



Ahmedabad
University

CSE523 - Machine Learning

**Project 11: Identify abnormal driving behaviour using
spatiotemporal analysis**

Weekly Report 2

Group: Titans

Team Members

Enrollment Number	Name
AU2140043	Bhavya Khakhar
AU2140154	Harsh Loriya
AU2140170	Krishna Patel
AU2140187	Priyam Shah

Problem discussion:

Road safety and transportation efficiency are directly impacted by the huge problem of identifying anomalous driving behaviour utilizing spatiotemporal analysis. Let's examine the details of this issue. First of all, a wide range of behaviours that depart from what is deemed normal or safe on the road is included in the category of abnormal driving behaviour. This could involve erratic lane changes, abrupt accelerations or decelerations, tailgating, driving while intoxicated or under the influence of narcotics, tailgating, and even aggressive driving behaviors like road rage.

Accurately and promptly identifying these aberrant behaviours is the difficult part. Because it looks at both the spatial (where the driving behaviour happens) and temporal (when it occurs) aspects, spatiotemporal analysis is relevant. This implies that rather than focusing on a single driving behaviour snapshot, we're tracking how it varies over time and between various locations.

Researchers and practitioners usually combine methods from data science, machine learning, and geographic information systems (GIS) to address this issue. To learn more about how drivers behave, they gather data from a variety of sources, including GPS units, accelerometers, cameras, and sensors built into automobiles.

They then examine this data to find trends and anomalies suggestive of strange driving behavior using spatiotemporal analysis tools. This could entail identifying outliers that deviate from typical driving patterns, clustering similar driving behaviours for additional research, or developing models that learn from historical data to predict future behaviour.

The ultimate objective of this research is to create algorithms or systems that can recognize anomalous driving behaviour in real-time and automatically notify law enforcement, transit authorities, or drivers in a timely manner. By doing this, we can raise overall transportation efficiency, decrease accidents and fatalities, and increase road safety.

The complexity and variety of driving behaviour, the requirement for strong and trustworthy data-gathering techniques, and the ethical issues around privacy and consent while tracking people's driving behaviours are just a few of the obstacles that must be overcome in this quest.

Notwithstanding these difficulties, spatiotemporal analysis has the potential to greatly improve road safety and efficiency for all users by detecting anomalous driving behaviour. In order to address a pressing problem with broad societal implications, a multidisciplinary team of experts from disciplines like data science, transportation engineering, and psychology has come together.