

Project Initialization and Planning Phase

Date	15 July 2024
Team ID	SWTID1720596651
Project Title	CodeXchange - AI-Powered Code Translation Tool
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template

This project proposal outlines a solution to address a specific problem. With a clear objective, defined scope, and a concise problem statement, the proposed solution details the approach, key features, and resource requirements, including hardware, software, and personnel.

Project Overview	
Objective	Develop the CodeXchange tool, leveraging AI to facilitate seamless translation of code between different programming languages, thereby enhancing interoperability and aiding developers in understanding and converting legacy codebases efficiently.
Scope	The project aims to build an AI-driven platform capable of accurately translating code across various programming languages, providing support for syntax, semantics, and idiomatic expressions, while also offering features for code optimization and refactoring to improve overall code quality and maintainability
Problem Statement	
Description	Developers often face challenges when working with diverse codebases written in multiple programming languages, leading to increased development time and difficulty in maintaining and updating legacy systems. Manual code translation is error-prone and inefficient, necessitating a solution that can accurately and automatically translate code while preserving its functionality and readability across different programming languages.
Impact	By providing accurate and automated code translation, CodeXchange will significantly reduce development time and errors, enhance collaboration among teams using different programming languages, and streamline the maintenance and modernization of legacy systems, ultimately boosting productivity and code quality.

Proposed Solution	
Approach	Develop an AI model trained on diverse code datasets to accurately translate between programming languages, integrate the model into a user-friendly platform, and continuously optimize performance based on user feedback and real-world application.
Key Features	<ol style="list-style-type: none"> 1. The approach of integrating the AI application for the translation of coding language. 2. Real-time conversion of work carried out simultaneously for efficient collaboration among the team. 3. Detailed database of codes translated to different languages and individual modules. 4. The error detection and correction tools; Self-debugging resources.

Project Proposal (Proposed Solution) report

The proposal report is a detailed report on the development of an AI-powered tool known as CodeXchange that is tailed at improving the translation of codes. CodeXchange's benefits are evident, as it comes to rectify the existing issues and shortcomings of developers thus enhancing productivity, collaboration, and code standardization, irrespective of code language. These are an integrated translation model based on artificial intelligence, the ability to perform translation in real time, a database of already translated code fragments, as well as error checking facilities.

Resource Requirements

Resource type	Description	Resource Requirements
Hardware		
Computing	CPU/GPU specifications, number of cores	T4 GPU
Memory	RAM specifications	8 GB
Storage	Disk space for data, models, and logs	1 TB SSD
Software		
Frameworks	Python frameworks	Flask
Libraries	Additional libraries	scikit-learn, pandas, numpy, matplotlib, seaborn
Development Env	IDE	Jupyter Notebook, PyCharm
Data		
Data	Source, size and format	GitHub repositories, varied sizes, multiple formats

