

# Deep Learning Recipes and Experiments

*Sam Friedman*

*2/20/2018*

## Deep Learning Recipes for DNA reads and short variants.

### Training models from example tensors

Train a model that predicts variant quality from read tensors and variant annotations:

```
python recipes.py train_ref_read_anno \  
  --data_dir ./data/g94982_tensors_chr1_channels_last/ \  
  --tensor_map read_tensor \  
  --id ref_read_anno_model
```

Train a model that predicts variant quality from read tensors and variant annotations:

```
python recipes.py train_ref_read \  
  --data_dir ./data/g94982_tensors_chr1_channels_last/ \  
  --tensor_map read_tensor \  
  --id ref_read_model
```

Train a model that predicts variant quality from reference sequence and annotations:

```
python recipes.py train_reference_annotation \  
  --data_dir ./data/example_reference_tensors_chr1/ \  
  --tensor_map reference \  
  --id ref_anno_model
```

Train a model that predicts variant quality from reference sequence only:

```
python recipes.py train_reference_annotation \  
  --data_dir ./data/example_reference_tensors_chr1/ \  
  --tensor_map reference \  
  --id ref_model
```

### Setting up your environment

We recommend using anaconda to handle your python environments. For CPU only libraries:

```
conda env create -n gatk -f ./gatkcondaenv_cpu.yml
```

To use GPU:

```
conda env create -n gatk -f ./gatkcondaenv_gpu.yml
```