Software Requirements Specification (SRS)

English to Hindi Language Translator Web Application

1. Introduction

Purpose: Develop a web app translating English to Hindi using Helsinki-NLP/opus-mt-en-hi.

Scope: Accept English text, process via NLP model, display Hindi output, deploy on Render.

Definitions: NLP (Natural Language Processing), Transformer, Flask, Render, OPUS-MT.

2. Overall Description

Standalone web app with frontend UI, Flask backend, HuggingFace NLP model, and Render deployment.

Functions: Text input, translation, output display, error handling.

Constraints: Model loading delay, free-tier cold start, internet dependency.

3. System Features

Text Translation: Input English → Transformer → Hindi Output.

User Interface: Textbox, translate button, output area.

Error Handling: Empty input, model failure, network issues.

4. External Interface Requirements

UI: Responsive single page.

Software: Python, Flask, Transformers, PyTorch.

Hardware: 2GB RAM minimum, internet-enabled device.

5. Non-Functional Requirements

Performance: <3 sec response after model load.

Security: Input validation and safe processing.

Usability: Beginner friendly and instant feedback.

Scalability: Extendable to multilingual REST API.

6. Architecture

User → Browser UI → Flask Backend → NLP Model → Output

7. Technology Stack

Frontend: HTML/CSS/JS | Backend: Flask | NLP: Helsinki-NLP/opus-mt-en-hi | Deployment: Render

8. Future Enhancements

Voice translation, Hindi→English, multi-language support, chat UI, offline mode.