Software Requirement Specification (SRS)

Project Title: English to Hindi Language Translator Web Application

1. Introduction

This document describes the requirements for a web-based English to Hindi Language Translator using the NLP model Helsinki-NLP/opus-mt-en-hi. The system is developed using Python, Flask, Transformers library, and deployed on Render.

2. Scope

The application accepts English text input, translates it into Hindi using a pretrained NLP model, and displays the translated output in a web browser.

3. Overall Description

The system consists of a frontend (HTML/CSS), backend (Flask), NLP model (Helsinki-NLP OPUS-MT), and deployment platform (Render).

4. Functional Requirements

• Accept English text input
• Validate input
• Translate text using NLP model
• Display Hindi output
• Handle errors gracefully

5. Non-Functional Requirements

• Response time less than 3 seconds after model load
• Secure input handling

• High availability depending on hosting plan
• Scalable for future enhancements

6. System Architecture

User → Browser → Flask Server → Tokenizer → Transformer Model → Hindi Output → Browser

7. Technology Stack

Frontend: HTML/CSS
Backend: Flask (Python)
ML Library: Transformers
Deployment: Render
WSGI Server: Gunicorn

8. Deployment Plan

1. Push project to GitHub
2. Create Web Service on Render
3. Install dependencies using requirements.txt
4. Start server using gunicorn app:app
5. Configure runtime.txt for Python version

9. Future Enhancements

• Multi-language support
• Speech-to-text input
• Translation history
• Dark mode UI