**Research Proposal**

**Title:**

Integration of GTA5 Game Model and Autonomous Vehicle Sensors for Enhanced Navigation System

**Abstract:**

This study addresses the limitations of using the GTA5 game model and AI training simulation to analyze road conditions, traffic, and road comfort due to the lack of real-time road data and vehicle sensors. To overcome these limitations, the research proposes integrating the model with autonomous vehicles equipped with sensors, specifically tire sensors. By combining the model's analysis with real-time data from the sensors, the study aims to create a more effective navigation system. The objectives of this research include enhancing the analysis of road conditions, traffic, and road comfort, and revolutionizing navigation systems by providing more accurate and up-to-date information for drivers and autonomous vehicles. The methods involve integrating the GTA5 model with autonomous vehicles equipped with tire sensors and analyzing the real-time data to improve navigation and decision-making capabilities. The expected outcomes include a more practical and efficient navigation system that leverages the strengths of both the GTA5 model and autonomous vehicle sensors. The significance of this study lies in its potential to address the current limitations and pave the way for the development of a more effective navigation system that benefits both human drivers and autonomous vehicles.

The use of the GTA5 game model and AI training simulation to analyze road conditions, traffic, and road comfort has shown promise. The GTA5 game simulation engine has powerful display simulation capabilities, and we are confident that it can handle this simulation task.

By leveraging the analysis capabilities of the GTA5 model and combining it with real-time data from vehicle sensors, we aim to create a system that offers enhanced navigation and decision-making capabilities for both human drivers and autonomous vehicles.

**Literature Review:**

Challenges and Opportunities in Autonomous Vehicle Navigation Systems" by Smith et al. (2019) This paper discusses the challenges faced in developing effective navigation systems for autonomous vehicles and explores potential opportunities for improvement. It specifically addresses the limitations of existing models and the need for real-time data integration.

"Integrating AI Training Simulations for Real-World Applications" by Johnson and Lee (2020) This study examines the potential of AI training simulations in real-world applications, highlighting the benefits and limitations of using simulated environments for analyzing road conditions, traffic, and road comfort.

"Sensor Integration in Autonomous Vehicles" by Chen et al. (2018) The research focuses on the integration of various sensors, including tire sensors, in autonomous vehicles. It discusses the potential impact of sensor data on navigation systems and the overall performance of autonomous vehicles.

"Enhancing Navigation Systems through Data Fusion" by Wang and Gupta (2021) This paper explores the concept of data fusion in navigation systems, emphasizing the importance of integrating different sources of data, such as AI training simulations and real-time sensor data, to create more effective navigation solutions.

"Future Directions in Autonomous Vehicle Technology" by Kim et al. (2022) The study presents future directions for autonomous vehicle technology, including the potential integration of AI training simulations with real-time sensor data to enhance navigation and decision-making capabilities.

**Research Design and Methods:**

We will achieve autonomous vehicle driving in the game through programming, and obtain statistical and average data based on continuous experiments. Finally, we will integrate data analysis, such as speed, comfort, acceleration, time, etc. Finally, a suitable training model is obtained.

In real life, conducting experiments would consume a lot of time and fuel. I chose this solution because it does not require continuous experimentation in real life traffic, but can be simulated on a computer, which is convenient, efficient, and precise.

**Timeline and Division of the Task:**

9~10week Search for relevant materials, find papers as citations, and write paper structures

11~12week Clarify the method of the paper and basically write the main part well

13week Refine various parts, optimize sentences and grammar, write citations

**\*Expected Outcomes and Implications:**

Refined Navigation System: The research seeks to create a more effective navigation system by combining the model's analysis with real-time sensor data. The anticipated outcome is a navigation system that provides drivers and autonomous vehicles with up-to-date and reliable information, ultimately contributing to safer and more efficient travel.

**\*References:**

We have found some, but we have not yet fully concluded them. We have already mentioned some basic papers, but we still need to refine them.

Are you going to conduct an experimental research? How can you get the data from tire sensors? It's so good that you have identified five core literature. But when you write a paper, you may have to integrate the content of the literature rather than list them one by one. Try to specify your methods and procedures. Keep on measuring the feasibility of each step.