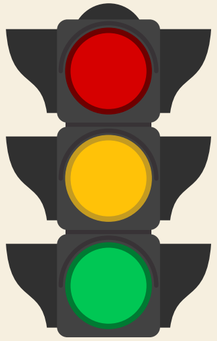


BEHAVIORAL PATTERN ANALYSIS OF DRIVERS

Group Id: PCS24–59

Shivi Goel

Sneha Jaiswal

Shikha Dixit

ABSTRACT

- The current provision of providing a permanent driving licence is one-time physical driving test which is not an efficient criterion for issuing driving licences.

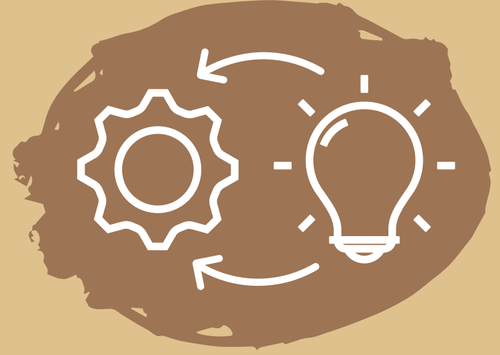
- It is necessary to further explore the relationship between driver behaviour, vehicle status and road traffic environment to determine the drivers' comprehensive driving capability and thus issuing the permanent licenses accordingly.

INTRODUCTION

- Many accidents occur due to the unsafe, careless and dangerous driving of the driver. Even today, the problem of traffic safety concerns the worldwide.

- In order to better educate, manage, and restrain driver behaviours, from the perspective of human factors and psychology, we have devised some parameters including speed of the vehicle, acceleration of the vehicle, steering wheel movement, lane changing frequency, seat belt and traffic rule violations.

PROBLEM STATEMENT

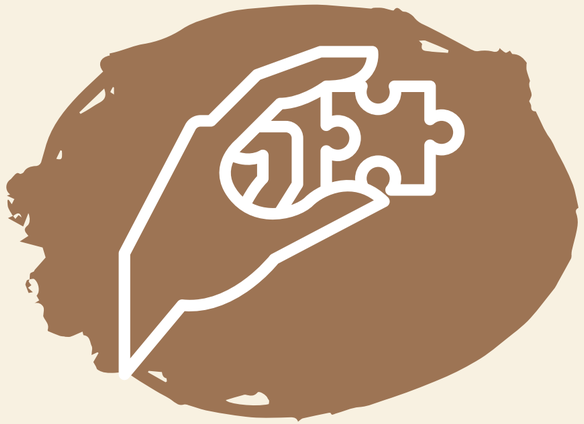


- There are 997 regional transport offices (RTOs) in India issuing over 1.15 crore fresh or renewed driving licences every year. A rough calculation shows that, on an average, 40 licences are issued by each RTO on any working day and it can be as high as 130 licences per day in case of Delhi.

- It is observed that the rate of deaths per thousand vehicles in 2021 has increased from 0.45 in 2020 to 0.53 in 2021. 4,03,116 road accidents caused 1,55,622 deaths and injuries to 3,71,884 persons during 2021.

- These reports are enough to realise that, this one-time physical driving test is not an efficient criterion for analysing driver's skills and issuing driving licences. Thus, we need a more comprehensive system.

FACTORS



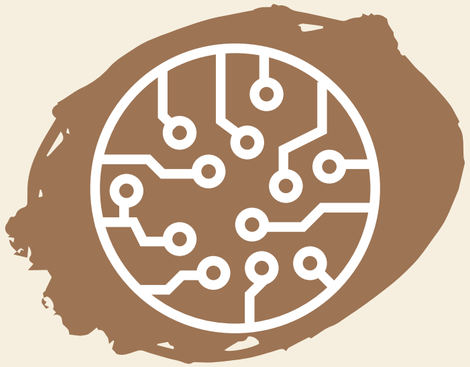
- STEERING WHEEL
- SPEED
- ACCELERATION
- SEAT BELT
- LANE POSITION

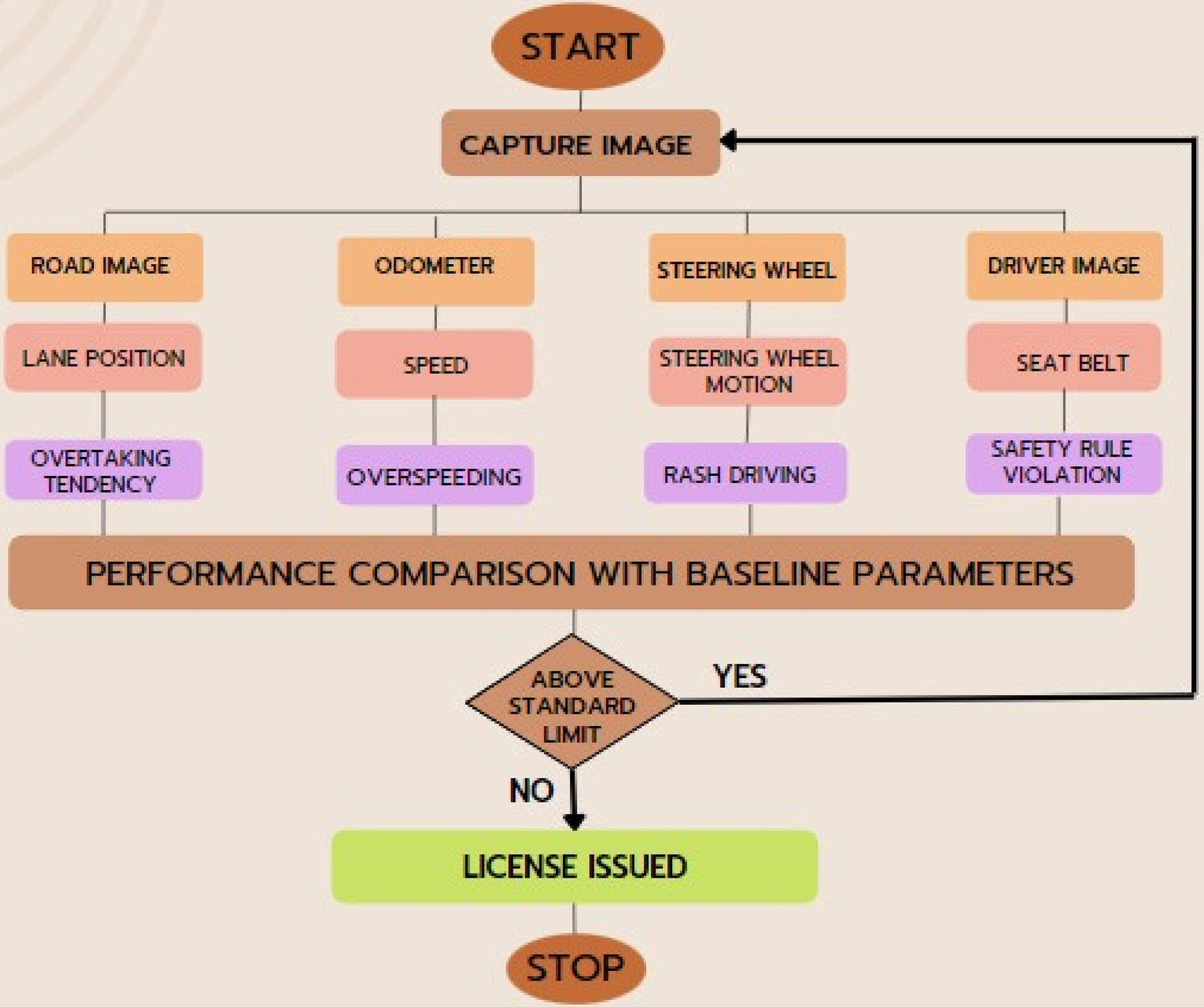
OBJECTIVE

- This project proposes a more detailed approach to analyse one’s driving skills and behaviour, which can be defined as the way a driver responds to his existing driving state by performing a certain action over a longer time period using some specific factors.

- The aim is to develop a scoring system for drivers under observation through which we can score them and decide whether they should be given permanent driving licences or not.

PROPOSED METHODOLOGY





PROPOSED ALGORITHM

- To implement the model, two cameras will be used.
- One camera will be placed on the dashboard of the vehicle which will click images of road through the vehicle. The images collected by this camera will be used for the analysis of two factors namely steering wheel movement and lane position.
- The other camera will be used to click images of the driver for seat belt check and later it will collect images of the odometer to keep a check on the speed and acceleration of the vehicle.
- These parameters are checked over a certain period of time. If these parameters are within their specified limit then the driver is issued with the permanent driving licence otherwise not.

FUTURE SCOPE

- This approach for issuing permanent driving licences will help considerably in reducing road accidents as the driving licence will be issued to only those whose skills have been analysed and hence it is considered that they will drive safely.

- Although accidents are an unpredicted incident and we cannot be sure that a person with good driving skills for a certain period of time will never do an accident and always drive safe but still with the help of this model we can surely help in reducing them.

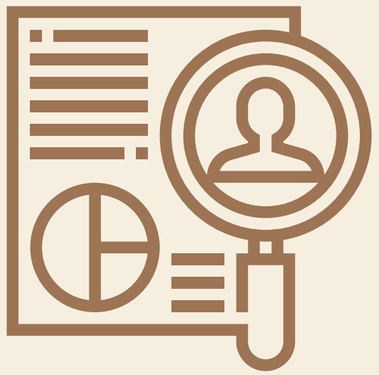
CONCLUSION

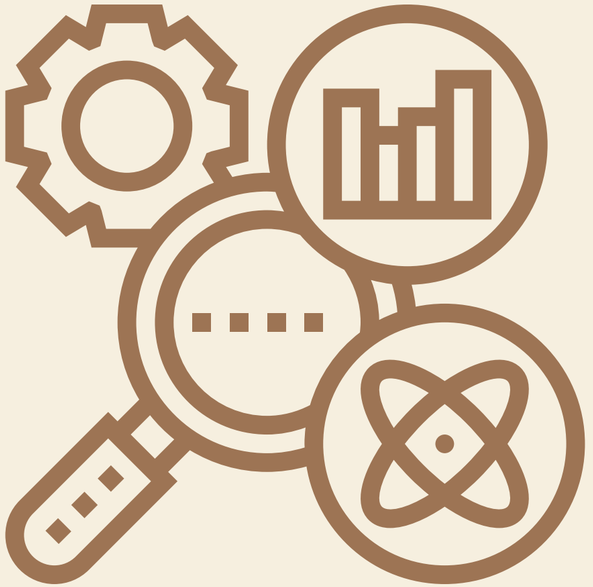
- The issuing of a permanent driving licence cannot be done based on a single test. Since driving a vehicle not only involves safety concerns regarding the driver’s life but it also includes the safety of other people on the road.

- Therefore a person should be allotted with his permanent driving licence only after doing certain analysis on his driving behaviour.

- This approach for issuing permanent driving licences will help considerably in reducing road accidents as the driving licence will be issued to only those whose skills have been analysed and hence it is considered that they will drive safely.

RESEARCH PAPERS SUMMARY





1. ORDERLINESS PREDICTS ACADEMIC PERFORMANCE: BEHAVIORAL ANALYSIS ON CAMPUS LIFESTYLE

- The paper basically tells us about behavioral analysis of students evaluated with the help of a study that determines the relationship between student's behaviour with their academic performance.
- The data is collected through smart cards given to students for this purpose. This data basically includes their shower time and meal time to calculate their orderliness and their library in and out timings to calculate their diligence.
- Based on this data and its analysis, educational institutions can evaluate good and poor performance of their students and work accordingly to improve the performance.

2. ANALYZING OBJECTIVE AND SUBJECTIVE DATA IN SOCIAL SCIENCES: IMPLICATIONS FOR SMART CITIES

- The research work done in this paper revolves around the integrati technology into the field of social studies.
- The study involves a field experiment carried out in UK on around 1870 people for two different time periods. Data for analysis is collected with the help of a Smartphone app.
- . Data is collected in different forms including location, text, image and time. Clustering is applied. With the help of different graphs and charts, the data is analyzed.
- Finally it concludes on how large scale social studies can be carried out and which type of techniques can be used for this purpose

3. ANALYSIS OF DISTRACTED DRIVER BEHAVIOUR USING SELF-ORGANIZING MAPS

- In this paper, different types of distractions of a driver are discussed and also it tells the effect of a particular distraction in driver's behavior.
- It tells how these distraction can change the behaviour of drivers. So for this they have used Self Organizing Maps (SOM) technique which is used for clustering and mapping the data.
- The collected data, that was used for analyzing the driver's behaviour, included application of the brake(brake pressure) , velocity in three dimensions (X,Y,Z) , turning, lane gap, and above average velocity

4. BEHAVIORAL CLASSIFICATION OF DRIVERS FOR DRIVING EFFICIENCY RELATED ADAS USING ARTIFICIAL NEURAL NETWORK

- This paper presents that the aggressiveness and the driving style of driver are majorly influence to vehicle control.
- The driving skills of driver will be divided into these three categories aggressive, normal and calm states through these three different driving inputs which are vehicle acceleration, speed, throttle pedal angle.
- For an efficiency oriented analysis, artificial neural network (ANN) is used to classify drivers into aggressive, normal, and calm.

Thank you!