This page describes some of the **experimental models** that have been optimized to run on Cloud TPU. These models are not officially supported by Google at this time, but they can be useful for some kinds of research.

The source code for the experimental models is available on GitHub (https://github.com/tensorflow/tpu/tree/master/models/official/). We ofte add models to the repository, so be sure to check GitHub periodically.

Several of the models are pre-installed on the `tf-1-15` VM image that you set up when following the quickstart guide (/tpu/docs/quickstart). The models are located in the following directories on the VM:

DenseNet is a variation of the ResNet image classification model where there is a full ("dense") set of skip-layer connections. See the DenseNet model optimized for Cloud TPU (https://github.com/tensorflow/tpu/blob/master/models/official/densenet/README.md) on GitHub. This sample is an implementation of the DenseNet (https://arxiv.org/pdf/1608.06993.pdf) image classification model.

MobileNet is an image classification model that performs well on power-limited devices such as mobile phones, leveraging depth-wise separable convolutions. See the MobileNet v1 model optimized for Cloud TPU (https://github.com/tensorflow/tpu/tree/master/models/official/mobilenet) on GitHub. This sample is an implementation of the MobileNet (https://arxiv.org/pdf/1704.04861.pdf) image classification model.

The code for the model is based on the original TensorFlow MobileNet_v1 (https://github.com/tensorflow/models/blob/master/research/slim/nets/mobilenet_v1.md), with the following adjustments:

- TPUEstimator interface.

- Data processing pipeline for ImageNet.

SqueezeNet is an image classification model that is optimized for fewer parameters and a much smaller model size without sacrificing quality compared to contemporary image classification models (AlexNet). See the SqueezeNet model optimized for Cloud TPU (https://github.com/tensorflow/tpu/tree/master/models/official/squeezenet) on GitHub. This sample is an implementation of the SqueezeNet (https://arxiv.org/pdf/1602.07360.pdf) image classification model.

The **experimental** DCGAN project (https://github.com/tensorflow/tpu/tree/master/models/experimental/dcgan) trains a Deep Convolutional Generative Adversarial Networks (DCGAN) model to produce generated images based on the MNIST and CIFAR-10 datasets.

The project includes simple generator and discriminator models based on the convolutional and deconvolutional models presented in Unsupervised Representation Learning with Deep Convolutional Generative Adversarial Networks (https://arxiv.org/abs/1511.06434).

- Walk through one or more of the Cloud TPU tutorials (/tpu/docs/tutorials).

- Explore the TPU tools in TensorBoard (/tpu/docs/cloud-tpu-tools).

- If you run into problems with your model, check the troubleshooting guide (/tpu/docs/troubleshooting).