# GitGrade – Intelligent GitHub Repository Evaluation System


## Abstract

GitGrade is an intelligent web-based system designed to analyze and evaluate GitHub repositories submitted by students and early-stage developers. The platform converts raw repository data into a meaningful score, structured summary, and a personalized improvement roadmap. By analyzing code organization, documentation quality, commit consistency, and real-world relevance, GitGrade bridges the gap between student work and recruiter expectations.


## 1. Introduction

In modern software engineering education, GitHub repositories serve as the primary indicator of a developer’s practical skillset. However, students often lack structured feedback on repository quality. GitGrade addresses this gap by providing an automated and transparent evaluation mechanism.

## 2. Problem Statement

Students struggle to understand how their GitHub repositories are perceived by recruiters. Manual evaluation is time-consuming and subjective, leading to inconsistent feedback and missed learning opportunities.

## 3. Objectives

• To analyze public GitHub repositories automatically
• To evaluate repository quality across multiple dimensions
• To generate an interpretable score and summary
• To provide a personalized roadmap for improvement

## 4. System Overview

The system accepts a GitHub repository URL as input, fetches repository metadata using public APIs, processes the data through evaluation logic, and presents results in a user-friendly interface.

## 5. Technology Stack

Frontend: React with Vite
UI Frameworks: MUI, Radix UI
Styling: Tailwind CSS
Hosting: Vercel
Version Control: Git and GitHub

## 6. Evaluation Parameters

Repositories are evaluated based on structure, readability, documentation quality, commit history, and real-world applicability. Each parameter contributes to the final score.

## 7. Results and Discussion

The system successfully generates consistent evaluations for multiple repositories. Users receive actionable insights rather than generic feedback, improving learning outcomes.

## 8. Limitations

GitGrade currently supports only public repositories and relies on available metadata. Advanced static code analysis is limited in the current version.

## 9. Future Enhancements

Future versions may include support for private repositories, AI-based code analysis, and deeper language-specific evaluations.

## 10. Conclusion

GitGrade provides a structured, automated, and meaningful evaluation of GitHub repositories. It serves as a valuable tool for students, mentors, and recruiters by transforming raw codebases into clear performance insights.