jtoy / **awesome-tensorflow**

TensorFlow - A curated list of dedicated resources http://tensorflow.org

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README.md

Awesome TensorFlow

A curated list of awesome TensorFlow experiments, libraries, and projects. Inspired by awesome-machine-learning.

What is TensorFlow?

TensorFlow is an open source software library for numerical computation using data flow graphs. In other words, the best way to build deep learning models.

More info here.

Table of Contents

Tutorials

- TensorFlow Tutorial 1 - From the basics to slightly more interesting applications of TensorFlow
- TensorFlow Tutorial 2 - Introduction to deep learning based on Google's TensorFlow framework. These tutorials are direct ports of Newmu's Theano
- TensorFlow Examples - TensorFlow tutorials and code examples for beginners
- Sungjoon's TensorFlow-101 - TensorFlow tutorials written in Python with Jupyter Notebook
- Terry Um's TensorFlow Exercises - Re-create the codes from other TensorFlow examples

- Installing TensorFlow on Raspberry Pi 3 - TensorFlow compiled and running properly on the Raspberry Pi
- Classification on time series - Recurrent Neural Network classification in TensorFlow with LSTM on cellphone sensor data
- Getting Started with TensorFlow on Android - Build your first TensorFlow Android app
- Predict time series - Learn to use a seq2seq model on simple datasets as an introduction to the vast array of possibilities that this architecture offers
- Single Image Random Dot Stereograms - SIRDS is a means to present 3D data in a 2D image. It allows for scientific data display of a waterfall type plot with no hidden lines due to perspective.
- CS20 SI: TensorFlow for DeepLearning Research - Stanford Course about Tensorflow from 2017 - Syllabus - Unofficial Videos
- TensorFlow World - Concise and ready-to-use TensorFlow tutorials with detailed documentation are provided.
- Effective Tensorflow - Tensorflow howtos and best practices. Covers the basics as well as advanced topics.

Models/Projects

- Domain Transfer Network - Implementation of Unsupervised Cross-Domain Image Generation
- Show, Attend and Tell - Attention Based Image Caption Generator
- Neural Style Implementation of Neural Style
- Pretty Tensor - Pretty Tensor provides a high level builder API
- Neural Style - An implementation of neural style
- AlexNet3D - An implementations of AlexNet3D. Simple AlexNet model but with 3D convolutional layers (conv3d).
- TensorFlow White Paper Notes - Annotated notes and summaries of the TensorFlow white paper, along with SVG figures and links to documentation
- NeuralArt - Implementation of A Neural Algorithm of Artistic Style
- Deep-Q learning Pong with TensorFlow and PyGame
- Generative Handwriting Demo using TensorFlow - An attempt to implement the random handwriting generation portion of Alex Graves' paper
- Neural Turing Machine in TensorFlow - implementation of Neural Turing Machine
- GoogleNet Convolutional Neural Network Groups Movie Scenes By Setting - Search, filter, and describe videos based on objects, places, and other things that appear in them
- Neural machine translation between the writings of Shakespeare and modern English using TensorFlow - This performs a monolingual translation, going from modern English to Shakespeare and vice-versa.
- Chatbot - Implementation of "A neural conversational model"
- Colornet - Neural Network to colorize grayscale images - Neural Network to colorize grayscale images
- Neural Caption Generator - Implementation of "Show and Tell"
- Neural Caption Generator with Attention - Implementation of "Show, Attend and Tell"
- Weakly_detector - Implementation of "Learning Deep Features for Discriminative Localization"
- Dynamic Capacity Networks - Implementation of "Dynamic Capacity Networks"
- HMM in TensorFlow - Implementation of viterbi and forward/backward algorithms for HMM

- DeepOSM - Train TensorFlow neural nets with OpenStreetMap features and satellite imagery.
- DQN-tensorflow - TensorFlow implementation of DeepMind's 'Human-Level Control through Deep Reinforcement Learning' with OpenAI Gym by Devsisters.com
- Highway Network - TensorFlow implementation of "Training Very Deep Networks" with a blog post
- Sentence Classification with CNN - TensorFlow implementation of "Convolutional Neural Networks for Sentence Classification" with a blog post
- End-To-End Memory Networks - Implementation of End-To-End Memory Networks
- Character-Aware Neural Language Models - TensorFlow implementation of Character-Aware Neural Language Models
- YOLO TensorFlow ++ - TensorFlow implementation of 'YOLO: Real-Time Object Detection', with training and an actual support for real-time running on mobile devices.
- Wavenet - This is a TensorFlow implementation of the WaveNet generative neural network architecture for audio generation.
- Mnemonic Descent Method - Tensorflow implementation of "Mnemonic Descent Method: A recurrent process applied for end-to-end face alignment"
- CNN visualization using Tensorflow - Tensorflow implementation of "Visualizing and Understanding Convolutional Networks"
- VGAN Tensorflow - Tensorflow implementation for MIT "Generating Videos with Scene Dynamics" by Vondrick et al.
- 3D Convolutional Neural Networks in TensorFlow - Implementation of "3D Convolutional Neural Networks for Speaker Verification application" in TensorFlow by Torfi et al.
- Lip Reading - Cross Audio-Visual Recognition using 3D Architectures in TensorFlow - TensorFlow Implementation of "Cross Audio-Visual Recognition in the Wild Using Deep Learning" by Torfi et al.
- Attentive Object Tracking - Implementation of "Hierarchical Attentive Recurrent Tracking"
- Holographic Embeddings for Graph Completion and Link Prediction - Implementation of Holographic Embeddings of Knowledge Graphs
- Unsupervised Object Counting - Implementation of "Attend, Infer, Repeat"

Powered by TensorFlow

- YOLO TensorFlow - Implementation of 'YOLO : Real-Time Object Detection'
- android-yolo - Real-time object detection on Android using the YOLO network, powered by TensorFlow.
- Magenta - Research project to advance the state of the art in machine intelligence for music and art generation

Libraries

- Lattice - Implementation of Monotonic Calibrated Interpolated Look-Up Tables in TensorFlow
- tf.contrib.learn - Simplified interface for Deep/Machine Learning (now part of TensorFlow)
- tensorflow.rb - TensorFlow native interface for ruby using SWIG
- tflearn - Deep learning library featuring a higher-level API
- TensorFlow-Slim - High-level library for defining models
- TensorFrames - TensorFlow binding for Apache Spark
- TensorForce - TensorForce: A TensorFlow library for applied reinforcement learning
- TensorFlowOnSpark - initiative from Yahoo! to enable distributed TensorFlow with Apache Spark.
- caffe-tensorflow - Convert Caffe models to TensorFlow format

- keras - Minimal, modular deep learning library for TensorFlow and Theano
- SyntaxNet: Neural Models of Syntax - A TensorFlow implementation of the models described in Globally Normalized Transition-Based Neural Networks, Andor et al. (2016)
- keras-js - Run Keras models (tensorflow backend) in the browser, with GPU support
- NNFlow - Simple framework allowing to read-in ROOT NTuples by converting them to a Numpy array and then use them in Google Tensorflow.
- Sonnet - Sonnet is DeepMind's library built on top of TensorFlow for building complex neural networks.
- tensorpack - Neural Network Toolbox on TensorFlow focusing on training speed and on large datasets.

Videos

- TensorFlow Guide 1 - A guide to installation and use
- TensorFlow Guide 2 - Continuation of first video
- TensorFlow Basic Usage - A guide going over basic usage
- TensorFlow Deep MNIST for Experts - Goes over Deep MNIST
- TensorFlow Udacity Deep Learning - Basic steps to install TensorFlow for free on the Cloud 9 online service with 1Gb of data
- Why Google wants everyone to have access to TensorFlow
- Videos from TensorFlow Silicon Valley Meet Up 1/19/2016
- Videos from TensorFlow Silicon Valley Meet Up 1/21/2016
- Stanford CS224d Lecture 7 - Introduction to TensorFlow, 19th Apr 2016 - CS224d Deep Learning for Natural Language Processing by Richard Socher
- Diving into Machine Learning through TensorFlow - Pycon 2016 Portland Oregon, Slide & Code by Julia Ferraioli, Amy Unruh, Eli Bixby
- Large Scale Deep Learning with TensorFlow - Spark Summit 2016 Keynote by Jeff Dean
- Tensorflow and deep learning - without at PhD - by Martin Görner
- Tensorflow and deep learning - without at PhD, Part 2 (Google Cloud Next '17) - by Martin Görner

Papers

- TensorFlow: Large-Scale Machine Learning on Heterogeneous Distributed Systems - This paper describes the TensorFlow interface and an implementation of that interface that we have built at Google
- TF.Learn: TensorFlow's High-level Module for Distributed Machine Learning
- Comparative Study of Deep Learning Software Frameworks - The study is performed on several types of deep learning architectures and we evaluate the performance of the above frameworks when employed on a single machine for both (multi-threaded) CPU and GPU (Nvidia Titan X) settings
- Distributed TensorFlow with MPI - In this paper, we extend recently proposed Google TensorFlow for execution on large scale clusters using Message Passing Interface (MPI)
- Globally Normalized Transition-Based Neural Networks - This paper describes the models behind SyntaxNet.
- TensorFlow: A system for large-scale machine learning - This paper describes the TensorFlow dataflow model in contrast to existing systems and demonstrate the compelling performance

Official announcements

- TensorFlow: smarter machine learning, for everyone - An introduction to TensorFlow
- Announcing SyntaxNet: The World's Most Accurate Parser Goes Open Source - Release of SyntaxNet, "an open-source neural network framework implemented in TensorFlow that provides a foundation for Natural Language Understanding systems.

Blog posts

- Why TensorFlow will change the Game for AI
- TensorFlow for Poets - Goes over the implementation of TensorFlow
- Introduction to Scikit Flow - Simplified Interface to TensorFlow - Key Features Illustrated
- Building Machine Learning Estimator in TensorFlow - Understanding the Internals of TensorFlow Learn Estimators
- TensorFlow - Not Just For Deep Learning
- The indico Machine Learning Team's take on TensorFlow
- The Good, Bad, & Ugly of TensorFlow - A survey of six months rapid evolution (+ tips/hacks and code to fix the ugly stuff), Dan Kuster at Indico, May 9, 2016
- Fizz Buzz in TensorFlow - A joke by Joel Grus
- RNNs In TensorFlow, A Practical Guide And Undocumented Features - Step-by-step guide with full code examples on GitHub.
- Using TensorBoard to Visualize Image Classification Retraining in TensorFlow
- TFRecords Guide semantic segmentation and handling the TFRecord file format.
- TensorFlow Android Guide - Android TensorFlow Machine Learning Example.
- TensorFlow Optimizations on Modern Intel® Architecture - Introduces TensorFlow optimizations on Intel® Xeon® and Intel® Xeon Phi™ processor-based platforms based on an Intel/Google collaboration.
- Coca-Cola's Image Recognition App Coca-Cola's product code image recognizing neural network with user input feedback loop.

Community

- Stack Overflow
- @TensorFlow on Twitter
- Reddit
- Mailing List

Books

- Machine Learning with TensorFlow by Nishant Shukla, computer vision researcher at UCLA and author of Haskell Data Analysis Cookbook. This book makes the math-heavy topic of ML approachable and practicle to a newcomer.
- First Contact with TensorFlow by Jordi Torres, professor at UPC Barcelona Tech and a research manager and senior advisor at Barcelona Supercomputing Center
- Deep Learning with Python - Develop Deep Learning Models on Theano and TensorFlow Using Keras by Jason Brownlee
- TensorFlow for Machine Intelligence - Complete guide to use TensorFlow from the basics of graph computing, to deep learning models to using it in production environments - Bleeding Edge Press
- Getting Started with TensorFlow - Get up and running with the latest numerical computing library by Google and dive deeper into your data, by Giancarlo Zaccone
- Hands-On Machine Learning with Scikit-Learn and TensorFlow – by Aurélien Geron, former lead of the YouTube video classification team. Covers ML fundamentals, training and deploying deep nets across multiple servers and GPUs using TensorFlow, the latest CNN, RNN and Autoencoder architectures, and Reinforcement Learning (Deep Q).
- Building Machine Learning Projects with Tensorflow – by Rodolfo Bonnin. This book covers various projects in TensorFlow that expose what can be done with TensorFlow in different scenarios. The book provides projects on training models, machine learning, deep learning, and working with various neural networks. Each project is an engaging and insightful exercise that will teach you how to use TensorFlow and show you how layers of data can be explored by working with Tensors.

Contributions

Your contributions are always welcome!

If you want to contribute to this list (please do), send me a pull request or contact me @jtoy Also, if you notice that any of the above listed repositories should be deprecated, due to any of the following reasons:

- Repository's owner explicitly say that "this library is not maintained".
- Not committed for long time (2~3 years).

More info on the guidelines

Credits

- Some of the python libraries were cut-and-pasted from vinta
- The few go reference I found where pulled from this page