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UTM SCHOOL OF COMPUTING
Faculty of Engineering

Project Proposal Form MCSD 6215
Sem: 1 Session: 2024/2025

SECTION A: Project Information

Program Name: **Masters of Computer Science (Data Science)**

Subject Name: **Project 1 (MCSD 6215)**

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Project Title: Predictive Maintenance and Performance Optimization for Jet Engines Based on Rolls-Royce Engine Manufacturer and Services Within the Aerospace Sector

Supervisor 1:

Supervisor 2 / Industry Advisor(if any):

SECTION B: Project Proposal

Introduction:

In engine manufacturing and services, Rolls-Royce is a trailblazer; ahead in the field within the aerospace sector and well known as a pioneer in the area of advancements in technology. With the aim of pledging the trustworthiness and successfulness of contemporary jet engines, predictive maintenance must be implemented. This is a data-driven strategy to predict potential failures in advanced that being facilitate by manufacturers and service providers.

Rolls-Royce have developed TotalCare program to exhibit the magnitude of predictive maintenance by providing proactive maintenance and live monitoring for their airplane engines, conclusively reducing operational expenses and airlines' downtime in the long run.

Predictive maintenance is becoming crucial from time to time to boost the jet engine's efficiency as to comply with the augment needs for fuel efficiency, sustainability in aviation industry and lower operational expense. Engine malfunctions prediction scale and detecting performance reduce in advanced can minimizing unanticipated maintenance expenses. Else, this can helps with reducing the fuel economy which is a crucial aspect for business that prioritize carbon reduction target.

The aims of this project is to utilize extensive datasets of jet engine performance and sensor data to generate predictive maintenance models and approach for optimizing performance. This project focus is to assess past engine data for factors identification that causing engine failures, cultivate predictive models for foreseen problems, and advocate strategies to amplify engine performance and fuel efficiency.

This research's significance is within the capability to lower aviation's environmental outcome while refining aircraft efficiency. This project seeks assistance for companies such as Rolls-Royce by improving the efficiency, sustainability, and reliability of their engine systems with collaborating predictive analytics and machine learning.

In conclusion, this project will apply data-driven insights to boost performance and fulfill maintenance needs, supporting operational improvements while also foster Rolls-Royce's innovation and sustainability goal beside conveying the aviation industry's prospective challenges.

Project1 Proposal Form MSc (Data Science)