

## Model Development Phase

Date	10 February 2026
Team ID	LTVIP2026TMIDS66217
Project Title	<b>TransLingua – AI-Powered Multi-Language Translator</b>
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
<b>Gemini Pro (gemini-1.5-flash)</b>	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
<b>Rule-Based Translator</b>	Uses predefined grammar and dictionary-based translation rules.	Not applicable	Low accuracy for complex sentences
<b>Statistical Machine Translation (SMT)</b>	Translates text based on probabilistic models learned from bilingual corpora.	Not applicable	Moderate accuracy
<b>Neural Machine Translation (NMT)</b>	Uses neural networks to translate sequences of text.	Not applicable	High accuracy
<b>Selected Model: Gemini Pro</b>	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.