SUPER DATASCIENCE

GREETINGS

Welcome to the data repository for the Deep Learning course by Kirill Eremenko and Hadelin de Ponteves

The datasets and other supplementary materials are below.

Enjoy!

PART 0. WELCOME TO THE COURSE!

Section 1. Welcome to the course!

- **Meet your instructors**
- **Deep Learning A-Z** (Folder Structure. Updated 20170402)

PART 1. ARTIFICIAL NEURAL NETWORKS (ANN)

Datasets & Templates:

- **Artificial_Neural_Networks**

Additional Reading:

- Yann LeCun et al., 1998, ***Efficient BackProp***
- By Xavier Glorot et al., 2011, ***Deep sparse rectifier neural networks***
- CrossValidated, 2015, ***A list of cost functions used in neural networks, alongside applications***
- Andrew Trask, 2015, ***A Neural Network in 13 lines of Python (Part 2 – Gradient Descent)***
- Michael Nielsen, 2015, ***Neural Networks and Deep Learning***

PART 2. CONVOLUTIONAL NEURAL NETWORKS (CNN)

Datasets & Templates:

- **Convolutional_Neural_Networks**

Additional Reading:

- Yann LeCun et al., 1998, ***Gradient-Based Learning Applied to Document Recognition***
- Jianxin Wu, 2017, ***Introduction to Convolutional Neural Networks***
- C.-C. Jay Kuo, 2016, ***Understanding Convolutional Neural Networks with A Mathematical Model***
- Kaiming He et al., 2015, ***Delving Deep into Rectifiers: Surpassing Human-Level Performance on ImageNet Classification***
- Dominik Scherer et al., 2010, ***Evaluation of Pooling Operations in Convolutional Architectures for Object Recognition***

- Adit Deshpande, 2016, ***The 9 Deep Learning Papers You Need To Know About (Understanding CNNs Part 3)***
- Rob DiPietro, 2016, ***A Friendly Introduction to Cross-Entropy Loss***
- Peter Roelants, 2016, ***How to implement a neural network Intermezzo 2***

PART 3. RECURRENT NEURAL NETWORKS (RNN)

Datasets & Templates:

- **Recurrent_Neural_Networks**
- **Homework_Challenge**

Additional Reading:

- Oscar Sharp & Benjamin, 2016, ***Sunspring***
- Sepp (Josef) Hochreiter, 1991, ***Untersuchungen zu dynamischen neuronalen Netzen***
- Yoshua Bengio, 1994, ***Learning Long-Term Dependencies with Gradient Descent is Difficult***
- Razvan Pascanu, 2013, ***On the difficulty of training recurrent neural networks***
- Sepp Hochreiter & Jurgen Schmidhuber, 1997, ***Long Short-Term Memory***
- Christopher Olah, 2015, ***Understanding LSTM Networks***
- Shi Yan, 2016, ***Understanding LSTM and its diagrams***
- Andrej Karpathy, 2015, ***The Unreasonable Effectiveness of Recurrent Neural Networks***
- Andrej Karpathy, 2015, ***Visualizing and Understanding Recurrent Networks***
- Klaus Greff, 2015, ***LSTM: A Search Space Odyssey***
- Xavier Glorot, 2011, ***Deep sparse rectifier neural networks***

PART 4. SELF ORGANIZING MAPS (SOM)

Datasets & Templates:

- **Self_Organizing_Maps**
- **Mega_Case_Study**

Additional Reading:

- Tuevo Kohonen, 1990, ***The Self-Organizing Map***
- Mat Buckland, 2004?, ***Kohonen's Self Organizing Feature Maps***
- Nadieh Bremer, 2003, ***SOM – Creating hexagonal heatmaps with D3.js***

PART 5. BOLTZMANN MACHINES (BM)

Datasets & Templates:

- **Boltzmann_Machines**

Additional Reading:

- Yann LeCun, 2006, ***A Tutorial on Energy-Based Learning***
- Jaco Van Dormael, 2009, ***Mr. Nobody***
- Geoffrey Hinton, 2006, ***A fast learning algorithm for deep belief nets***
- Oliver Woodford, 2012?, ***Notes on Contrastive Divergence***

- Yoshua Bengio, 2006, ***Greedy Layer-Wise Training of Deep Networks***
- Geoffrey Hinton, 1995, ***The wake-sleep algorithm for unsupervised neural networks***
- Ruslan Salakhutdinov, 2009?, ***Deep Boltzmann Machines***

PART 6. AUTOENCODERS (AE)

Datasets & Templates:

- **AutoEncoders**

Additional Reading:

- Malte Skarupke, 2016, ***Neural Networks Are Impressively Good At Compression***
- Francois Chollet, 2016, ***Building Autoencoders in Keras***
- Chris McCormick, 2014, ***Deep Learning Tutorial – Sparse Autoencoder***
- Eric Wilkinson, 2014, ***Deep Learning: Sparse Autoencoders***
- Alireza Makhzani, 2014, ***k-Sparse Autoencoders***
- Pascal Vincent, 2008, ***Extracting and Composing Robust Features with Denoising Autoencoders***
- Salah Rifai, 2011, ***Contractive Auto-Encoders: Explicit Invariance During Feature Extraction***
- Pascal Vincent, 2010, ***Stacked Denoising Autoencoders: Learning Useful Representations in a Deep Network with a Local Denoising Criterion***
- Geoffrey Hinton, 2006, ***Reducing the Dimensionality of Data with Neural Networks***

ANNEX. GET THE MACHINE LEARNING BASICS

Datasets & Templates:

- **Data_Preprocessing_Template**
- **Classification_Template**
- **API-Updates**

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Shares

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TERMS & CONDITIONS

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SUPER

MAKING THE COMPLEX SIMPLE

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