Project Design Phase-II
Data Flow Diagram & User Stories

Date	18 February 2026
Team ID	LTVIP2026TMIDS84143
Project Name	Electric Motor Temperature Prediction using Machine Learning
Maximum Marks	4 Marks

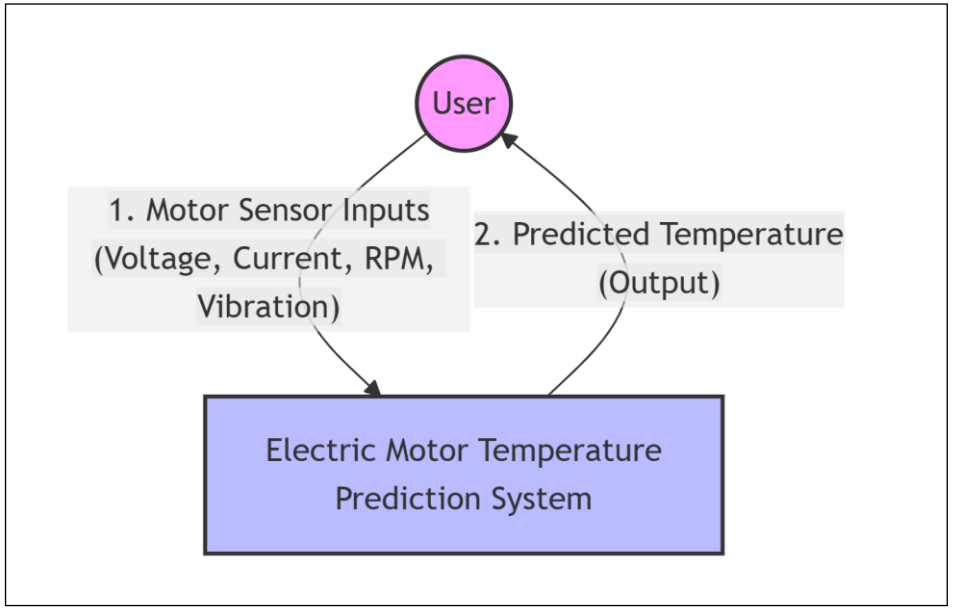
Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

DFD – Level 0 (Detailed Internal Flow

Flow Description:

1. User enters motor parameters
   (ambient, coolant, u_d, u_q, motor_speed, i_d, i_q, torque)
2. System processes input using trained ML model
3. Predicted PM Temperature is returned to user



DFD – Level 1 (Detailed Internal Flow)

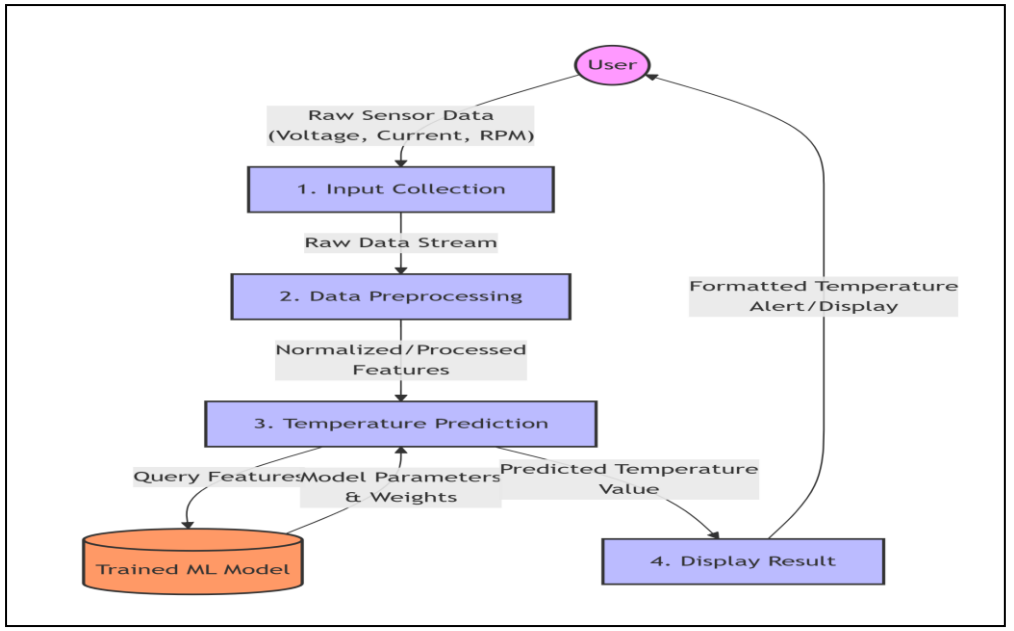
Now we break the system into internal processes.

Processes:

1. Input Collection
2. Data Preprocessing
3. Model Prediction
4. Display Result

Data Store:

- Trained Model (.save file)
- Dataset (for training phase)
- Loads saved ML model
- Predicts PM temperature



User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
User (Engineer / Operator)	Input Motor Parameters	USN-1	As a user, I can enter motor sensor values (ambient, coolant, u_d, u_q, motor_speed, i_d, i_q, torque)	I can submit valid sensor values through the form	High	Sprint-1

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
User (Engineer / Operator)	Temperature Prediction	USN-2	As a user, I can click Predict to estimate the permanent magnet temperature	The system displays predicted PM temperature correctly	High	Sprint-1
User (Engineer / Operator)	Input Validation	USN-3	As a user, I want validation for incorrect or missing inputs	System shows error message if inputs are invalid	High	Sprint-1
User (Engineer / Operator)	Model Integration	USN-4	As a user, I want the system to use a trained ML model for prediction	Prediction is generated using saved model (.pkl file)	High	Sprint-1
User (Engineer / Operator)	Result Display	USN-5	As a user, I want to see the predicted temperature clearly on the dashboard	Predicted value is displayed in readable format	High	Sprint-1
Admin (Developer)	Model Training	USN-6	As an admin, I can train the machine learning model using dataset	Model is trained and evaluation metrics are generated	High	Sprint-1
Admin (Developer)	Model Saving	USN-7	As an admin, I can save the trained model for deployment	Model is stored as a .save file	High	Sprint-1
Admin (Developer)	Model Update	USN-8	As an admin, I can retrain and update the model when new data is available	Updated model replaces old model successfully	Medium	Sprint-2
User (Engineer)	Overheating Alert	USN-9	As a user, I want to know if predicted temperature exceeds safe threshold	System shows warning message if temperature is high	Medium	Sprint-2
User (Engineer)	Web Interface	USN-10	As a user, I want a simple web interface to interact with the system	Web page loads and allows prediction without errors	High	Sprint-1