PROJECT OVERVIEW STATEMENT

Project Name	Proactive Shield: Smart Maintenance Platform for Aero Engine Industrial Equipment

Problem/Opportunity

Aero engine industrial equipment requires continuous monitoring and predictive maintenance to prevent unexpected failures and reduce downtime. Traditional maintenance approaches rely heavily on scheduled inspections, which may not accurately predict potential failures, leading to inefficiencies, increased costs, and potential safety risks. This project aims to address these challenges by leveraging smart maintenance solutions powered by AI and IoT technologies.

Goal

Develop a smart maintenance web platform that enables real-time monitoring, predictive analytics, and automated diagnostics for aero engine industrial equipment to enhance operational efficiency, reduce downtime, and optimize maintenance schedules.

Objectives

1.Design and build a responsive web-based platform using Vue.js frontend and Express backend that provides real-time monitoring capabilities and visualization tools.

2.Develop user-friendly dashboards for maintenance engineers to visualize prediction results and support data-driven decision-making processes.

3.Deploy and test the platform in at least two pilot implementation environments within the first year of development.

Success Criteria

1.Engine component anomaly detection accuracy rate exceeds 95% within six months of deployment.

2.Unplanned maintenance events reduced by at least 25% in the first year after implementation.

3.Average equipment downtime per incident decreased from 72 hours to under 30 hours within 12 months.

4.Maintenance-related operational costs reduced by 25% within 18 months of full implementation.

Assumptions, Risks, Obstacles

1.High-quality historical maintenance data is available for AI model training and validation.

2.Equipment manufacturers will provide necessary access for system integration and data collection.

3.Maintenance staff will adapt to the new platform with proper training and support.

4.The existing IT infrastructure can support the increased data collection and processing demands.

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