Deep Learning Workflow

Presented by Jon Tyler

Dataset

This data was initially published on Analytics Vidhya by Intel to host a Image Classification Challenge. Then later uploaded Kaggle.

This Data contains around 25k images of size 150x150 distributed under 6 categories.

Buildings

Sea

Mountain

Street

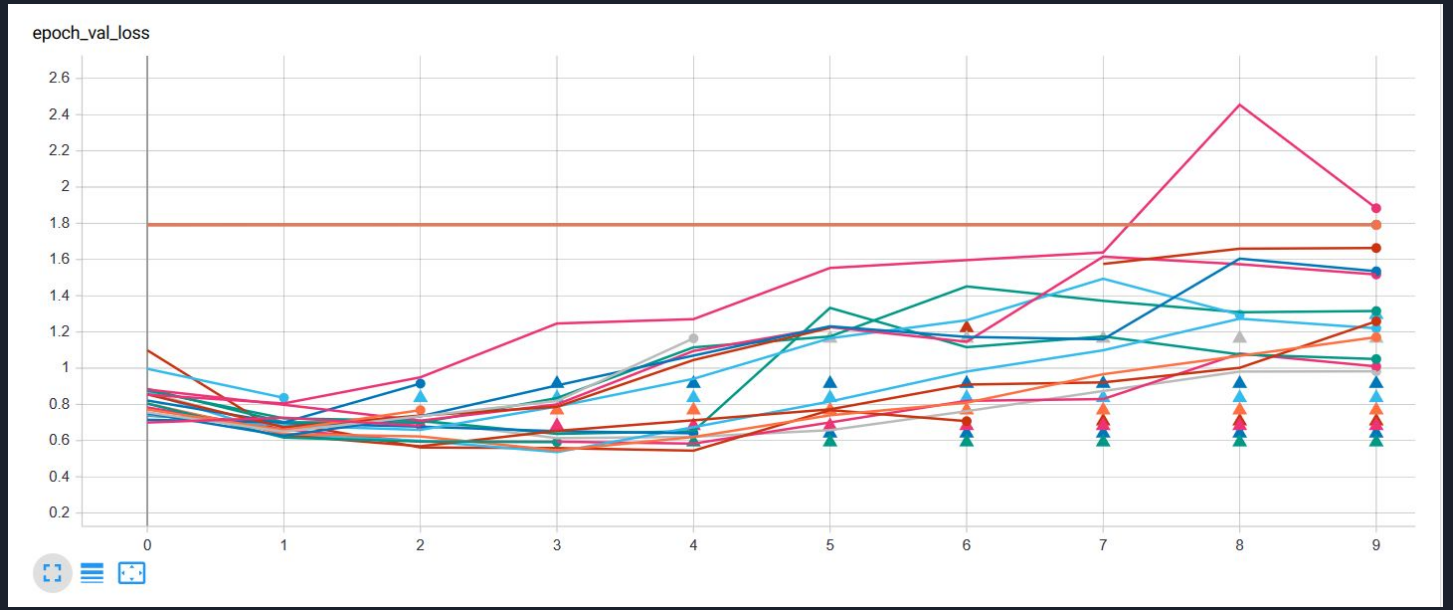
Forest

Glacier

Initial Model

An architecture was created to test 27 different models for the dataset

From these results, we isolated early pitfalls in our process and then identified the direction in which to steer our architecture.



Final Model and Results

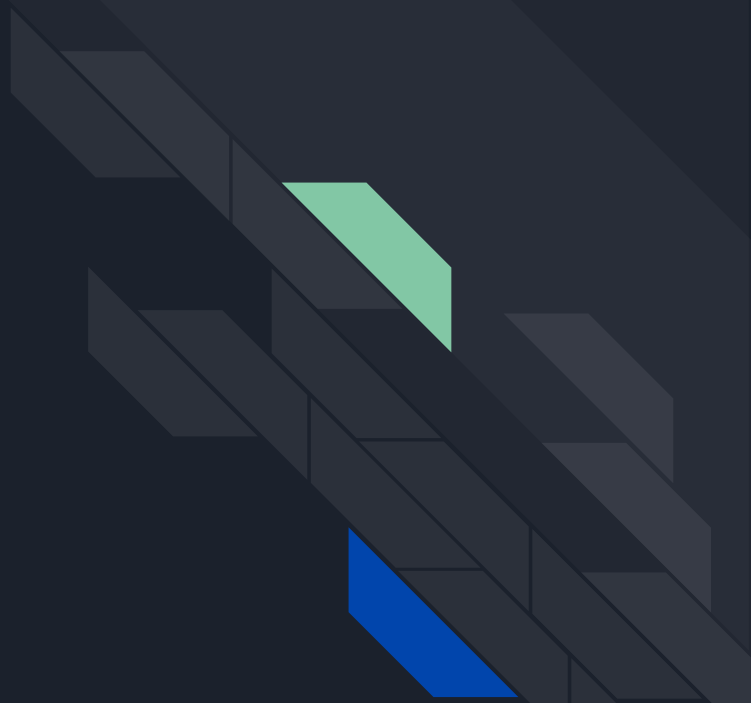
We continued to make 12 more iterations to the original framework.

Finally settling on an architecture that results in a **80%** accuracy score.

Pre-Trained Models

ResNet50
Microsoft's residual learning framework

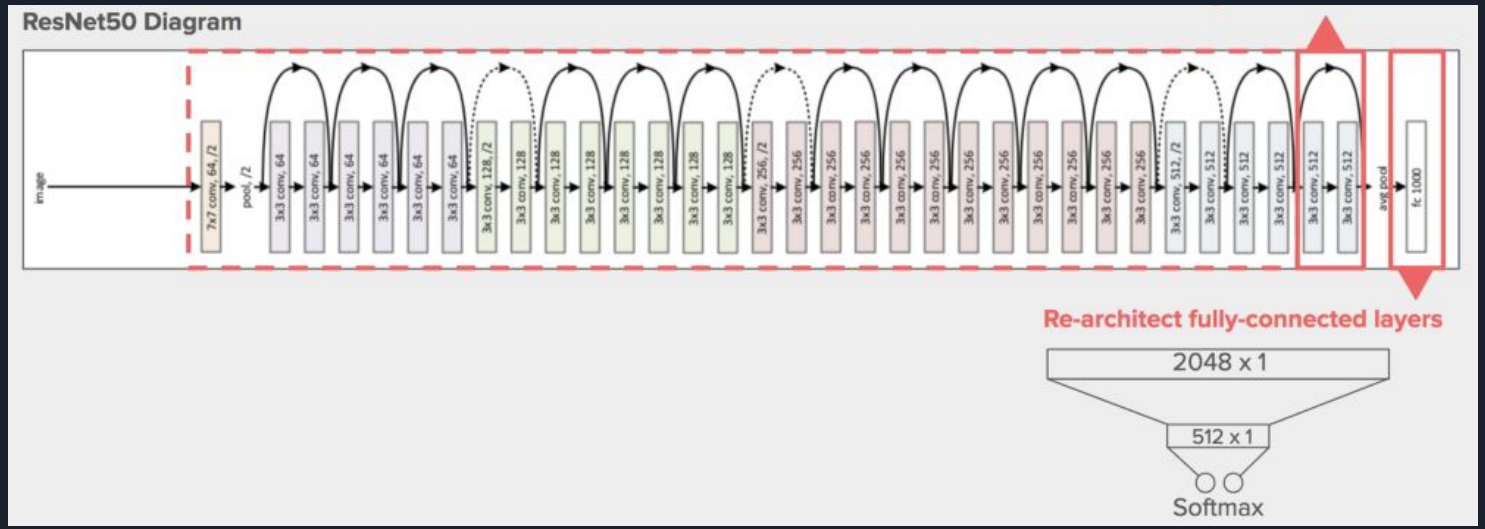
VGG16
created by Oxford alumni



ResNet50

An reasonable amount was spent attempting to merge this pre-trained model to our dataset.

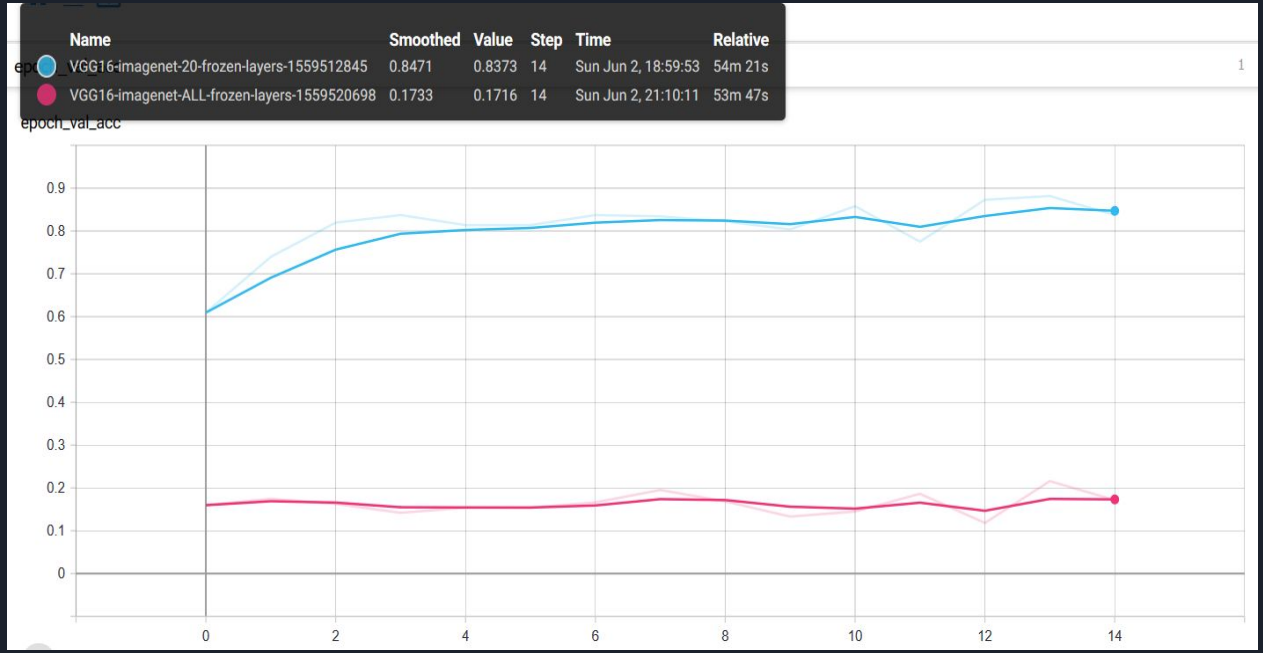
It is *not uncommon* to pivot from one pre-trained model to a different pre-trained model.

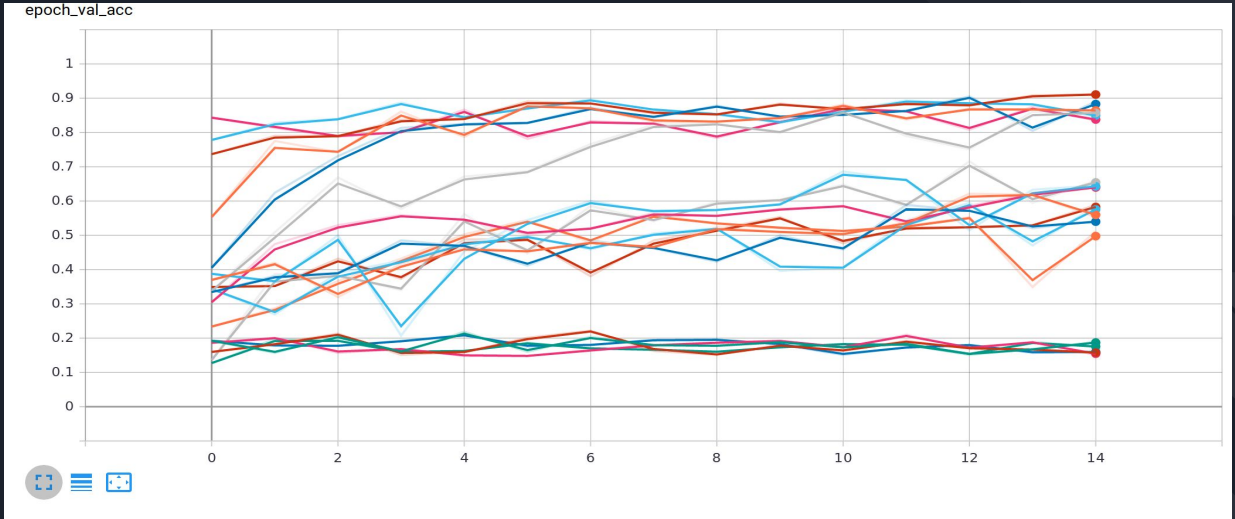


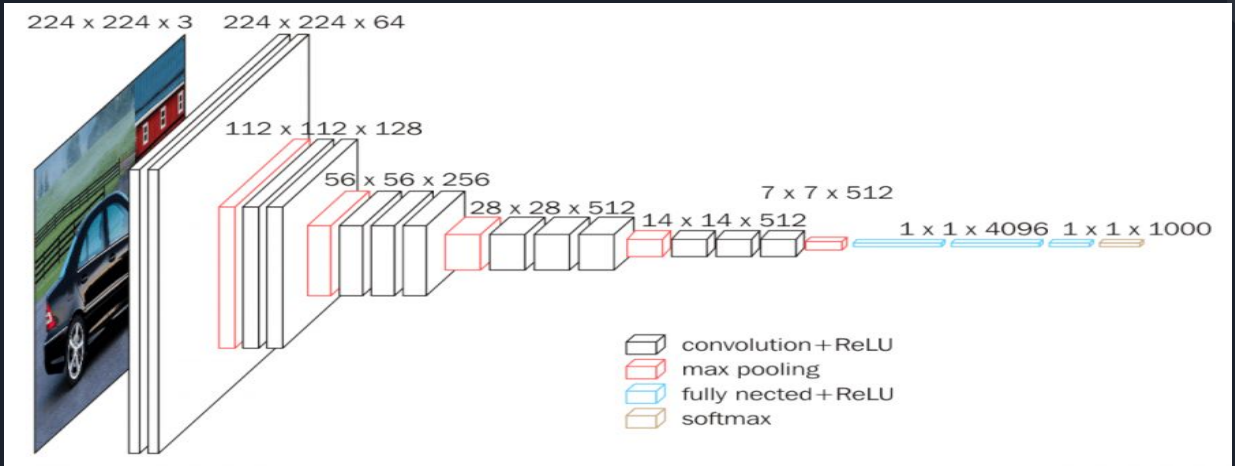
VGG16

Within the initial attempt of running this model, we received a higher training accuracy than our inhouse model.

83.75%
Compared to
80.75%







20 more models were created to extend the VGG16 framework. Resulting in a **91.1% accuracy score**

Next Steps

- Incorporate VGG16 architecture into our inhouse model
- Data augmentation to test robustness
- Scale best model for use in production