# Introduction:

This document provides a detailed explanation of the AI features integrated into our chat website, including the next word suggestion , Translation, and Sentiment Analysis functionalities.

1. Next Word Prediction, also known as Language Modeling, is a natural language processing (NLP) task where the goal is to predict the next word in a sequence of text based on the context of the words that have come before it. This is an essential building block for many NLP applications, such as text autocompletion.
2. Pass
3. Pass
4. Pass

Feature Details:

- **1.1 Feature** : The next-word prediction feature provides suggestions for the next possible word as a user types a message in the chat. This feature helps users type faster and reduces the effort by predicting the next word based on the context of the sentence.
    - **Example:** 1. Mobile keyboard next word recommendation .
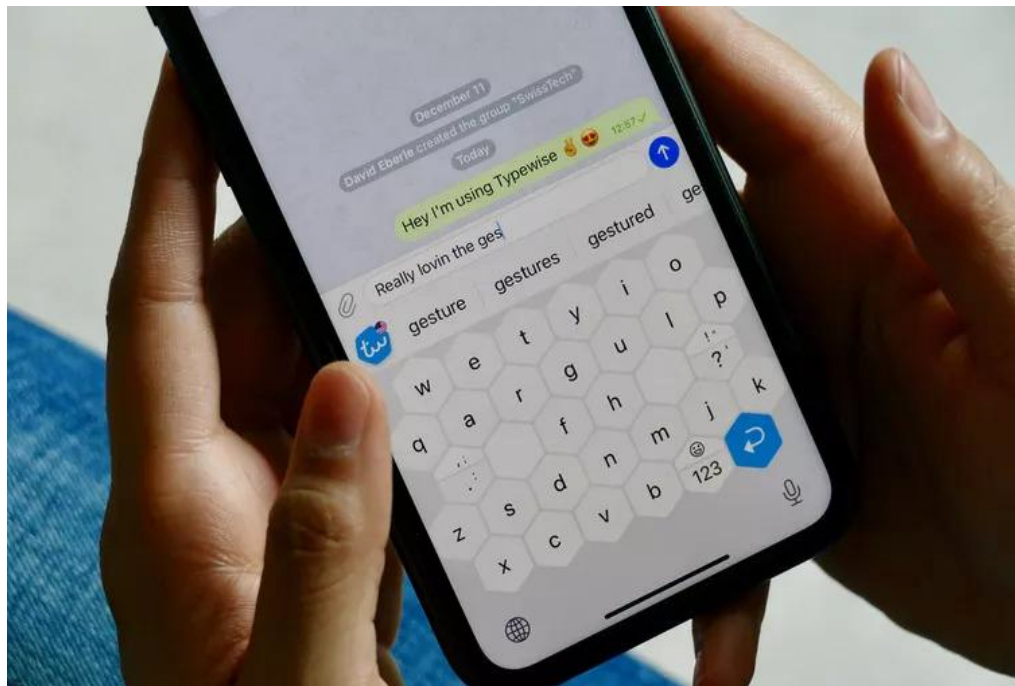
○ **Example 2** : **Whenever we search for something on any search engine, we get many suggestions and, as we type new words in it, we get better recommendations according to our searching context.**
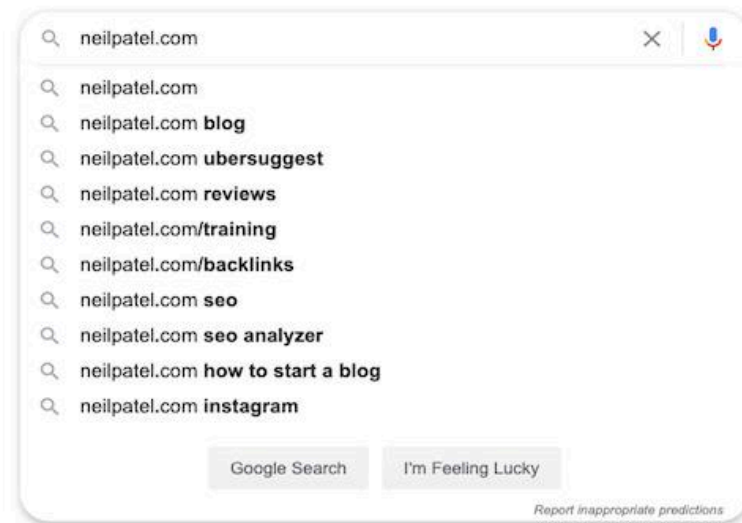
○ **Technology Used** : **This feature leverages Natural Language Processing (NLP) and Long Short-Term Memory (LSTM) neural network, it is an advance recurrent neural network which is capable to store order states by using its cell state feature.**

Architecture of Bidirectional LSTM Neural Network

Inputs:		Outputs:		Nonlinearities:		Vector operations:	
X_t	Current input	C_t	New updated memory	σ	Sigmoid layer	×	Scaling of information
C_{t-1}	Memory from last LSTM unit	h_t	Current output	tanh	Tanh layer	+	Adding information
h_{t-1}	Output of last LSTM unit			b	Bias		
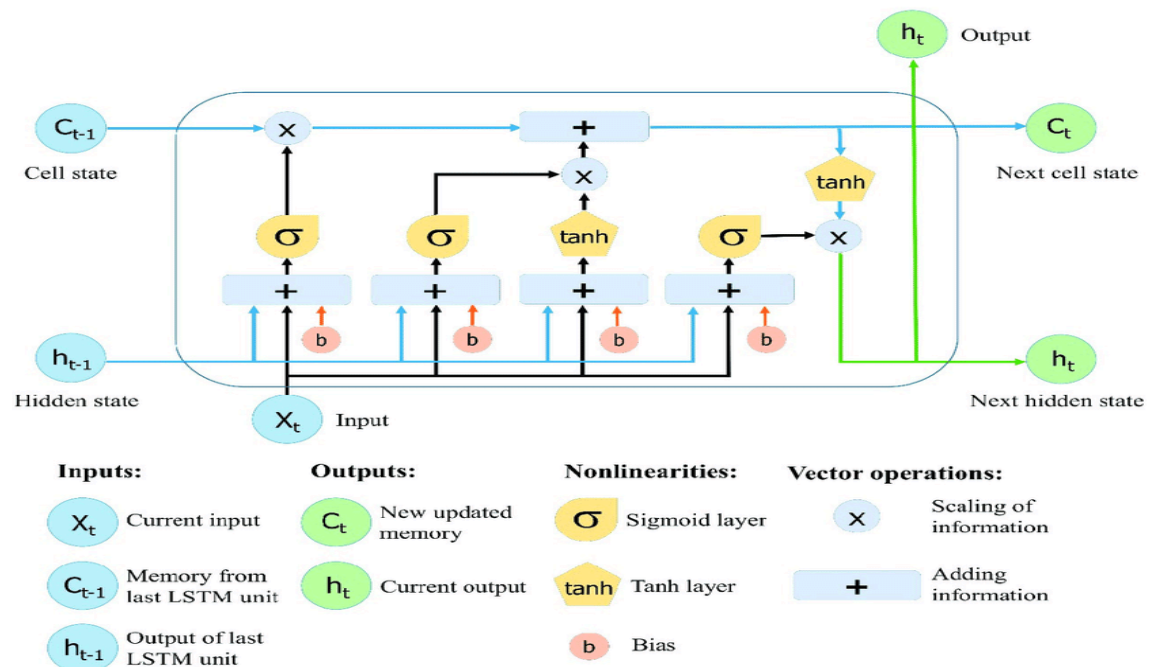
Flow Diagram:

This flow diagram contains how AI models are working in the website.

```
                    ┌──────────┐
                    │   User   │
                    └────┬─────┘
                         ▼
                    ┌──────────┐
                    │ Chat UI  │
                    └────┬─────┘
                         ▼
            ┌─────────────────────────┐
            │ Frontend captures user input │
            └────────────┬────────────┘
                         ▼
            ┌─────────────────────────┐
            │ Request sent to Web Server │
            └────────────┬────────────┘
                         ▼
            ┌─────────────────────────┐
            │ Web Server processes request │
            └────────────┬────────────┘
                         ▼
                  ◆ AI Model Integration ◆
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Next-Word Prediction Model	Sentiment Analysis Model	Spelling Correction and Suggestion Model
Generate next-word suggestions	Calculate sentiment score	Check and suggest spelling corrections
Send suggestions to Web Server	Send sentiment result to Web Server	Send spelling suggestions to Web Server
Send suggestions to frontend	Send sentiment result to frontend	Send spelling corrections to frontend
User sees word suggestions	User sees sentiment feedback	User sees spelling corrections