

CS63 Spring 2024

Final Project Checkpoint

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1 Project Goal

For this project, we want to use a Recurrent Neural Network (RNN) to assess tweets for emotions. We will be using Kaggle's "Emotions" dataset to train and test our model.

2 AI Methods Used

For this project, we will be building an RNN. We will use the Keras library to help us build and train this model.

3 Staged Development Plan

1. Research how an RNN works and look for dataset (Kaggle's Emotions)
2. Split dataset into train and test sets
3. Use Keras library build an RNN, describing each steps with comments
4. Train and test using the dataset
5. Write code to help us visualize accuracy of model (confusion matrix)
6. Adjust hyperparameters and train until satisfied with accuracy (>90%)
7. Create a program that takes a piece of text and outputs an emotion
8. Writeup and presentation
 - (a) Describe what an RNN is, how it differs from other models we've learned in class, and why its useful
 - (b) Describe dataset
 - (c) Describe network (what the model is doing to each input)
 - (d) Assess model using accuracy, confusion matrix, and program
9. Stretch Goals
 - (a) Break acronyms/chat words into words (e.g. lol, btw, brb)

- (b) See which words is associated to each emotions
- (c) Begin building our own RNN
 - i. Tokenization
 - ii. Embedding
 - iii. Network
 - iv. Backpropation through time
 - v. Assess with toy dataset (like XOR but for text)

4 Measure of Success

Our project is successful if we can complete our main goals. Ultimately, our final product will be similar to the final product of our CNN lab with the addition of our program that utilizes the network.

5 Plans for Analyzing Results

We will be using a confusion matrix to analyze the accuracy of our model, and undestand where our model is likely to mess up. We will also use our program to analyze our model's accuracy. We'll feed the program various texts and keep track of how many times it accurately outputs an emotion, as well as nonsense data to see what the model does.