Solution Requirements:

Solution Requirements (Functional & Non-functional)

Date: 19 February 2026
Team ID: LTVIP2026TMIDS61980
Project Name: Electric Motor Temperature Prediction

Maximum Marks: 4 Marks

Functional Requirements

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Data Management	Load motor sensor dataset; manage features such as voltage, current, motor speed, and temperature parameters
FR-2	Data Preprocessing	Perform data cleaning, null value handling, outlier checking, and feature scaling using MinMaxScaler
FR-3	Exploratory Data Analysis	Visualize relationships between motor parameters using graphs and statistical analysis
FR-4	Model Training	Train multiple regression models including Linear Regression, Decision Tree, Random Forest, and Support Vector Regressor
FR-5	Model Evaluation	Evaluate models using RMSE and R^2 score; compare performance and select best model
FR-6	Prediction System	Accept user input parameters and generate predicted rotor temperature
FR-7	Testing & Validation	Validate predictions using test dataset and ensure reliable output generation

Non-functional Requirements

Following are the non-functional requirements of the proposed solution.

NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	Simple and user-friendly web interface built using HTML and CSS
NFR-2	Security	Input validation to prevent incorrect or invalid data submission
NFR-3	Reliability	Stable predictions with high R^2 accuracy and low RMSE error
NFR-4	Performance	Fast prediction response using optimized machine learning model
NFR-5	Availability	Web application accessible anytime through Flask server deployment
NFR-6	Scalability	System supports future real-time IoT sensor integration and cloud deployment