AI-POWERED IDE

Abstract

This project aims to develop an advanced AI-integrated IDE (Integrated Development Environment) that provides a comprehensive set of features to enhance the coding experience. The IDE will be built as standalone software, designed to support multiple programming languages and cater to the needs of postgraduate students and professional developers. Key features include live preview, automated code correction, language checking, intelligent code completion, code suggestions, and more. This IDE will leverage AI to streamline the development process, improve code quality, and boost productivity.

Key Features

1. **File Explorer**:

    o Allows users to navigate and manage their project files with ease.

    o Supports common file operations like create, open, save, and delete.

2. **Code Editor**:

    o Syntax highlighting and themes for various programming languages.

    o Intelligent code completion and suggestion using AI.

    o Automated code correction and refactoring suggestions.

    o Real-time language checking and linting.

3. **Integrated Terminal**:

    o Built-in terminal for executing commands and running scripts.

    o Supports multiple shell environments (e.g., Bash, PowerShell).

4. **Live Preview**:

    o Real-time preview of HTML/CSS/JS code changes.

    o Integrated with the code editor to reflect updates instantly.

5. **AI-Powered Features**:

    o Code suggestions and completion powered by AI.

    o Automated code reviews and best practice suggestions.

    o Natural language processing (NLP) for documentation and comments.

    o Language translation for code comments and documentation.

    o Contextual code search and smart refactoring.

6. **Version Control Integration**:

    o Seamless integration with Git for version control.

    o Visual diff and merge tool.

7. **Real-Time Collaboration**:

    o Enables multiple users to collaborate on code in real-time.

    o Integrated chat and video conferencing.

8. **User Behavior Analytics**:

    o Tracks and analyzes user behavior to provide personalized suggestions.

    o Generates insights on coding patterns and habits.

Technical Stack

- **Frontend**: Angular, HTML, CSS, JavaScript

- **Backend**: Node.js, Express.js, Python (for AI services), MongoDB (for data storage)

- **AI Integration**: OpenAI API for code suggestions and NLP features

- **Version Control**: Git