

Model Development Phase

Date	10 February 2026
Team ID	LTVIP2026TMIDS66217
Project Title	TransLingua – AI-Powered Multi-Language Translator
Maximum Marks	6 Marks

Model Selection Report

The Model Selection Report outlines the evaluation and selection of the most suitable AI model for multilingual text translation. Since TransLingua is an inference-based application, the selection focuses on pre-trained large language models that offer high accuracy, contextual understanding, and multilingual support rather than traditional machine learning classifiers.

Model	Description	Hyperparameters	Performance Metric
Gemini Pro (gemini-1.5-flash)	A pre-trained generative large language model capable of context-aware multilingual translation with high accuracy and low latency.	Pre-trained (No custom hyperparameters tuned)	High translation accuracy, strong contextual understanding
Rule-Based Translator	Uses predefined grammar and dictionary-based translation rules.	Not applicable	Low accuracy for complex sentences
Statistical Machine Translation (SMT)	Translates text based on probabilistic models learned from bilingual corpora.	Not applicable	Moderate accuracy
Neural Machine Translation (NMT)	Uses neural networks to translate sequences of text.	Not applicable	High accuracy
Selected Model: Gemini Pro	Chosen due to superior context awareness, scalability, and multilingual performance compared to traditional approaches.	—	Best overall performance

Model Selection Justification

Justification Aspect	Description
Context Awareness	Gemini Pro provides context-aware translations, outperforming traditional rule-based and statistical translation methods.
Multilingual Support	The model efficiently supports multiple languages with minimal latency, making it suitable for global use cases.
Pre-trained Capability	Being pre-trained on large multilingual corpora, Gemini Pro eliminates the need for custom model training.
API Integration	The model integrates easily through APIs, enabling seamless real-time translation in web applications.