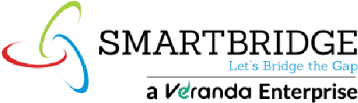
**Project Initialization and Planning Phase**

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| --- | --- |
| Date | 20 June 2024 |
| Team ID | 739900 |
| Project Name | Predicting Permanent Magnet Resistance  Of Electronic Motor Using Machine Learning |
| Maximum Marks | 3 Marks |

**Define Problem Statements (Customer Problem Statement Template):**

1. **Background:** Our company manufactures electronic motors that utilize permanent magnets. Understanding and predicting the resistance of these magnets is crucial for optimizing motor performance and efficiency.
2. **Problem Description:** Currently, predicting the resistance of permanent magnets in our electronic motors relies heavily on manual measurements and theoretical calculations. This process is time-consuming, prone to human error, and lacks precision, leading to potential inefficiencies in motor design and operation.
3. **Customer Pain Points:**
   * **Inaccuracy:** Existing methods for predicting magnet resistance often result in deviations from actual values due to manual errors or simplified assumptions.
   * **Time-Consuming:** The current process requires significant time and effort, delaying motor development and production cycles.
   * **Costly Iterations:** Inefficient predictions can lead to costly design iterations and potential rework, impacting time-to-market and overall profitability.
   * **Lack of Scalability:** As our product lines expand, the manual prediction method becomes increasingly impractical and unsustainable.
4. **Desired Outcome:** We aim to develop a machine learning model capable of accurately predicting the resistance of permanent magnets in electronic motors. This model should:
   * Improve prediction accuracy compared to current methods.
   * Reduce the time required for resistance prediction.
   * Enable faster iterations in motor design and development.
   * Provide scalability to handle increased production demands.
5. **SolutionRequirements:**
   * **Accuracy:** The model should achieve a high level of accuracy in predicting magnet resistance, minimizing deviations from actual measurements.
   * **Efficiency:** Automation of this prediction process should significantly reduce the time and effort currently required.
   * **Scalability:** The solution should be scalable to accommodate different motor designs and production scales.
   * **Integration:** Ideally, the model should integrate seamlessly into our existing motor design and testing processes.
6. **Success Metrics:**
   * **Prediction Accuracy:** Reduce prediction errors by X% compared to current methods.
   * **Time Efficiency:** Decrease the time required for resistance prediction from hours to minutes.
   * **Cost Savings:** Achieve cost savings of $Y per motor through reduced design iterations and improved efficiency.
7. **Constraints:**
   * The model should be developed using data that respects confidentiality and privacy agreements.
   * Compliance with industry standards and regulatory requirements must be ensured throughout the development and deployment phases.
8. **Stakeholders:**
   * Engineering and R&D teams responsible for motor design.
   * Production and quality control teams involved in manufacturing and testing.
   * Senior management for strategic alignment and resource allocation.
9. **Implementation Plan:**
   * Phase 1: Data collection and preprocessing.
   * Phase 2: Model development and training.
   * Phase 3: Model validation and testing.
   * Phase 4: Integration into existing processes and tools.
   * Phase 5: Monitoring and continuous improvement.
10. **Timeline:**
    * Start Date: [Insert Start Date]
    * Completion Date: [Insert Completion Date]
    * Milestones and checkpoints should be defined to ensure timely progress and alignment with business objectives.