

Sreenidhi Institute of Science and Technology
Department of Computer Science and Engineering
MAJOR PROJECT (9E888)

Batch No: 1		Title
Roll No	Name	
22311A05HU	Palla Manoj Reddy	AI-Powered Repository Analysis and Visualization System using RAG and LLMs
22311A05JB	Sahil Kumar Karn	
22311A05Z3	Mani Raja	

Abstract

This project introduces an AI-driven automation system designed to analyze, interpret, and visualize software repositories using Large Language Models (LLMs) and Retrieval-Augmented Generation (RAG) techniques. The system accepts a GitHub repository link as input and automatically performs key operations, including repository cloning, file structure analysis, semantic content extraction, and contextual summarization of source code.

At its core, the project integrates workflow automation through n8n, enabling modular and rapid prototyping of each stage—from data retrieval and preprocessing to embedding generation and AI-based interpretation. The use of RAG ensures that the LLM receives precise and relevant code segments, allowing for accurate explanations, summaries, and project insights without exceeding token limits.

In addition to textual analysis, the system also generates mind maps and visual representations of repository structures, enhancing developer comprehension and code navigation. Once the n8n-based prototype is validated, its exported workflow (in JSON format) can be programmatically transformed into a Python-based, scalable pipeline, enabling deployment as a standalone AI agent or API service.

By combining automation, intelligent retrieval, and generative reasoning, this project demonstrates how AI can be applied to improve code understanding, documentation, and onboarding efficiency for developers and organizations alike.

Student 1	Palla Manoj Reddy	Internal Guide	HOD
Student 2	Sahil Kumar Karn	Dr. Preethi Jeevan	Dr. K. SHIRISHA
Student 3	Mani Raja		