Project Initialization and Planning Phase

Date	31 January 2026
Team ID	LTVIP2026TMIDS66217
Project Title	TransLingua – AI-Powered Multi-Language Translator
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) report

The proposed solution, **TransLingua**, aims to overcome language barriers by leveraging advanced generative AI models to provide accurate, fast, and context-aware language translation. The system addresses the limitations of traditional translation tools such as lack of contextual understanding, limited language support, and complex user interfaces. By integrating Google's Gemini Pro model with a Streamlit-based web application, TransLingua ensures an efficient, user-friendly, and scalable translation solution for personal, academic, and professional use cases.

Project Overview

Category	Description
Objective	The primary objective of TransLingua is to develop an AI-powered web application that enables users to translate text accurately between multiple languages using advanced large language models, ensuring contextual correctness and ease of use.
Scope	The project focuses on building a web-based language translation system that accepts user input text, allows selection of source and target languages, utilizes a pre-trained generative AI model for translation, and displays real-time translated output through an intuitive interface. The scope includes model integration, UI development, deployment, and testing, but excludes custom model training from scratch.

Problem Statement

Category	Description
Description	Current language translation solutions often suffer from inaccuracies, lack of contextual understanding, limited language support, and poor user experience, which negatively impact effective communication across different languages.
Impact	Addressing these challenges will enhance communication efficiency, reduce misunderstandings, and improve user confidence in multilingual interactions. An accurate and user-friendly translation system contributes to better academic collaboration, business communication, and travel experiences.

Proposed Solution

Category	Description
Approach	The proposed solution employs Google's Gemini Pro large language model to perform context-aware translations. A Streamlit-based frontend is used to provide an interactive and simple user interface, enabling seamless communication between users and the AI model.
Key Features	• AI-powered multilingual text translation • Context-aware and accurate translations • Simple and intuitive Streamlit user interface • Real-time translation output • Support for multiple widely used languages

Resource Requirements

Resource Type	Description	Specification / Allocation
Computing Resources	CPU/GPU	Standard CPU (Cloud-based inference)
Memory	RAM	8 GB
Storage	Disk space for application and logs	50 GB SSD

Software

Resource Type	Description	Specification
Frameworks	Web framework	**Streamlit**
Libraries	AI & utilities	google-generativeai, python-dotenv
Programming Language	Core language	Python
Development Environment	IDE	VS Code / PyCharm

Data

Resource Type	Description
Data Source	User-provided text input
Data Format	Text
Data Size	Real-time, dynamic input

Workflow Diagram