**Tensorflow devolper certification -**

[**https://developers.google.com/certification**](https://developers.google.com/certification)

[**https://www.freecodecamp.org/learn**](https://www.freecodecamp.org/learn)

How to use Pycharm

Tensorflow 2.0 vs Tensorflow 1.0

Python 2.0 vs Python 3.0

**In order to successfully take the exam, test takers should be comfortable with:**

* Foundational principles of ML and Deep Learning
* Building ML models in TensorFlow 2.x
* Building **image recognition, object detection, text recognition** algorithms with deep neural networks and convolutional neural networks
* Using real-world images in different shapes and sizes to visualize the journey of an image through convolutions to understand how a computer “sees” information, **plot loss and accuracy**
* Exploring strategies to prevent overfitting, including **augmentation and dropouts**
* Applying neural networks to **solve natural language processing problems** using TensorFlow

**Skills checklist**

**(1) Build and train neural network models using TensorFlow 2.x**

You need to understand the foundational principles of machine learning (ML) and deep learning (DL)

using TensorFlow 2.x. You need to know how to:

❏ Use TensorFlow 2.x.

❏ Build, compile and train machine learning (ML) models using TensorFlow.

❏ Preprocess data to get it ready for use in a model.

❏ Use models to predict results.

❏ Build sequential models with multiple layers.

❏ Build and train models for binary classification.

❏ Build and train models for multi-class categorization.

❏ Plot loss and accuracy of a trained model.

❏ Identify strategies to prevent overfitting, including augmentation and dropout.

❏ Use pretrained models (transfer learning).

❏ Extract features from pre-trained models.

❏ Ensure that inputs to a model are in the correct shape.

❏ Ensure that you can match test data to the input shape of a neural network.

❏ Ensure you can match output data of a neural network to specified input shape for test data.

❏ Understand batch loading of data.

❏ Use callbacks to trigger the end of training cycles.

❏ Use datasets from different sources.

❏ Use datasets in different formats, including json and csv.

❏ Use datasets from tf.data.datasets.

**(2) Image classification -** Build image recognition and object detection models with deep neural

networks and CNN using TensorFlow 2.x

❏ Define Convolutional neural networks with Conv2D and pooling layers.

❏ Build and train models to process real-world image datasets.

❏ Understand how to use convolutions to improve your neural network.

❏ Use real-world images in different shapes and sizes..

❏ Use image augmentation to prevent overfitting.

❏ Use ImageDataGenerator.

❏ Understand how ImageDataGenerator labels images based on the directory structure.

**(3) Natural language processing (NLP) -** neural networks to solve natural language processing problems using TensorFlow

❏ Build natural language processing systems using TensorFlow.

❏ Prepare text to use in TensorFlow models.

❏ Build models that identify the category of a piece of text using binary categorization

❏ Build models that identify the category of a piece of text using multi-class categorization

❏ Use word embeddings in your TensorFlow model.

❏ Use LSTMs in your model to classify text for either binary or multi-class categorization.

❏ Add RNN and GRU layers to your model.

❏ Use RNNS, LSTMs, GRUs and CNNs in models that work with text.

❏ Train LSTMs on existing text to generate text (such as songs and poetry)

**(4) Time series, sequences and predictions -** Solve time series and forecasting problems in TensorFlow

❏ Train, tune and use time series, sequence and prediction models.

❏ Prepare data for time series learning.

❏ Understand Mean Average Error (MAE) and how it can be used to evaluate accuracy of

sequence models.

❏ Use RNNs and CNNs for time series, sequence and forecasting models.

❏ Identify when to use trailing versus centred windows.

❏ Use TensorFlow for forecasting.

❏ Prepare features and labels.

❏ Identify and compensate for sequence bias.

❏ Adjust the learning rate dynamically in time series, sequence and prediction models.

**TIPS**

Get latest version of tensorflow installed.

Know tensorflow add-ons and there uses.

Pre-written scipts for tensorflow code can also be used. So, prepare them before hand.

**Resources i will be using**

Ineuron lectures and assignments

Tensorflow devolper specialisation – DeepLearning.AI