Title -Electric Motor Prediction

Presented By-Project Group 5

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Electric Motor Prediction

A presentation on predicting electric motor performance using machine learning. We'll cover objectives, datasets, models, and results.

Why Predict Electric Motor

Enhanced Efficiency

Predictive models optimize motor operations. This leads to reduced energy consumption.

Proactive Maintenance

Early failure detection minimizes downtime. Optimized maintenance schedules are also beneficial.

Cost Savings

Reduced energy use and downtime lead to significant savings. Smart resource allocation is also possible.

Project Goals: Efficiency, Prediction, and Reduction

1 **Performance Prediction**
Predict motor performance based on input parameters.

2 **Efficiency Improvement**
Improve motor efficiency using machine learning techniques.

3 **Failure Reduction**
Reduce motor failures through predictive analytics.

Dataset Overview: Source and Key Features

Data Source

Data comes from motor sensors and operational logs.

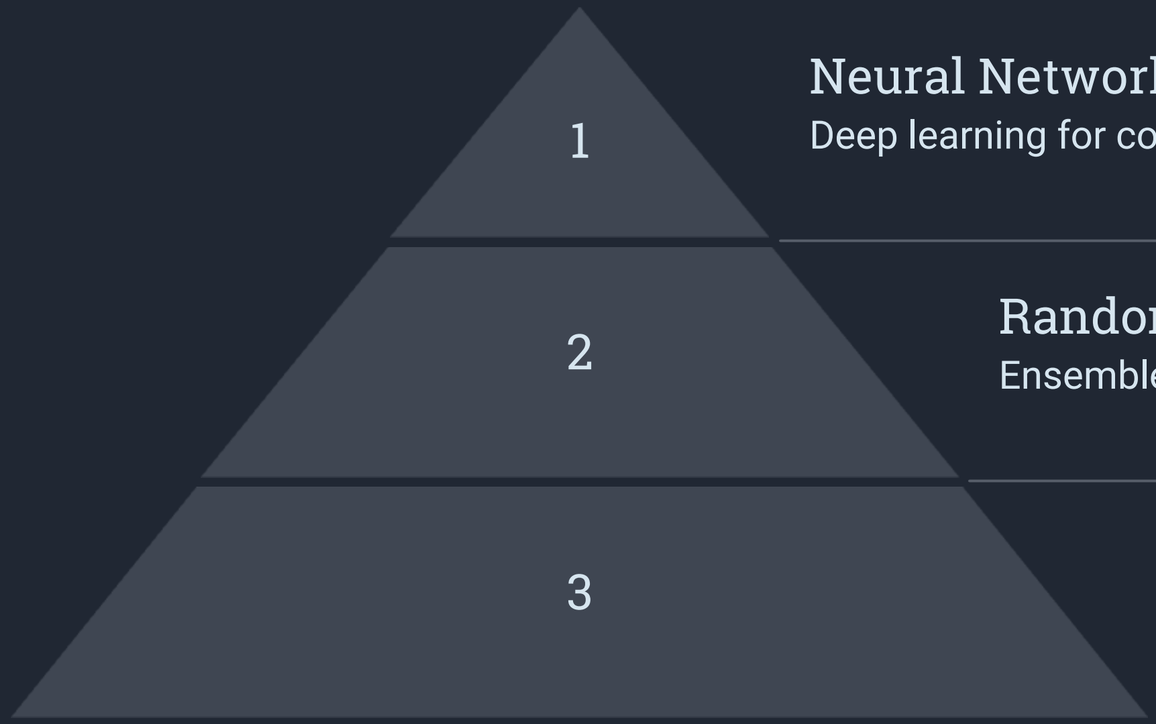
Key Features

Includes voltage, current, temperature, and vibration.

Data Analysis

Used for training and testing machine learning models.

Machine Learning Models: Selection and Justification



Neural Networks
Deep learning for complex patterns.

Random Forest
Ensemble method for high accuracy.

Linear Regression
Baseline for simple relationships.

Methodology: Training, Validation, and Testing

1

Data Splitting

70% training, 15% validation, 15% testing.

2

Model Training

Use training data to fit model parameters.

3

Validation

Tune hyperparameters to optimize model.

4

Testing

Evaluate performance on unseen data.

Results and Evaluation: Performance

Histogram

Distribution of performance metrics.

Box Plot

Shows data range and outliers.

Scatter Plot

Relationships between variables.

Heatmap

Correlation matrix of features.

Conclusion and Future Directions

1

Key Findings

Machine learning models accurately predict motor performance.

2

Improvements

Efficiency gains and failure reduction are significant.

3

Future Work

Real-time prediction and adaptive control systems.

Thank You

Thank you for your time. We look forward to implementing these advanced features.