PROJECT 3

Symptom-Based Disease Prediction and Prescription Recommendation Using Deep Learning

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Project Report: Deep Learning for Disease Prediction

1. Project Overview

This project implements a deep learning model to analyze patient-reported symptoms and predict potential diseases along with corresponding prescriptions.

2. Objectives

- Predict diseases based on patients' symptom descriptions.
- Recommend appropriate prescriptions or treatments.
- Preprocess medical text data for deep learning compatibility.
- Train a multi-output LSTM model for classification.

3. Tools and Technologies Used

Programming Language:

- Python

Libraries and Frameworks:

- Pandas & NumPy
- TensorFlow & Keras
- Sklearn (LabelEncoder)
- Keras Tokenizer & pad_sequences

4. Dataset and Preprocessing

Data Source: `medical_data.csv` with `Patient_Problem`, `Disease`, and `Prescription` columns.

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Steps:

- Tokenization and padding

- Label encoding and one-hot conversion

5. Model Architecture

The model uses a shared embedding and LSTM encoder with two output branches.

Layers:

- Embedding -> LSTM -> Dense (Disease) & Dense (Prescription)

Outputs are predicted using softmax activation.

6. Training & Evaluation

Loss Functions: Categorical Crossentropy for both outputs

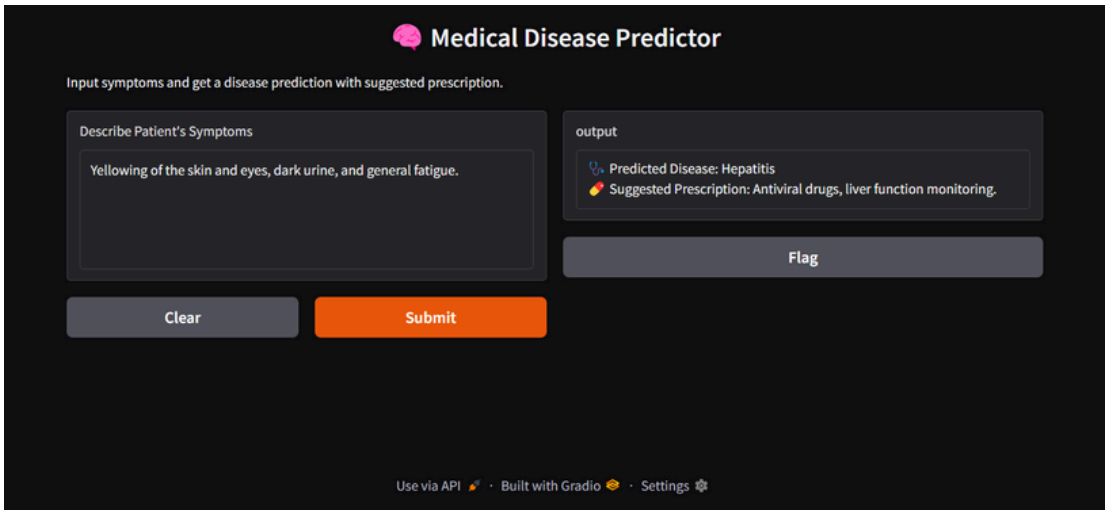
Optimizer: Adam

Metrics: Accuracy

Model Type: Multi-output

7. Sample Predictions

Sample 1: Input -> Disease & Prescription



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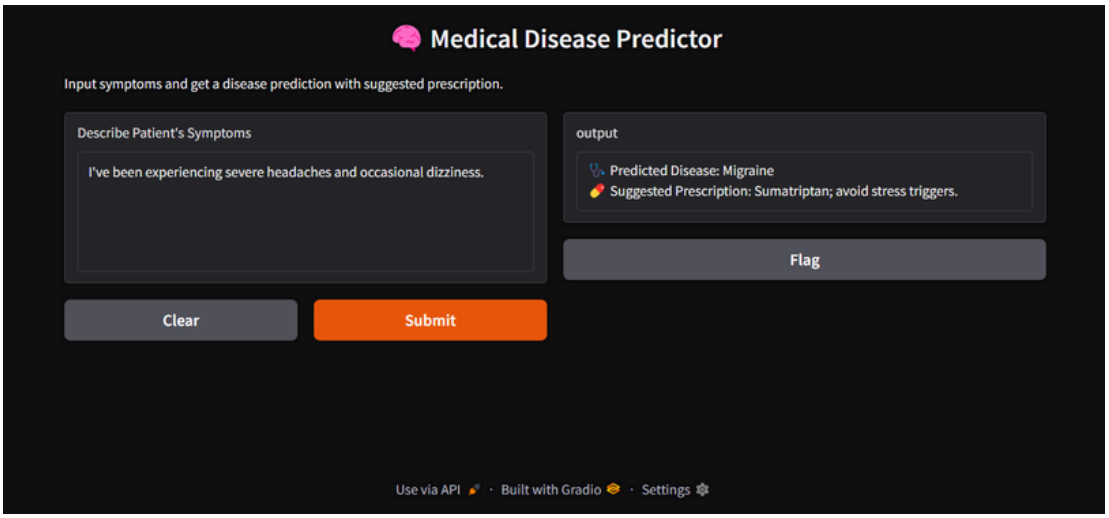
Sample 2: Input -> Disease & Prescription



8. Sample Deployment Link

Use the link below to interact with the live model or notebook:

https://761db6159a7287f45d.gradio.live

(Valid only for 1 week)