# Software Requirements Specification (SRS)

***Project: English to Hindi Language Translator Web Application***

## 1. Introduction

Purpose: Develop a web-based English to Hindi translator using NLP model Helsinki-NLP/opus-mt-en-hi.
Scope: Accept English text, translate to Hindi using pretrained model, display result on web interface.

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## 2. Overall Description

Product Perspective: Standalone Flask web application using HuggingFace model.
Product Functions:
- Accept English text input
- Validate input
- Process using NLP model
- Return Hindi translation
- Display results

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## 3. System Features

Text Translation Feature:
- FR1: Accept text input
- FR2: Validate non-empty input
- FR3: Process using Helsinki-NLP model
- FR4: Return Hindi translation
- FR5: Display translated output

Error Handling Feature:
- FR6: Show error for empty input
- FR7: Handle server errors gracefully

## 4. External Interface Requirements

User Interface:
- Text area for English input
- Translate button
- Output section
- Responsive design

Software Interface:
- Python
- Flask
- Transformers
- Torch
- Render

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## 5. Non-Functional Requirements

Performance: Response time ≤ 5 seconds
Security: No permanent data storage
Usability: Simple and mobile-friendly UI
Reliability: 99% uptime (Render dependent)
Scalability: Can extend to multi-language support

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## 6. System Architecture

User → Browser → Flask Server → NLP Model → Flask Server → User
Components:
- Frontend (HTML/CSS)
- Backend (Flask)
- NLP Model
- Render Deployment

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## 7. Deployment Requirements

- GitHub Repository
- app.py
- requirements.txt
- templates folder
- Procfile (web: gunicorn app:app)
- Deploy on Render Web Service

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## 8. Future Enhancements

- Multi-language support
- Speech-to-text
- Text-to-speech
- Authentication
- API endpoint

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