EXECUTIVE SUMMARY

Project Title: Voltix AI

Project Time Frame: January 2026 – December 2026 (Including 4 months Co-Op)

Value Proposition: Voltix AI is an intelligent web-based assistant that offers maintainability insights, quality recommendations, and contextual explanations to help developers comprehend, integrate, and enhance existing codebases.

Summary:

Voltix AI solves the problem of poorly documented code, lack of coding standards, and high onboarding costs for new developers in modern software projects. Voltix AI analyzes the codebase of an organization and provides guidance and suggestions using AI. The service aims to lower onboarding costs, improve code quality, and assist in maintaining development standards. Voltix AI uses large language models and code analysis to provide insights to developers through a web interface.

Team Members & Roles:

- **Krish Jitesh Gohil**: Team Lead & Full Stack Developer
- **Shashank Nanda**: Full Stack Developer
- **Kanwar Singh Sandhu**: Full Stack Developer

PROJECT OVERVIEW AND BACKGROUND

Inspiration:
The team members' combined experience working on large and unfamiliar codebases during internships, academic projects, and professional assignments is what allows Voltix AI to solve this problem. It takes weeks for newcomers to grasp the architecture, coding standards, and project structure.

Background & Context:
Software maintenance contributes to a large part of the overall cost of software development. As the team size increases, the documentation becomes outdated, and the knowledge is fragmented among senior developers. Although AI-powered coding assistance tools are available, they are mostly code-generating tools and lack understanding, onboarding, and improvement of quality.

Existing Solutions & Gaps:
Partial support is offered by existing tools like code linters, documentation generators, and AI code assistants. But they frequently lack:

- Context-aware justifications customized for a particular codebase
- New developers' onboarding-focused advice

- High-level, ongoing insights into the maintainability and quality of code

By serving as an intelligent guide for both individuals and organizations, Voltix AI seeks to close this gap.

PROBLEM STATEMENT & STAKEHOLDERS

Problem Statement:
Companies and Organizations struggle to maintain documentation of their codebases with frequent changes and tight deadlines focusing more on delivering features which results in reduction on code quality and proper documents for future references, Voltix AI solves this.

Stakeholders:

- New Developers: Need faster and clearer onboarding into complex codebases
- Senior Developers / Tech Leads: Spend significant time mentoring and reviewing code
- Organizations / Engineering Teams: Face increased costs due to technical debt and slow development cycles

OBJECTIVES

The main objectives of Voltix AI are:

1. Reduce onboarding time for new developers working on existing codebases
2. Provide clear, AI-generated explanations of code structure and logic
3. Offer actionable recommendations to improve code quality and maintainability
4. Provide industry standard AI generated documentation for newly written code
5. Create a scalable web platform usable by individuals and teams

Success Metrics:

- Ability to analyze and explain a real-world codebase
- Demonstration of quality improvement suggestions (linting, refactoring tips)
- Functional web interface with AI-driven insights

Deliverables:

- A fully functional web application (Voltix AI)
- Codebase analysis and onboarding assistance features
- Final project demo and documentation

WHY THIS IS A 2 SEMESTER PROJECT

Voltix AI is designed as a complex, multi-component system that justifies a two-semester development timeline. Key reasons include:

- **Major Features:**
    - Codebase ingestion and parsing
    - AI-powered contextual explanations using LLMs
    - Code quality and maintainability analysis
    - Developer-friendly web dashboard
- **Technical Complexity:**
  Frontend development, backend services, AI/LLM pipelines, and code analysis tools must all be integrated for the project. Ensuring usability, scalability, and accuracy adds a great deal of depth.
- **Innovation & Value:**
  Voltix AI concentrates on comprehending current systems and enhancing long-term quality, in contrast to basic code assistants. A short-term project cannot accomplish this degree of integration and insight.
- **User Impact:**
  The solution delivers measurable value by saving developer time, improving code health, and supporting organizational growth.

Conclusion:

Voltix AI is a technically challenging and significant project that fits both the team's technical capabilities and the demands of the industry. The project will produce a polished, useful solution that improves developer productivity and code quality over the course of two semesters.