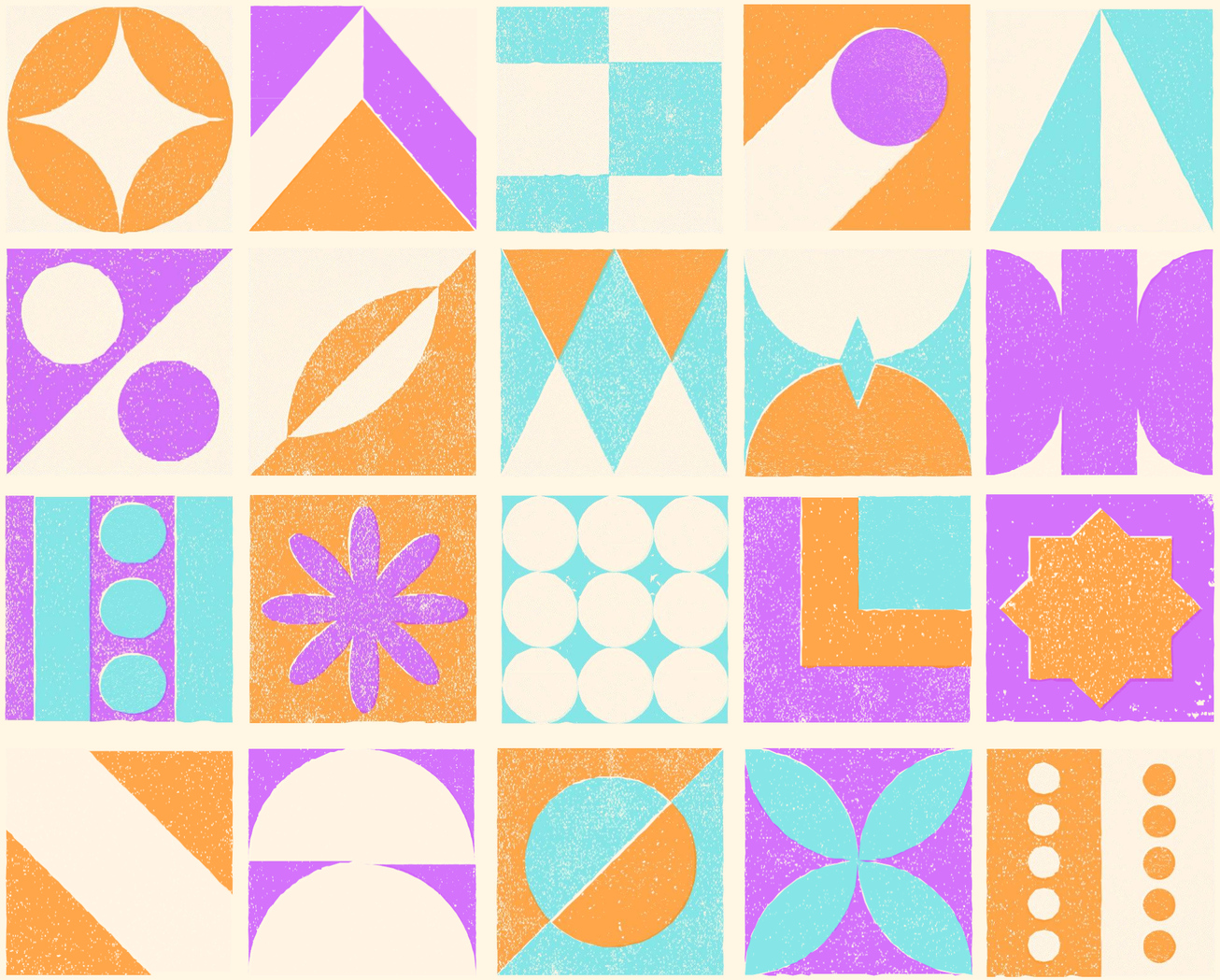
LITERATURE SURVEY

1.KARTHICK.A
2. MAREESWARAN.K
3.PRAVEENKUMAR.T
4.VALAVANTHARAJA.M



Vehicle Performance Analyzer

Artificial Intelligence for Vehicle-to-Everything: A Survey

Wang Tong et. al in their paper titled "Artificial Intelligence for Vehicle-to-Everything: A Survey" have presented a comprehensive survey of the research works that have utilized AI to address various research challenges in Vehicle-to-Everything(V2X) systems and have summarized the contribution of those research works and categorized them according to the application domains, thereby presenting open problems and research challenges that need to be addressed for realizing the full potential of AI and Machine Learning in vehicular systems.[1]

Simulation for prediction of vehicle efficiency, performance, range and lifetime: A review of current techniques and their applicability to current and future testing standards

In the paper "Simulation for prediction of vehicle efficiency, performance, range and lifetime: A review of current techniques and their applicability to current and future testing standards", Abbas Fotouhi et. al have developed on earlier work, exploring conventional and 'backward' techniques in the context of current NEDC-based UNECE vehicle testing standards and the proposed replacements based on the World Light Test Procedure. Model sensitivities for A, C, and D-segment vehicles are quantified and this is used to explore aspects where accurate models are key and where lower-fidelity representative models are appropriate. The paper also explores the sensitivity of predictions to PID control driver models and discusses the effect of cycle-following tolerance on predictions. Finally, the paper proposes new standards - suitable for simulation or real-world testing - for a common quantification of in-use battery lifetime. [2]

Intelligent Performance Analysis of Automated Steering Systems for Autonomous Vehicles

The results of the research made by S. Salih and R. Olawoyin titled "Intelligent Performance Analysis of Automated Steering Systems for Autonomous Vehicles" showed that the proposed network control system had trained and validated more than 96.5% steering system behavior patterns and adapted large random disturbances of the steering controller commands. It is, therefore, necessary to develop artificial intelligence methodologies in automated steering systems of autonomous vehicles with neural network representing the main topology blocks of the control system architecture and utilize ANN abstraction in the control system of autonomous vehicle steering control system. The study's findings demonstrated that the suggested network control system had successfully trained and validated more than 96.5% of steering system behaviour patterns and had successfully responded to significant random disturbances of steering controller commands. Therefore, it is essential to design artificial intelligence techniques for automated steering systems of autonomous vehicles that use ANN abstraction in the control system of the steering control system and neural networks as the basic topology building blocks of the control system architecture.[3]

Machine learning based real-time vehicle data analysis for safe driving modeling

In the paper “Machine learning based real-time vehicle data analysis for safe driving modeling“ the authors Pamul Yadav, Sangsu Sung and Dhananjay Singh say that the need to assess vehicle Meta characteristics that can assist drivers become more adept at avoiding collisions. It also highlights the need to assess how the quality of cars has changed over time. In this study, the driver's safety metrics and economical driving metrics are estimated using a linear regression model that is supervised learning-based. Over the course of a month, the data was gathered from fifteen separate drivers, totaling over 15,000 data points. And the criteria we developed could be used in automotive technology analysis to create cutting-edge intelligent automobiles. In the end, we examined the parameter correctness over 80% for the driver's safety solution in a real-world scenario and presented it.[4]

Modeling and Performance Analysis of Battery Enabled Vehicle

In the paper “Modeling and Performance Analysis of Battery Enabled Vehicle”, the authors Salil Patwardhan, R Bindu, Sushil Thale have discussed the significant problems of car emissions have been a significant problem. Research in the automotive industry has advanced, and the greatest solution found for addressing this issue is encouraging the use of electric vehicles, particularly battery electric vehicles. In order to do a thorough investigation before creating a real-time model, EV modelling is helpful. To ensure that the battery continues to operate in a safe manner, fuzzy logic control is employed to determine the regenerative braking component. The urban and highway driving cycles are taken into consideration separately when examining the significance of driving behaviour. Variations in the vehicle's weight and in the road's rolling resistance, incline, and driving style are analysed for their impacts.[5]

Machine Learning Technologies for Secure Vehicular Communication in Internet of Vehicles: Recent Advances and Applications:

Authors:

Elmustafa Sayed Ali,Mohammad Kamrul Hasan,Rosilah Hassan,Rashid A. Saeed, MonaBakri Hassan, Shayla Islam, Nazmus Shaker Nafi, and Savitri Bevinakoppa

Abstract:

Recently, interest in Internet of Vehicles' (IoV) technologies has significantly emerged due to the substantial development in the smart automobile industries. Internet of Vehicles' technology enables vehicles to communicate with public networks and interact with the surrounding environment. It also allows vehicles to exchange and collect information about other vehicles and roads. IoV is introduced to enhance road users' experience by reducing road congestion, improving traffic management, and ensuring the road safety.

Another challenge is achieving fast and efficient communication between many different vehicles called Vehicle-to-Everything (V2X). One of the vital questions that the researchers need to address is how to effectively handle the privacy of large groups of data and vehicles in IoV systems. Artificial Intelligence technology offers many smart solutions that may help IoV networks address all these questions and issues. Machine learning (ML) is one of the highest efficient AI tools that have been extensively used to resolve all mentioned problematic issues. For example, ML can be used to avoid road accidents by analyzing the driving behavior and environment by sensing data of the surrounding environment.

Machine learning mechanisms are characterized by the time change and are critical to channel scenarios. This paper aims to provide theoretical foundations for machine learning and the leading models and algorithms to resolve IoV applications' challenges. This paper has conducted a critical review with analytical modeling for offloading mobile edge-computing decisions based on machine learning and Deep Reinforcement Learning (DRL) approaches for the Internet of Vehicles (IoV). The paper has assumed a Secure IoV edge-computing offloading model with various data processing and traffic flow.

References

[1] W. Tong, A. Hussain, W. X. Bo and S. Maharjan, "Artificial Intelligence for Vehicle-to-Everything: A Survey," in IEEE Access, vol. 7, pp. 10823-10843, 2019, doi: 10.1109/ACCESS.2019.2891073.

[2] S. Salih and R. Olawoyin, "Intelligent Performance Analysis of Automated Steering Systems for Autonomous Vehicles," 2020 IEEE International Conference on Electro Information Technology (EIT), 2020, pp. 200-205, doi: 10.1109/EIT48999.2020.9208311.

[3]S. Patwardhan, R. Bindu and S. Thale, "Modeling and Performance Analysis of Battery Electric Vehicle," 2019 2nd International Conference on Power and Embedded Drive Control (ICPEDC), 2019, pp. 24-29, doi: 10.1109/ICPEDC47771.2019.9036646.

Use Cases

1. Provide data to help in improving the efficiency of the vehicles in future designs.

2. Understanding the effect of external environmental factors including user behavior, seasonal changes, etc. on performance metrics.