

**Project Design Phase-I**  
**Proposed Solution**

|               |   |
|---------------|---|
| Date          | 24 September 2022   |
| Team ID       | PNT2022TMID{...}  |
| Project Name  | Project - Machine Learning-Based Predictive Analytics for Aircraft Engine |
| 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) | Engine failure is quite dangerous and takes a long time to fix. Unexpected failure results in time and money losses. Saving time, effort, money, and occasionally even lives can be done by anticipating failure. By putting in the sensors and monitoring the values, the fault can be found. Any device may be subject to failure detection and preventive maintenance, but we will be dealing with engine failure for a predetermined number of days.<br>The project's goal is to use machine learning to predict engine failure in order to prevent wasted time and money and hence increase productivity. |
| 2.    | Idea / Solution description              | To Accomplish this, create Train and Test. Know and learn about the problem statement completely and learn about the requirements needed. Download the dataset needed for the Project. Pre-process or clean the data. Analyze the pre-processed data. Train the machine with pre-processed data using an appropriate machine learning algorithm. Save the model and its dependencies. Build a Web application using a flask that integrates with the model built.  |
| 3.    | Novelty / Uniqueness                     | TSFC and core-size are key design parameters for any new aircraft engine. TSFC is a measure of fuel efficiency. It affects aircraft range and is a key element in fuel burn. TSFC is also an indicator of engine operating cost  |
| 4.    | Social Impact / Customer Satisfaction    | The results show that by bringing together sufficient high quality data, robust machine learning algorithms, and data science, machine learning-based predictive analytics can be an effective tool for engine design-space exploration during the conceptual design phase.  |

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|----|--------------------------------|--|
| 5. | Business Model (Revenue Model) | Subscription and advertising model   |
| 6. | Scalability of the Solution    | It identifies the best engine design expeditiously amongst several candidates. The promising results of the predictive analytics show that machine-learning techniques merit further exploration for application in aircraft engine conceptual design. |