AI ART SENTIMENT ANALYSIS ON TWITTER

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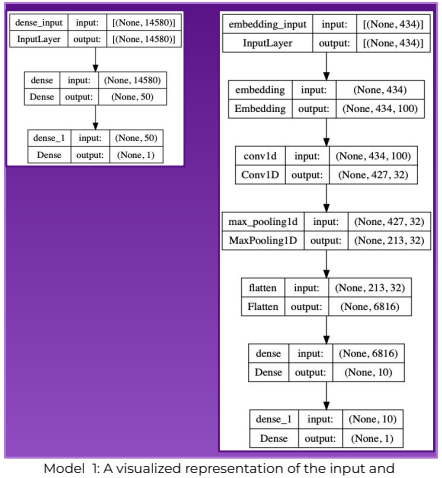
Introduction for AI Art Sentiment Analysis

With the enormous size of the artistic community, it's no surprise that AI Art is such a controversial topic. Twitter opinions are heavily divided over the ethics of AI's appropriation of others' art styles. While some feel empowered by AI art, others question if it can even be considered art. This project deploys two neural networks for sentiment analysis, in order to dissect Twitter's take on AI's role in art.

Data Details

- *Sourced from Kaggle*
  - Pre-classified as: Negative, Neutral, Positive
- *Topics Include:*
  - Video Games, Companies, and Web Services
- *Cleaned & Processed Data:*
  - Removed Neutral Comments
  - Applied Spell Check for Clarity
  - Removed Punctuation to Reduce Noise
- *Organized Data for Testing & Training:*
  - Placed Data into Separate Folders: "pos" & "neg"
  - Batched Comments 20 at a time
  - Produced 1000 text files for positive and negative comments

Bag-of-Words CNN



Model 1: A visualized representation of the input and outputs for our Bag-of-Words and Conventional Neural Network models.

Implementation Methods

This project compares two neural networks for sentiment analysis: Bag-of-Words and Conventional Neural Networks (CNN).

Bag-of-Words gathers words from a text file and assigns to them a measurement that is used to represent relative sentiment between Positive or Negative.

CNN is a computational model composed of interconnected layers of neurons. By exploiting spatial hierarchies through convolutional layers, CNNs can effectively extract relevant features from the text for classification.

Results:

After running AI art tweets through both models, I gathered the test and training accuracy as well as the sentiments on all of the test data. Below are a few correctly identified sentiments from the sample data.

Since reality is stressing me out so much lately I've been spending more time in solitude to rest my mind. AI art helps calm my ever-raw nerves these days. I'm going to throw some of what I've done out there for giggles. **POSITIVE (51.190%)**

Unpacking the 'AI art guilt.' For me, it's a resourceful way to experiment with ideas, learn new styles, and make every pixel count. It's about being smart in creativity. **POSITIVE (56.288%)**

AI Artificial Intelligence is getting dangerous too much Fake Fake Fake everywhere isn't good.
NEGATIVE (70.697%)

AI software takes things that real people made, and fakes making something new by using what it took. It's plagiarism by algorithm. If a human traced someone else's art, would it be plagiarism? **NEGATIVE (68.482%)**

Listing 1: Sample outputs from both neural models. The first positive and negative samples are from the CNN model, and the second pair is from the BoW model.

Test & Training Accuracy

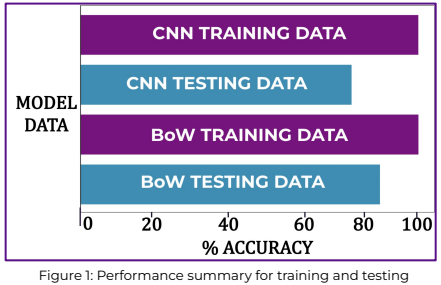


Figure 1: Performance summary for training and testing

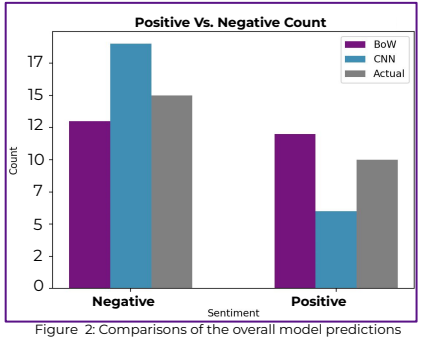


Figure 2: Comparisons of the overall model predictions against actual sentiments of the 25 samples.

Conclusion

Despite the fact that in Figure 2, BoW has a closer ratio of sentiments to the correct ratio, CNN actually had more correct responses that aligned with the actual sentiments - 8:25 BoW, 13:25 CNN. I imagine that most of the issues with sentiment analysis come from the nature of collecting data from twitter.

Most users, even the ones that were pro AI, imbued their comments with some level of disdain for the opposing side. What likely happened was that these negative words compromised the positivity of pro-AI comments.

Overall, most individuals on twitter strongly dislike AI art. Even positive reviews offer a degree of guilt for enjoying the service - likely another driver to the negative bias depicted in Figure 2.

References

Brownlee, J. (2020, December 20). How to prepare movie review data for sentiment analysis (text classification). MachineLearningMastery.com. https://machinelearningmastery.com/prepare-movie-review-data-sentiment-analysis/

KazAnova, et al. (2017, September 13). Sentiment140 dataset with 1.6 million tweets. Kaggle. https://www.kaggle.com/datasets/kazanova/sentiment140