

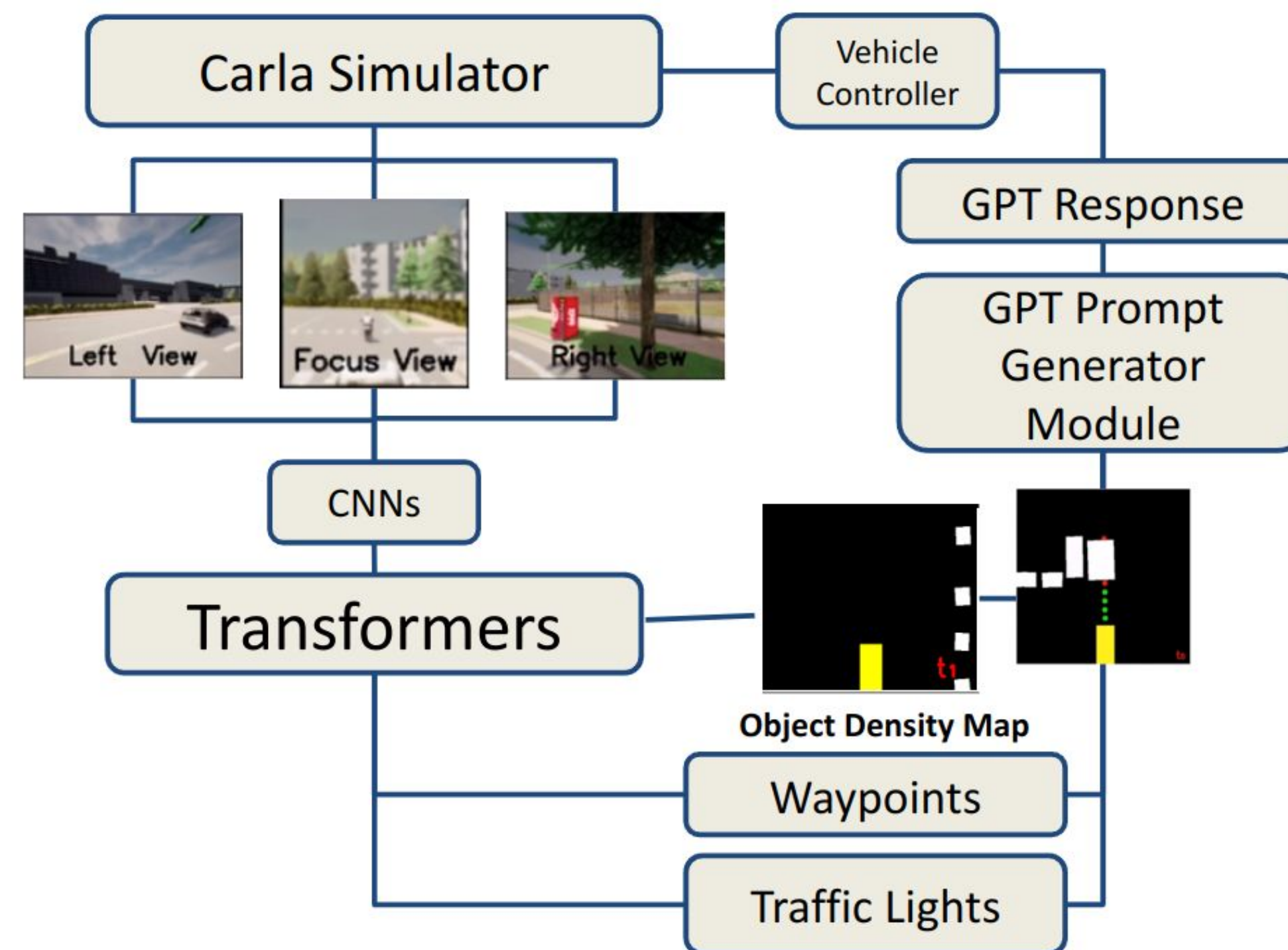
Improved Safety Control for Autonomous Driving using GPT (LLMs) – Case Study

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Introduction:

- Carla Simulator:** An open-source platform that facilitates tackling the complexities of autonomous driving by enhancing safety and scene perception.
- Safety Challenges:** Autonomous driving safety is hindered by unexpected behaviors in dense traffic. Improved systems are crucial for accident prevention.
- Scene Understanding:** Current systems struggle with complex scenes due to limited sensor capabilities. Enhanced perception is vital for safe driving, especially in challenging environments.



Case Study:



Problem Formulation:

This study develops an autonomous driving control system leveraging a GPT-based Prompt Generation Module to interpret sensory inputs and generate vehicle commands. By transforming multi-modal sensor data into contextual prompts for GPT, the system synthesizes responses to navigate complex traffic scenarios safely. The goal is to refine decision-making processes, ensuring robust safety protocols in autonomous vehicle operations within simulated environments.

For more video simulations and results



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Simulation Results:

- Revolutionizing Urban Autonomous Driving:** Employed an GPT over sequential decision making process over perceived environment, setting new safety standards.
- Evolving Precision and Reliability:** Future enhancements focused on integrating temporal dynamics and advancing probabilistic models for improved decision-making.