

# MACHINE LEARNING BASED VEHICLE PERFORMANCE ANALYZER



# AGENDA

➤ Introduction

➤ Application

➤ Indicators

➤ Advantage

➤ Attributes

➤ Disadvantage

➤ Challenges

➤ Conclusion

# INTRODUCTION

- ❖ Vehicle performance is the study of the motion of a vehicle. The motion of any vehicle depends upon all the forces and moments that act upon it.
- ❖ These forces and moments, for the most part are caused by interaction of the vehicle with the surrounding medium such as air or water, Earth's surface.



# INDICATORS

- ❖ The maximal speed that can be reached.
- ❖ The accelerating time from zero to a certain speed.
- ❖ The maximal climbing angle
- ❖ The mileage in a certain condition
- ❖ The hydrogen consumption in a specific cycle.

# ATTRIBUTES

- ❖ Fuel economy & Emissions
- ❖ Thermal & Energy management
- ❖ Durability & Drivability
- ❖ Driving dynamics & Integrated safety
- ❖ Water & Dirt management & Integrated safety
- ❖ Pass-by-noise regulation & NVH



# CHALLENGES

- ❖ Develop light weight emission-friendly & safe vehicle
- ❖ Frontload performance engineering for efficient development
- ❖ Balance vehicle performance to exceed customer expectations
- ❖ Adapt development process for smart system validation

# APPLICATIONS

- ❖ Automatic Accident Notification
- ❖ Forward Collision Warning
- ❖ Electronic Emergency Brake Light
- ❖ Traffic Notification System



# ADVANTAGES

- ❖ Blind crossing
- ❖ Prevention of collisions
- ❖ Real-time traffic condition monitoring
- ❖ Safety
- ❖ Dynamic route scheduling



# DISADVANTAGES

❖ Delay

❖ Retransmission

❖ Security

❖ Quality of Service & Scalability

# CONCLUSION

❖ The overall car performance depends on various operating factors, such as the engine performance, transmission design, aerodynamic, friction reduction technology, and driver skill.

❖ An on-road experiment is necessary for a designer, driver, tuner, developer, and researcher to investigate the final result.



**Thank you**