**MATH 4920**

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**Kaggle Competition Write Up – Google Isolated Sign Language Recognition**

This competition was enlightening in several ways. It gave us a chance to try our hands at solving a real-world problem with the data science techniques we’ve been learning about. However, we quickly realized that this problem was not suited towards the perhaps more standard machine learning models such as XGBoost as the performance was insufficient. From there we took to the Kaggle community to learn from our peers. In doing so we brought our validation accuracy score from a little over 1% to over 50%! While this may still sound like a poorly performing model, that is amongst the 250 possible signs. According to the organizers a model with even 50-60% accuracy should perform reasonably well in the app as they only give the user 5 signs at a time, which decreases the odds the model makes a mistake in deciphering between similar signs (for example ‘bird’ and ‘goose’).

Secondly, it showed us the far distance between the pet examples and datasets given in many artificial intelligence and machine learning courses and the advanced techniques required to solve real problems. In preparation for this competition, we completed several DataCamp courses including:

* Introduction to Deep Learning in Python
* Introduction to Deep Learning with Keras
* Unsupervised Learning in Python
* Introduction to TensorFlow in Python
* Image Processing in Python
* Image Processing with Keras in Python
* Advanced Deep Learning with Keras

While helpful for understanding the conversation on the platform and in the public notebooks, even this course work was not enough to keep up with those on the top of the leader board. Those leading with scores of 70% accuracy or greater seem to be making custom implementations of cutting-edge transformer models. From this we’ve learned just what an incredible tool Kaggle can be for learning from other experts in the industry and keeping up with modern AI methods.