***Proposed Topic : "Optimization and Simulation of a Hybrid Solar and Wind-Powered Industrial Data Center ".***

Clive Morgan. Dr.

EME,

Chapter 01 :

Chapter 02 : Project Initiation

2.1 Introduction ( Written)

2.2 Keep Blank

2.3 Keep Blank

2.4 Keep Blank

Develop Project Plan and Timeline & Gantt chart : Keep Blank

Chapter 03 : Specification of the project task in details written format

Write in details about dataset

Weather Data: Collect historical data on solar irradiance and wind speed for the chosen location from sources like weather stations or online databases.

Data Center Usage Data: Obtain data center power consumption data, including daily and weekly usage patterns, from operational logs or industry partners.

3.1 Resource List

In this section just write the resource list details and also give a table

Hardware and Infrastructure: High-performance computers for running simulations and training machine learning models.

Simulation Environment: Development environment with necessary computational power and storage capacity.

Software: Python programming environment, libraries for data analysis (e.g., Pandas, NumPy), machine learning, and optimization.

3.2 Specifications of Software Block Diagram using ML (Python Programming Language)

provide a software block diagram while doing the main project

Chapter 05 :

5.1 Data Collection : Sources of wind power data (e.g., meteorological stations, wind farms)

5.2 Data Preprocessing

Chapter 06 : Design & Development

6.1 Solar Power Generation Model Development using python : Develop a model to convert solar irradiance data into power output using parameters like panel area and efficiency.

* Psolar​=irradiance×panel\_area×panel\_efficiency

6.2 Wind Power Generation Model Development using python : Develop a model to convert wind speed data into power output using parameters like turbine area and efficiency.

* Pwind​=0.5×air\_density×turbine\_area×(wind\_speed3)×turbine\_efficiency

6.3 Hybrid Data centre consumption Model Development using python

Create a model to simulate data center power consumption, considering base load and variations.

Pdata\_center​=base\_load+daily\_variation

Implement the selected machine learning algorithms to optimize the balance between power generation and consumption.

Chapter 07 : Testing

7.1 **Integrate Models:** Combine the solar and wind power generation models with the data center consumption model in a simulation environment.

**Run Simulations:** Use historical weather data to simulate power generation and consumption over a specified period (e.g., one year).

7.2 Algorithm Selection : Choose suitable machine learning algorithms for optimization, such as reinforcement learning or linear programming.

7.3 Simulations Model Training by python based programming language Chapter 08 : Analysis

8.1 Validation Result Analysis

8.2 Analysis of Test Optimization

Chapter 09 :

9.1 Monitoring Procedures for the model

9.2 Risk Assessment Specific and General risk On Industry write in details

9.3 Government Risk Assessment (Local) : Keep Blank

9.4 Government Risk Assessment (Global) : Keep Blank

Chapter 10 :

IDC Operators : Keep Blank

IDC Managers : Keep Blank

IDC on AWS : Keep Blank

Give Some Diagram Pie or Bar charts Table where necessary for better understanding Also level it.

Written report should be 8k words to maintain the points which are mentioned above and also relate to the project work and title area .

Please Do Not write in general concepts , relate it with the project workflow .Do Not copy paste from Chat Gpt . Use chat Gpt as a calculator .Paraphrase it, humanize it then write it according to the project concept.

Robotic writings easily can be detected so please avoid direct copy paste from chat gpt or others AI

Give a turnitin report

Provide 4 or 5 slide

give the speech of the slide in a different doc or word file

Give Python files in Colab format

Writings report in word or doc format

Do Not work on Keep blank areas

Mail it : [likabishop@gmail.com](mailto:likabishop@gmail.com)

Deadline : 20 July 2024