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Project Synopsis

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| **Elective** | Computer Science & IT |
| **Date of Submission** | 18/06/2023 |

# Title:

* Weather Prediction using Python and its Modules with Machine Learning Algorithm

# Problem Statement:

# Improving Forecast Accuracy: Enhancing the accuracy of weather forecasts is a primary objective. The problem statement involves identifying and mitigating sources of errors and uncertainties in weather prediction models

# Addressing Data Gaps and Quality Issues: Weather analysis requires high-quality and comprehensive observational data.

# Objectives of the Research:

* Forewarning of Severe Weather: One of the key objectives of weather prediction is to provide early warnings and forecasts for severe weather events such as hurricanes and rains.
* Facilitating Planning and Preparedness: Weather prediction enables individuals, businesses, and organizations to plan and prepare for upcoming weather conditions.
* Supporting Operations and Resource Management: Weather prediction plays a crucial role in various sectors, including aviation, maritime operations, agriculture, energy, construction, and tourism.

# Research Methodology:

* The methodology for weather prediction involves a combination of observational data collection, data analysis, numerical modeling, and forecast interpretation.
* Researched based
* Primary Method.

# Limitation:

* Weather prediction has certain limitations due to the inherent complexity and uncertainties associated with atmospheric processes.

# Work Plan (Week 1 to Week 8)

* + Provide an outline of planned research tasks that will be conducted during eight weeks of the research project.

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| **Week No.** | **Activities Completed** |
| Week 1 | * express the idea to the mentor * Find ways to gather data set upon confirmation. * Seek advice and instructions from mentor. |
| Week 2 | * Clean the collected data by removing outliers, errors, and inconsistencies. * Convert data into a standardized format for further analysis. |
| Week 3 | * by using Python and its modules, create a code   to visualize data.   * save the code in Python notebook. * execute the code and check for error. |
| Week 4 | * select the suitable model in ML * calibrate the trained models by adjusting parameters to improve their accuracy and performance |
| Week 5 | * apply the trained models to new, unseen weather data to generate predictions. * Predict future weather conditions, including temperature, precipitation, wind |
| Week 6 | * Present weather predictions and associated uncertainties in a user-friendly manner, such as graphical displays, charts, or maps. * Regularly evaluate the performance of the weather prediction system and identify areas of improvement. |
| Week 7 | * Train data with weekly updates to improve prediction * Cross check the code and its functionality |
| Week 8 | * Prepare for Project Submission * Preparation for VIVA |