Introduction

This repository is a collection of programs written as examples in Tensorflow V2. Programs are combined into following two sections-

- Example scripts
- Collaborative projects

Motivation

Primary objective of the project is to gain an in-depth understanding of functional and operational characteristics of Tensorflow V2. These include Tensorflow syntax, Keras API, control flow and dynamic computation of graphs. Example scripts will build the understanding of writing programs in the basic Tensorflow structure. Collaborative projects will lead to the development of practical Tensorflow aplications for solving a challenging problem.

Study Material

- ☐ Tensorflow Documentation (primary resource)
- ☐ Repository of Tensorflow v2 Examples (primary resource)
- ☐ Tensorflow for Beginners (secondary resource)
- ☐ Old Tensorflow repository (just in case)

Agenda

Following is the tentative agenda-

Date	Topic	Programs	Reading	Remarks (weak points)
21/12/2020	Introduction	ANN, CNN, Autograph, LR	new features	use tf.float32 from now on

Date	Topic	Programs	Reading	Remarks (weak points)
22/12/2020	Deep Convolutional Models-1	Inception	tf.Module()	optmize graph using @tf.function
23/12/2020	Deep Convolutional Models-2	VGG, ResNet	tf.GradientTape()	tf.Session() replaced with tf.GradientTape()
24/12/2020	Memory-based Models	RNN, LSTM	RNNs in Keras	tf.Module() preferred
25/12/2020	Adversarial Learning	GAN, Pix2Pix, CycleGAN	DCGAN	list-concatenated layers for larger models
26/12/2020	Distributed Training	DistGPU	Distributed Training in TF	average tower gradients for each GPU udring training, manually set tf.device() flag
27/12/2020	Test-1	implement 1 program	CycleGAN	-
28/12/2020	Language Models	GPT	Transformers in Tensorflow	use predefined layers for large models, revise attention mechanisms
29/12/2020	Case Study	Training BERT in Tensorflow	BERT for classification, Fine-tuning BERT, Solving GLUE tasks using BERT	
30/12/2020	Reinforcement Learning	A2C	Dreamer	use Keras API for combined model loss, model.train_on_bathc(obs, [inp1, inp2])
31/01/2021	Test-2	implement 1 program	-	
01/01/2021	Project Day	DreamerV2	DreamerV2	
02/01/2021	Project Day	DreamerV2	DreamerV2	
03/01/2021	Project Day	DreamerV2	DreamerV2	

Potential Project Topics

- [ ] CycleGAN
- [ ] DeepDream
- [ ] DCGAN
- [ ] Pix2Pix
- [ ] Adversarial FGSM

- [ ] VAE