Project Summary

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The project is about developing AI-powered autonomous electric taxis tailored for commercial use in Turkey , especially focusing on the improvement of urban transportation systems in dense populated areas such as Istanbul. The project uses advanced technologies like AI, sensor fusion and real-time data processing to create a fully autonomous driving system. The important part of the project includes the integration of sensors (LiDar , radar and cameras) , object detection using convolutional neural networks and real-time behavior prediction for enhanced safety and efficiency.

The aim of this project is to address challenges such as high operational costs , safety concerns , and environmental impact , offering a sustainable , cost-effective and user-friendly alternative to traditional taxis.

The methodology emphasizes on the iterative approach , beginning with comprehensive research and design , followed by simulation testing using tools like CARLA and finally a hardware prototyping with components like Raspberry Pi and LiDar sensors . The AI models are designed to learn as long as they are running to make sure they adapt to changing environments and to improve their accuracy over time. A stepwise process includes real-time object detection , route planning using algorithms like A* and behavior prediction to reduce collision risks. The project focuses on plans for rigorous testing and validation , targeting high accuracy , safety and reliability metrics in simulated and controlled environments.

If this project is applied on a larger scale it will have a significant potential to revolutionize the taxi industry , because it offers economic and ecological advantages such as reduced operational costs and lower carbon emissions. It aims to enhance passenger safety and comfort by eliminating human related issues like reckless driving or disputes. This step is not the last step in the project but it is the first step to inspire further academic and industrial collaborations, laying a foundation for broader adoption of self driving cars technologies in Turkey.