

Identifying Drawings with the Quick Draw Challenge

Group 3

We're trying to put together a CNN based on the "Quick, Draw!" Kaggle competition (Google 2018).

Introduction

Our team has based our project idea on the "Quick, Draw!" Kaggle competition which classifies user drawings into one of 345 label categories. Many drawings were incomplete or failed to match the label. The challenge was to effectively build a recognizer that could work with this noisy data. The challenge was unique from an algorithmic perspective because the data included both temporal and spatial components; areas that have traditionally used two different types of Neural Network Architectures. Our team attempted to provide a solution using a subset of the data, to the Kaggle problem, while taking a more in depth look at potential pitfalls and modeling strategy, without having to use extensive computational resources.

Methods

First, we got our data from Google/Kaggle. CNNs are traditionally known to work well with spatial data, which prompted us to process the original csv files to images of the drawings.

Maybe we should structure our models as experiments. Then talk about what worked the best. Here's some example hypotheses

H_a : Prediction will go up when we use a CNN compared to a fully connected feedforward neural network.

H_a : Prediction will go up when we use regularization.

H_a : Run neural networks without any activations.

H_a : Try different architectures- number of layers, different (or no) activations

H_a : CNN with dilation is preferable to LSTM because it's presumably faster. We can cite some papers here.

Try out: Overfitting, Bias/variance, imbalance, dropout, pushing activation

Results

Here's how the results performed when we were exploring our hypotheses

Discussion

Here's what worked the best, worst, and future areas for research.

References

Appendix

Add computer code, plots, and other relevant technical details that will help me evaluating your work.

Statement of contribution

Google. 2018. “Quick, Draw! Doodle Recognition Challenge | Kaggle.” <https://www.kaggle.com/c/quickdraw-doodle-recognition>.