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VIT Vellore's | 30th March - 2nd April
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ABSTRACT

The next generation of street lighting systems use sensors to detect obstacles, including vehicles, pedestrians, and hairpin curves in real-time. The data collected can create real-time 3D maps, helping drivers navigate safely. This feature is particularly useful for unfamiliar drivers, while transportation engineers can use the information to design safer and more efficient roads. The incorporation of sensors can also save energy by turning lights on only when needed, reducing costs and light pollution. Overall, these systems have the potential to revolutionize road navigation, making it safer and more efficient while providing real-time data for transportation planners and engineers

USP

The unique selling point of this project is the integration of obstacle-detecting sensors into street lighting systems, which can detect and show hairpin curves, vehicles, pedestrians, and animals in real-time. The data collected can create real-time 3D maps and a safer environment for drivers and pedestrians, while reducing energy costs and minimizing light pollution. This technology can be particularly useful for unfamiliar drivers and transportation planners, enabling them to design safer and more efficient roads. The system has the potential to revolutionize road navigation, making it safer and more efficient, with the added benefit of providing real-time data for transportation planning and engineering.

MARKET COMPETITORS

In India market competitors for this project include companies such as

- Havells
- Syska
- Bajaj Electricals
- Crompton Greaves.

METHODOLGY

1. Define the objectives: Identify the main objectives and goals of the project, including the desired functionality and features of the system.
2. Site survey: Conduct a site survey to determine the locations and specifications for the lighting fixtures and sensors.
3. Design the system: Develop a detailed plan and design for the street lighting system that incorporates the obstacle-detecting sensors.
4. Procurement: Procure the necessary equipment and materials, including lighting fixtures, sensors, and control systems.
5. Installation: Install the lighting fixtures and sensors according to the design plan, making sure to follow safety guidelines and regulations.
6. Testing: Conduct testing to ensure that the system is functioning as intended and that the sensors are detecting obstacles accurately.
7. Integration: Integrate the lighting system with other systems, such as navigation or traffic control systems, as necessary.
8. Maintenance: Establish a maintenance plan to ensure that the system remains functional and accurate over time, including regular sensor calibration and fixture upkeep.
9. Evaluation: Evaluate the effectiveness of the system in meeting the defined objectives and goals, and make necessary adjustments or upgrades as needed.

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TECH STACK

1. Lighting fixtures: LED lights, bulbs, or luminaires that are energy-efficient and have the necessary features for integration with sensors and control systems.
2. Sensors: Various types of sensors, such as radar, lidar, or cameras, that can detect obstacles in real-time and communicate with the control system.
3. Control systems: Software and hardware components that can manage the lighting system and sensor data, such as a central control unit, wireless network, or cloud-based platform.
4. Data processing and analytics: Tools and technologies for processing and analyzing the real-time data collected from the sensors, such as machine learning algorithms or data visualization software.
5. User interface: A user interface that displays real-time data and allows users to interact with the system, such as a mobile application or web-based dashboard.

The specific technology stack will depend on the project requirements and goals, and can be customized to fit the needs of the system.

SOCIAL IMPACT

1. **Improved safety: The real-time detection of obstacles can help reduce accidents, injuries, and fatalities on roads, making them safer for drivers, pedestrians, and cyclists.**
2. **Enhanced accessibility: The ability to detect hairpin curves and other obstacles can make roads more accessible for drivers, especially those who are unfamiliar with the area or have mobility impairments.**
3. **Energy efficiency: The use of energy-efficient lighting fixtures and sensors can reduce energy costs and minimize light pollution, which can have environmental and economic benefits.**
4. **Smart city development: Implementing smart city solutions such as smart lighting systems can contribute to the overall development of smart cities, making them more efficient, sustainable, and liveable.**
5. **Job creation: The development, installation, and maintenance of street lighting systems with obstacle-detecting sensors can create new job opportunities in the field of smart city development and maintenance.**

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THANK YOU!