**LAB REPORT**

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***In partial satisfaction of the requirements for the degree of***

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**in**

## COMPUTER SCIENCE ENGINEERING

**with specialization in Cloud Computing**



## SCHOOL OF COMPUTING

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**BONAFIDE CERTIFICATE**

Register No.**RA2111028010010** Certified to be the bonafide work done by **Alankriti Dadlani** of II Year/IV Sem B.Tech Degree Course in the **Practical Software Engineering and Project Management 18CSC206J** in **SRM INSTITUTE OF SCIENCE AND TECHNOLOGY,** Kattankulathur during the academic year 2022 – 2023.

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**ABSTRACT**

The Smart Windmill System project aims to revolutionize the traditional windmill concept by integrating advanced technologies to enhance efficiency, optimize power generation, and provide real-time monitoring capabilities.

This system comprises interconnected windmills with sensors, actuators, and communication devices. These components enable the collection and transmission of various data points such as wind speed, direction, temperature, humidity, and energy output. The IoT infrastructure ensures seamless connectivity and enables centralized control and monitoring of the entire windmill network.

Our app, has features of checking windmill status, calculating energy generated by the windmill, checking AQI around the windmill etc.

This project contributes to the transition towards renewable energy sources by harnessing the power of wind and leveraging cutting-edge technologies. It offers numerous benefits, including increased energy efficiency, reduced maintenance costs, and improved sustainability. This project's findings and outcomes can shape the future of wind energy production and pave the way for a greener, more intelligent power generation infrastructure.

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### CONCLUSION:

### In conclusion, the Smart Windmill System project presents a significant advancement in wind energy technology by combining IoT and data analytics. By integrating these technologies, the project enhances the efficiency, monitoring capabilities, and overall performance of traditional windmills.

### Through real-time data collection and analysis, the system optimizes power generation by adapting windmill blade orientation and speed based on environmental conditions. This adaptive approach maximizes energy output while minimizing wear and tear on the windmill components, leading to increased efficiency and extended operational lifespan.

### Moreover, the project's implementation of advanced data analytics enables predictive maintenance, fault detection, and performance optimization. By leveraging valuable insights from the collected data, operators can address potential issues promptly, minimize downtime, and reduce maintenance costs.

### The Smart Windmill System contributes to the global transition toward renewable energy sources and sustainability. By harnessing the power of wind and leveraging cutting-edge technologies, this project offers a greener and more intelligent approach to wind energy generation.

### The outcomes and findings of the Smart Windmill System project have the potential to shape the future of wind energy production. The successful integration of IoT and data analytics can pave the way for more efficient and sustainable power generation infrastructure. It is envisaged that the lessons learned and advancements made through this project will have a significant impact on the wind energy industry, promoting a cleaner and more sustainable future for generations to come.

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Heading :

DESIGN AND ANALYSIS OF HIGHWAY WIND POWER GENERATION

USING VERTICAL AXIS WIND TURBINE