learning model which already used in route and traffic predict .Next section consists of various Data sources. Section 4 authors can additionally evaluate among different categories of Machine Learning , which will assist us to have a macro overview of different types of ML strategies and which are right for route prediction tasks according to their unique model feature Authors incorporate challenges of the different model.

## II. RELATED WORK

Weiran Yao et al [2].proposed a solution for the traffic prediction model, it's far very tough to forecast morning traffic .The cause is that traffic can spoil down considerably at some point of the early morning shuttle, and the time and length of this spoil-down range notably from day to day. Early morning traffic forecast is vital to tell morning-shuttle traffic management, however they may be commonly hard to expect in advance, in particular via way of means of midnight (called 'next-day morning traffic prediction' thereafter).In this paper, author advise to mine Twitter messages as a probing approach to apprehend the impacts of human's artwork and rest patterns with inside the middle of the night/night-time of the previous day to the following-day morning site visitors. The model is tested on limited-access highway networks in Pittsburgh as experiments. The ensuing dating is exceptionally easy and powerful. We discover that, in general, the sooner humans relax as indicated from Tweets, the greater congested roads might be with inside the morning. The occurrence of big sports with inside the middle of the night in advance, represented via higher or lower tweet sentiment than regular, often implies reduced adventure name for with inside the following morning than regular days. Besides, humans tweeting sports activities with inside the night time time in advance and early morning (via 5am) are statistically associated with congestion in morning peak

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