Sarcasm Detection using Contextual Embeddings

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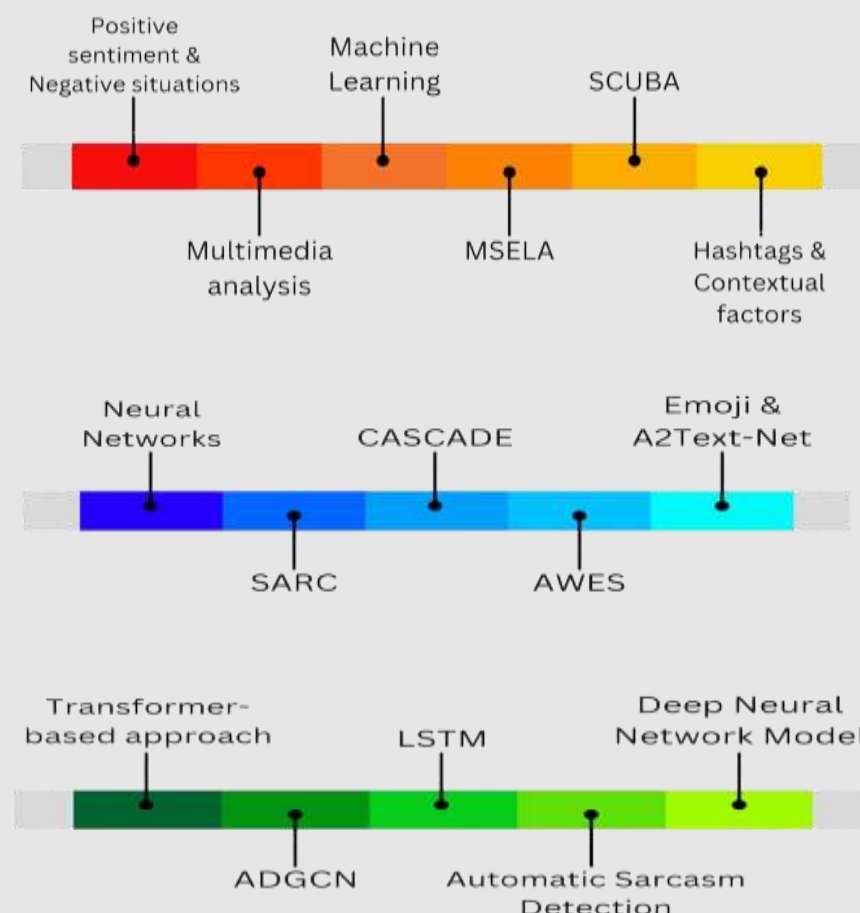
Abstract

Sarcasm detection, is an important step for sentiment analysis because it is not easy to tell the sentence is sarcastic or non-sarcastic unlike other sentiment. And also, it is crucial for machine to detect sarcasm for better understanding to serve as an interface for mutual communication between machines and humans. Sarcasm detection is still an unexplored part because not only for machine but sometimes humans are also not able to understand sarcasm. In this study we have tried to understand sarcasm and train the model using LSTM.

Introduction

- Sarcasm is the cutting use of words, often with ambivalence and frequently in a playful way, to make fun of someone or something.
- Sarcastic detection is crucial for understanding online interactions, sentiment analysis, and chatbot performance, as figurative language, including irony and sarcasm, serves different purposes.
- Adapting to various contextual scenarios, the proposed model uses LSTM networks and contextual embeddings to improve sarcasm detection.

Goal

To obtain the whether the sentence is sarcastic or non-sarcastic

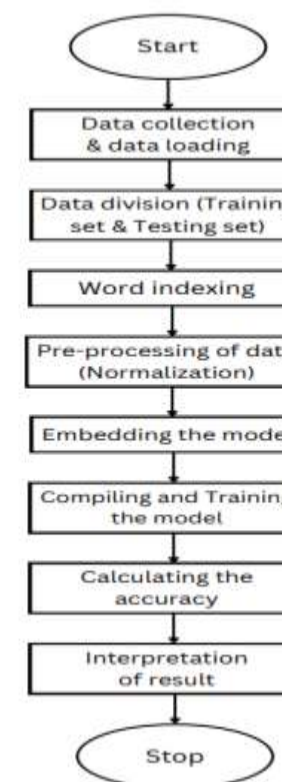You just broke my car window, Great job! → LSTM Model → Sarcasm

Literature Review

Scope

- This study investigated the detection efficacy of sarcasm using contextual embeddings, tackling the problem of context-dependency and subtlety in NLP.
- LSTM networks were utilized to capture semantic subtleties and temporal dynamics.
- Empirically explored the synergistic effects of embeddings and LSTMs, leading to improved architectural configurations and training methodologies.
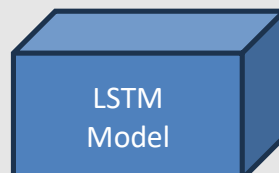- Advanced knowledge of sequential reasoning and contextual comprehension.

Methodology

Processing Technique

LSTM Memory Cell

Inputs:
- X_t Input Vector
- C_{t-1} Memory from previous block
- h_{t-1} Output of previous block

Outputs:
- C_t Memory from current block
- h_t Output of current block

Non-linearities:
- σ Sigmoid
- tanh Hyperbolic tangent

Vector operations:
- x Element-wise multiplication
- + Element-wise Summation/ concatenation

Bias: 0
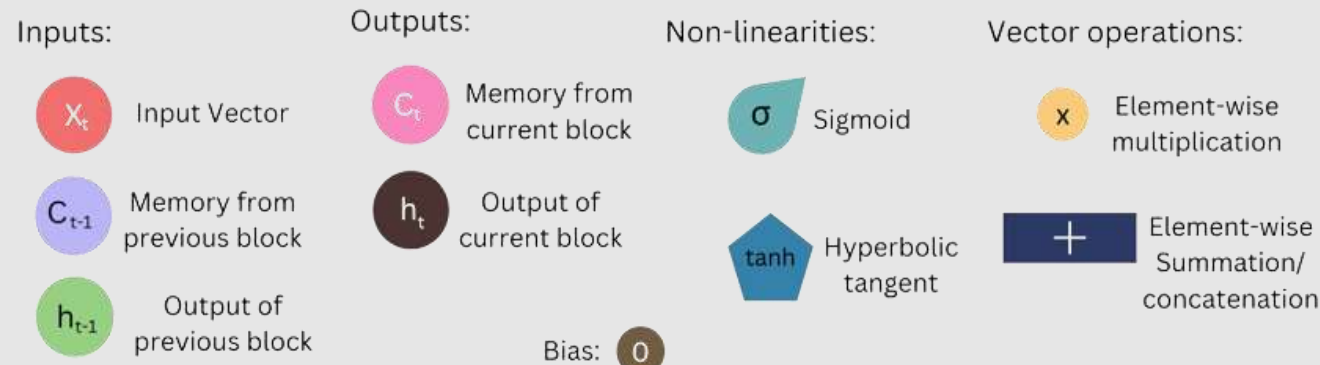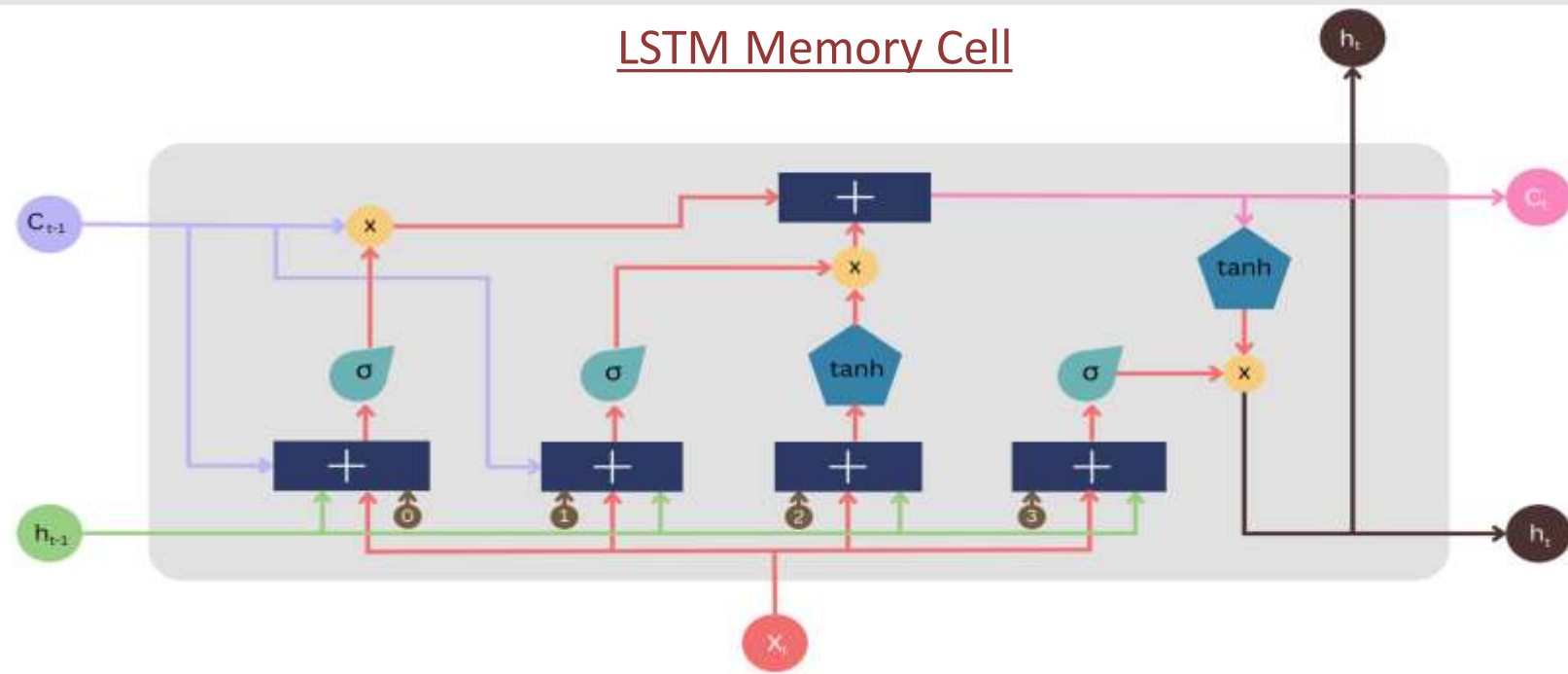
Performance Analysis
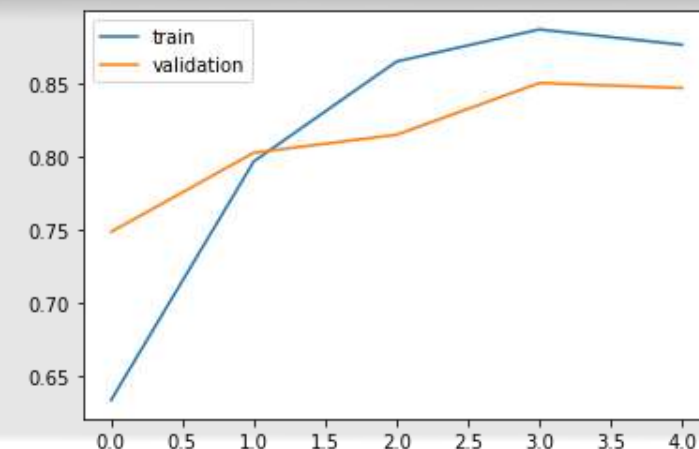
Conclusion

- This poster shows our performed experiment using LSTM. In this a brief description of our model is also explained.
- We have mentioned the past works done in this domain and also mentioned about our goal. Later, methodology and processing techniques are also discussed.
- We have mentioned the model accuracy on test data

In a Nutshell

- Identified the range of reviews.
- Padded the sequences to ensure they are of a fixed size.
- Fixed hyperparameters such as batch size, epochs, and verbose.
- Compiled and trained the model using the specified hyperparameters..
- Finally, evaluated the model's accuracy on the test data.

81.95% Accuracy

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