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**Department of Artificial**

**Intelligence and Data Science**



**NAAN MUDHALVAN -INTERNET OF THINGS**

PROJECT TITLE : SMART\_PARKING

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SMART PARKING:

The term "smart parking" describes the use of cutting-edge technology and data-driven solutions to manage and utilise parking spaces in urban areas as efficiently as possible.

Smart parking systems' main objective is to increase the effectiveness of parking operations,

lower the amount of time and energy spent seeking for parking, reduce traffic congestion, and

enhance the experience of urban mobility as a whole.Smart parking is a novel method of

urban parking management that makes use of technology to maximise the use of parking spaces

and improve the parking experience as a whole. Key elements consist of:

1.Sensor Technology: Uses sensors (e.g., ultrasonic, infrared) to monitor parking space

occupancy in real-time.

2.Real-time Data: Collects and transmits parking occupancy data to a central system,

providing up-to-date information to users.

3.Mobile Apps: Offers dedicated mobile apps and websites for users to check parking

availability, locations, and pricing.

4.Navigation Assistance: Provides turn-by-turn navigation to available parking spaces,reducing search time.

5.Reservations and Payments: Allows users to reserve parking spots in advance and make electronic payments for convenience.

6.Data Analytics: Utilizes data for informed decision-making, such as pricing adjustments and resource allocation.

7.Integration: Integrates with public transportation systems for a seamless commuting experience.

8.Environmental Impact: Reduces traffic congestion and emissions by minimizing the time spent searching for parking.

9.Security: Enhances security with surveillance cameras and lighting in parking areas.

10.Payment Options: Supports various payment methods, including mobile wallets and contactless payments.

11.Variable Pricing: Adjusts parking fees based on demand to optimize space usage.

12.Accessibility: Provides features for people with disabilities, including reserved accessible parking.

13.Scalability: Easily adapts to changing urban populations and parking demands.

DESIGN THINKING FOR SMART PARKING:

1. Empathize:

Understand the pain points and needs of both drivers and parking operators.

Conduct interviews, surveys, and observations to gather insights.

Identify common frustrations such as parking availability, payment processes, and

navigation challenges.

2. Define:

Clearly articulate the problems and challenges identified during the empathy phase.

Develop a problem statement that focuses on the most critical issues.

Prioritize problems to address based on user needs and feasibility.

3. Ideate:

Brainstorm creative solutions to the defined problems.

Encourage cross-functional collaboration among designers, engineers, and urban planners.Generate a wide range of ideas without judgment.

4. Prototype:

Create low-fidelity prototypes of potential smart parking solutions.

Use mock-ups, wireframes, or physical models to visualize concepts.Test prototypes with a small group of users to gather feedback.

5. Test:

Collect feedback from users who interact with the prototypes.

Refine and iterate on the solutions based on user input.

Continue testing and refining until the solution effectively addresses the identified

problems.

6. Implement:

Develop a comprehensive plan for implementing the smart parking system.

Collaborate with relevant stakeholders, including local government, parking operators, and technology providers.Ensure seamless integration with existing infrastructure and systems.

7.Measure:

Establish key performance indicators (KPIs) to evaluate the success of the smart parking system.Monitor parking space utilization rates, user satisfaction, and environmental impact.Use data analytics to continually improve the system.

8. Iterate: Continuously gather user feedback and make iterative improvements to the smart parking system.Be open to evolving the system as technology and user needs change.

9. Scale:

Plan for scalability to accommodate growing urban populations and increased demand for parking.Consider expanding the smart parking system to cover more areas within the city.

10. Educate and Engage:

Educate users about the benefits and functionality of the smart parking system.

Promote the use of mobile apps and other tools for reservations and payments.

Engage the community and gather ongoing feedback to maintain a user-centric approach