Medicine Substitute Recommendation – BiLSTM Based

Description:
This system recommends similar or alternative medicines for a given medicine name using a deep learning approach based on the medicine's name, chemical class, and action class. It supports discovery of substitute drugs even if no direct substitution is listed in the dataset.

How it Works:

1. Dataset Used: A custom dataset **medicine_dataset.csv** with fields like name, Chemical Class, Action Class, and predefined substitute0 to substitute4 columns.

2. Feature Engineering: Combines key features (name + Chemical Class + Action Class) into a text format for each medicine to represent its identity semantically.

3. Text Vectorization:

    - Tokenization using Keras tokenizer (limited to top 5000 words).

    - Sequences padded to ensure uniform input length.

Model Used:

1. A BiLSTM (Bidirectional LSTM) model built using PyTorch.

2. It learns contextual embeddings of each medicine's textual description.

Recommendation Logic:

Returns a mix of:

- ✓ Up to 3 direct substitutes (from dataset columns like substitute0, substitute1, etc.).
- ✓ Up to 7 similar medicines based on model predictions (excluding already listed direct substitutes).

Output:
Original medicine name
List of alternative medicines with similarity scores