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Sentiment Extraction



Project Goals

500 million tweets are produced daily with information that could potentially impact organizations, companies, brands and people. ML-based techniques such as sentiment analysis have primarily focused on determining the polarity of a text, bringing relevant insights for decision-making purposes. However, how could companies and organizations identify which part of the text causes that sentiment? This is known as sentiment extraction

Traditional machine learning techniques cannot fully perform this task due to complexities in language, especially when related to tweets with vague content, irony, slang, typos and illogical clauses.

Are there other robust architectures that could address this business problem? Absolutely!

Finally, to construct a portfolio that would outperform the S&P 500 buy-and-hold benchmark without incurring any additional risk.

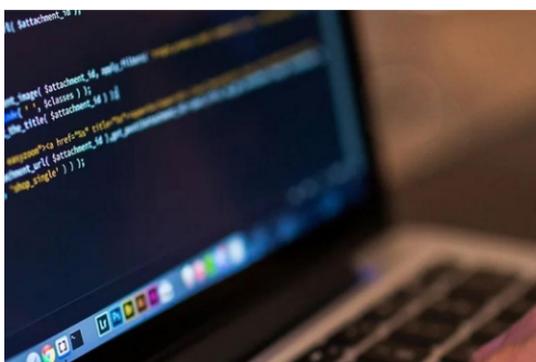
Solution Design

Sheyld.AI participated in a Kaggle competition on sentiment extraction, which required us to create a model that could look at tweets with an assigned sentiment and identify which part best supported it.

To address this challenge...

- We used Simple Transformers, which is a library that simplifies the usage of Transformers (a state-of-the-art deep learning architecture). Additionally, we made use of the question-answering schema, allowing us to structure data based on a context (the entire tweet), a question (positive, negative or neutral), and an answer (the extraction that best supports that sentiment)
- We used a pre-trained transformer in TensorFlow (Roberta), which gave us more flexibility when designing its architecture

Jaccard Score, an index used for similarity, was the selected metric for this challenge.



Outcomes

Our two best models obtained a Jaccard Score of 0.70 (SimpleTransformer-based) and 0.71 (TensorFlow-based).

Our team also created **setup** and **tutorial** videos, a **GitHub repository** and a **project wiki page** with additional resources.

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