

Project Design Phase-I
Proposed Solution Template

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| Date | 23 October 2023 |
| Team ID | 592670 |
| Project Name | Project – Machine learning approach for predicting rainfall |
| Maximum Marks | 2 Marks |

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

| S.No. | Parameter | Description |
|-------|--|---|
| 1. | Problem Statement (Problem to be solved) | Rainfall has been a major concern these days. Weather conditions have been changing for time being. Rainfall forecasting is important otherwise, it may lead to many disasters. Irregular heavy rainfall may lead to the destruction of crops, heavy floods that can cause harm to human life. It is important to exactly determine the rainfall for effective use of water resources, crop productivity, and pre-planning of water structures. |
| 2. | Idea / Solution description | This comparative study is conducted concentrating on the following aspects: modelling inputs, Visualizing the data, modelling methods, and pre-processing techniques. The results provide a comparison of various evaluation metrics of these machine learning techniques and their reliability to predict rainfall by analyzing the weather data. |
| 3. | Novelty / Uniqueness | <ul style="list-style-type: none">• Complexity of Natural Phenomenon• Uncertainty and Prediction Horizon• Environmental and Societal Impact• Geographical Variation |
| 4. | Social Impact / Customer Satisfaction | <p>Social impact:</p> <ul style="list-style-type: none">• Crop Yield and Food Security• Reservoir Management <p>Customer satisfaction:</p> <ul style="list-style-type: none">• Customers, including farmers, water resource managers, and disaster preparedness agencies, place a high value on the accuracy of rainfall forecasts |

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| | | <ul style="list-style-type: none"> • Effective communication of predictions, including weather alerts and warnings, is crucial for customer satisfaction. |
| 5. | Business Model (Revenue Model) | <ul style="list-style-type: none"> • Data Licensing and data integration services • Weather forecast subscriptions and customized services • API access and SaaS Platforms |
| 6. | Scalability of the Solution | <ul style="list-style-type: none"> • The machine learning models used for rainfall prediction should be scalable to handle large datasets and complex algorithms. Utilize parallel processing and distributed computing to train models faster. • Utilize cloud computing services (e.g., AWS, Azure, Google Cloud) to scale infrastructure resources as needed. Cloud platforms offer auto-scaling capabilities that can adapt to fluctuating workloads. |