“DocuCore: Text & Code Summariser in Cloud”

A

Project Report

submitted

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असतो मा सद्गमय

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Introduction

- This project is designed to automate the analysis of documents and source code using Databricks models.
- **Goals:**
  - Simplify code quality checks.
  - Summarize lengthy PDFs using DBRX Instruct.
  - Automate deployment using CI/CD pipelines.
- **Relevance:**
  - Reduces manual analysis time.
  - Encourages best practices in modern software development.

Problem Statement

- Manual analysis is time-consuming and prone to errors.
- Lack of scalable solutions leads to delays in development cycles.
- Need for an integrated, scalable, and automated system for code and document analysis.

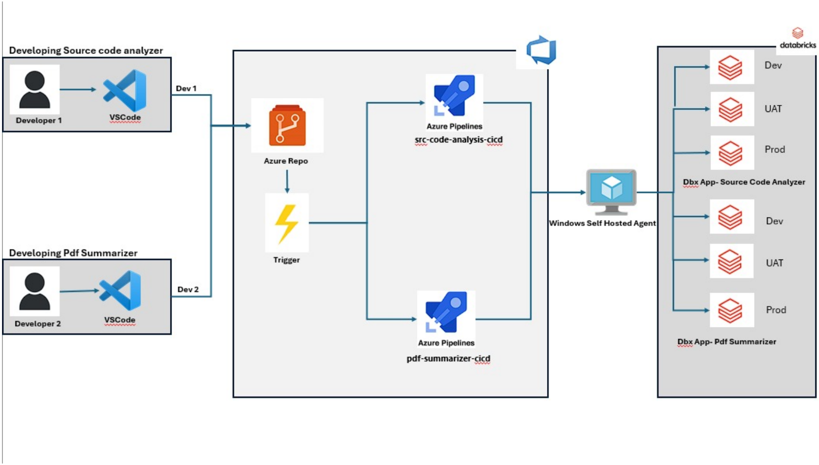
Literature Review

- **Existing Approaches:** Tools like SonarQube and ESLint help in code quality checks. LLMs are used for text summarization.
- **Gaps Identified:** Lack of integration between document summarization, code analysis, and cloud automation pipelines.
- Our project bridges this gap by automating both document and code analysis using Azure's scalable infrastructure.

Proposed Solution

- A CI/CD-based automated workflow that:
  - Analyzes source code provided.
  - Summarizes documents (PDFs) using LLM models in Databricks.
- Key Technologies:
  - Azure DevOps Pipelines
  - Databricks Apps
  - Microsoft Self-Hosted Agent
  - LLM-powered Summarizer
  - Source Code Analyzer Integration

Architecture Diagram



Implementation Details

- **Azure DevOps:** Used for setting up CI/CD pipelines and managing code repositories.
- **Databricks & Databricks Apps:** Deployed LLM-based summarization and code analysis tasks in a scalable notebook environment.
- **Microsoft Self-Hosted Agent:** Custom agent runs locally to build and deploy artifacts on specific environments securely.
- **Source Code Analyser:** Used for static code analysis integrated directly into the CI/CD pipeline.
- **PDF Summarizer:** Accepts long-form technical documents and generates intelligent summaries using GPT models.
- **Integration:** All components are deployed and orchestrated via Azure ensuring seamless execution across modules.

Features and Functionality

- Cloud-based deployment ensures high availability and scalability.
- Integrated CI/CD pipelines enable multi-environment deployment.
- Secure access with role-based control and data encryption.

Testing and Evaluation

- **Testing:**
  - **Unit Testing:** Individual module testing (code parser, summarizer).
  - **Integration Testing:** Checked Azure pipeline, Databricks execution, and output delivery.
- **Evaluation:**
  - Output summaries were concise and accurate.
  - Code analysis matched expected static metrics.
  - Pipelines performed consistently under load.

Result and Analysis

- Reduced Deployment Time.
- Automated Multi-Environment Deployment.
- Scalable and Efficient Architecture.
- Team Integration & Collaboration

Future Work

- Implementation of Rollback Deployment.
- Support additional code languages and document formats.
- Implement best practices for Network Security.

Conclusion

- Built a scalable system for automatic code and document analysis.
- Integrated AI and DevOps tools for practical, real-world application.
- Delivered a proof-of-concept that can evolve into a fully adaptive developer assistant.

References

◀ 1.Microsoft Azure DevOps Documentation

◀ 2.Databricks Documentation