Deployment A Sentiment Analysis Recurrent Neural Network Model Using Pytorch On Aws Segmaker.

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Abstract—A Sentiment Analysis Classifier web-app, made using PyTorch and deployed in AWS with SageMaker. A required project for the Udacity Machine Learning Engineer Nanodegree. Sentiment Analysis web app is a notebook and collection of Python files to be completed. The result is a deployed RNN performing sentiment analysis on movie reviews complete with publicly accessible API and a simple web page which interacts with the deployed endpoint. This project assumes that you have some familiarity with SageMaker. Completing the XGBoost Sentiment Analysis notebook should suffice. The notebook and Python files provided, once completed, result in a simple web app which interacts with a deployed recurrent neural network performing sentiment analysis on movie reviews. This project assumes some familiarity with SageMaker, the mini-project, Sentiment Analysis using XGBoost, should provide enough background.

Introduction: A Sentiment Analysis Classifier web-app, made using PyTorch and deployed in AWS with SageMaker is a simple web page which a user can enter a Review. The web page will then send the review off to our deployed model which will predict the Sentiment of the entered revew. As in the XGBoost in sagemaker nootbook, we will be using the IMDB dataset. IMDB dataset is a dataset for binary sentiment classification containing substantially more data than previous banchmaek dataset.To begin we will read in each of review & combine them into a single input sturucture, we will combine the +ve & -ve review & shuffle the resulting records. In XGBoost notebook transformed the data from its word representation to a bag-of-word feature representation.

* The Training and Prediction Processes

In the training process (a), our model learns to associate a particular input (i.e. a text) to the corresponding output (tag) based on the test samples used for training. The feature extractor transfers the text input into a feature vector. Pairs of feature vectors and tags (e.g. positive, negative, or neutral) are fed into the machine learning algorithm to generate a model. In the prediction process (b), the feature extractor is used to transform unseen text inputs into feature vectors. These feature vectors are then fed into the model, which generates predicted tags (again, positive, negative, or neutral).

*Feature Extraction from Text

The first step in a machine learning text classifier is to transform the text extraction or text vectorization, and the classical approach has been bag-of-words or bag-of-ngrams with their frequency. More recently, new feature extraction techniques have been applied based on word embeddings (also known as word vectors). This kind of representations makes it possible for words with similar meaning to have a similar representation, which can improve the performance of classifiers.

*Classification Algorithms:-

The classification step usually involves a statistical model like Naïve Bayes, Logistic Regression, Support Vector Machines, or Neural Networks:

Naïve Bayes :- a family of probabilistic algorithms that uses Bayes's Theorem to predict the

category of a text.

Linear Regression :- a very well-known algorithm in statistics used to predict some value (Y) given a set of features (X).

Support Vector Machines :- a non-probabilistic model which uses a representation of text examples as points in a multidimensional space. Examples of different categories (sentiments) are mapped to distinct regions within that space. Then, new texts are assigned a category based on similarities with existing texts and the regions they're mapped to.

Deep Learning :- a diverse set of algorithms that attempt to mimic the human brain, by employing artificial neural networks to process data.

The rest of the paper is organized as follows: will present the software and hardware models of Sentiment Analysis Web Application system. will present the simulation results obtained using the Sentiment Analysis Web Application . Section 4 discusses the results briefly and finally will end the paper with conclusion and future works.

• Related work(Literature Survey)

1) Kumar et al. proposed MOVREC, a movie recommendation system based on collaborative filtering approaches. Collaborative filtering takes the data fromall the users and based on that generates recommendations.

2) De Campos et al. also made an analysis of both the traditional recommendation techniques. As both of these techniques have certain setbacks, he proposed another system which is a combination of Bayesian network and collaborative technique.

3) Kigon Lyu et al. A sentiment is the emotional response of an individual toward an external stimulus; therefore, the sentiment valence and sentiment weight vary among different persons.

- **Flow Diagram**

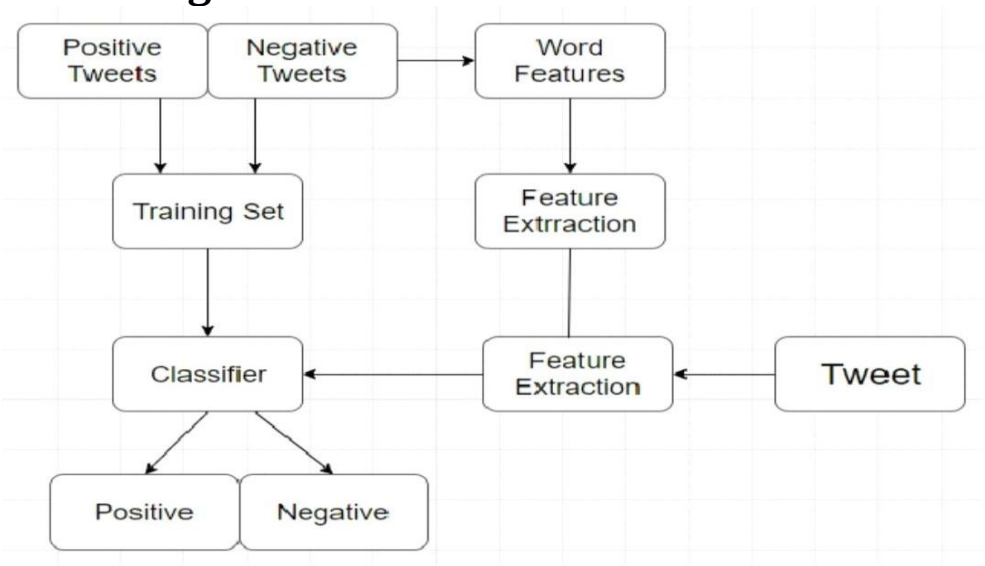

Figure 2: General Sentiment Flowchart. Source: [17]

- **Conclusion**

A study of Sentiment Analysis Recurrent Neural Network Model very helpful and reliable. It is a prototype App that we can use this in verious Application. it can be used to give your business valuableinsights into how people felt about your product, brand Or Service. When applied to social media channel it can be used to identify spikes in sentiment, there by Allowing youto identify potential product advocates Or Social media influencers.

- **References**

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