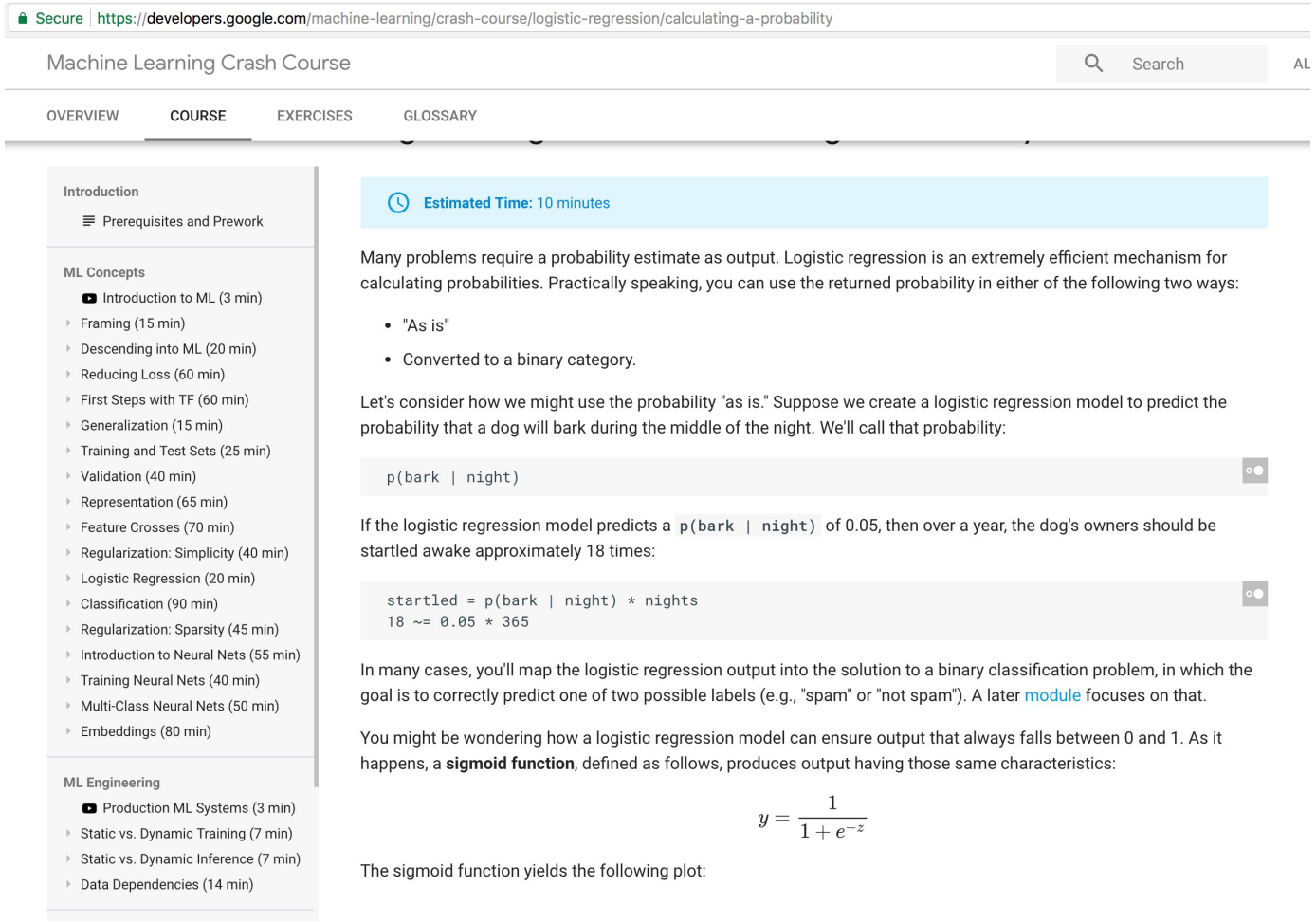
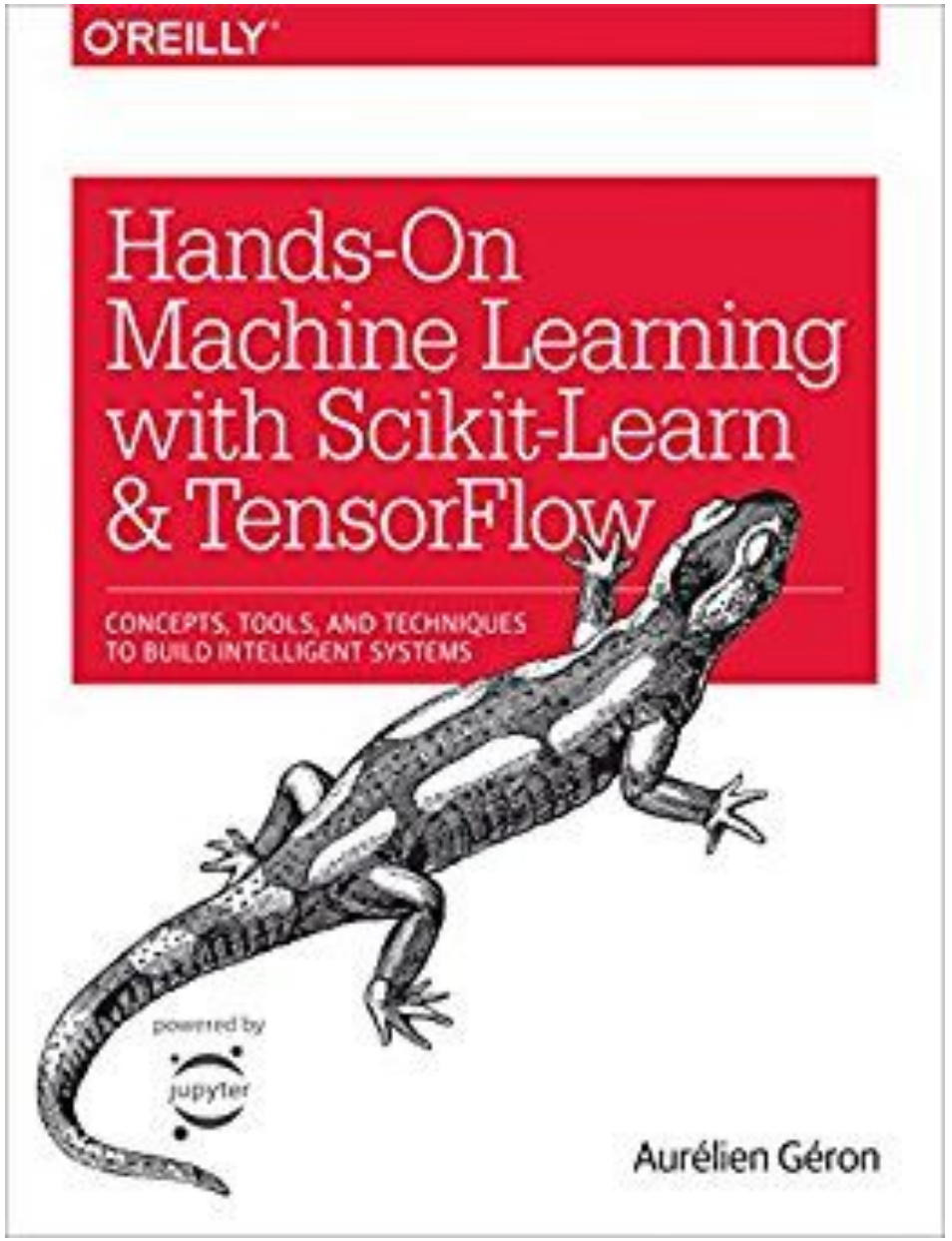
Machine Learning

Resources and References

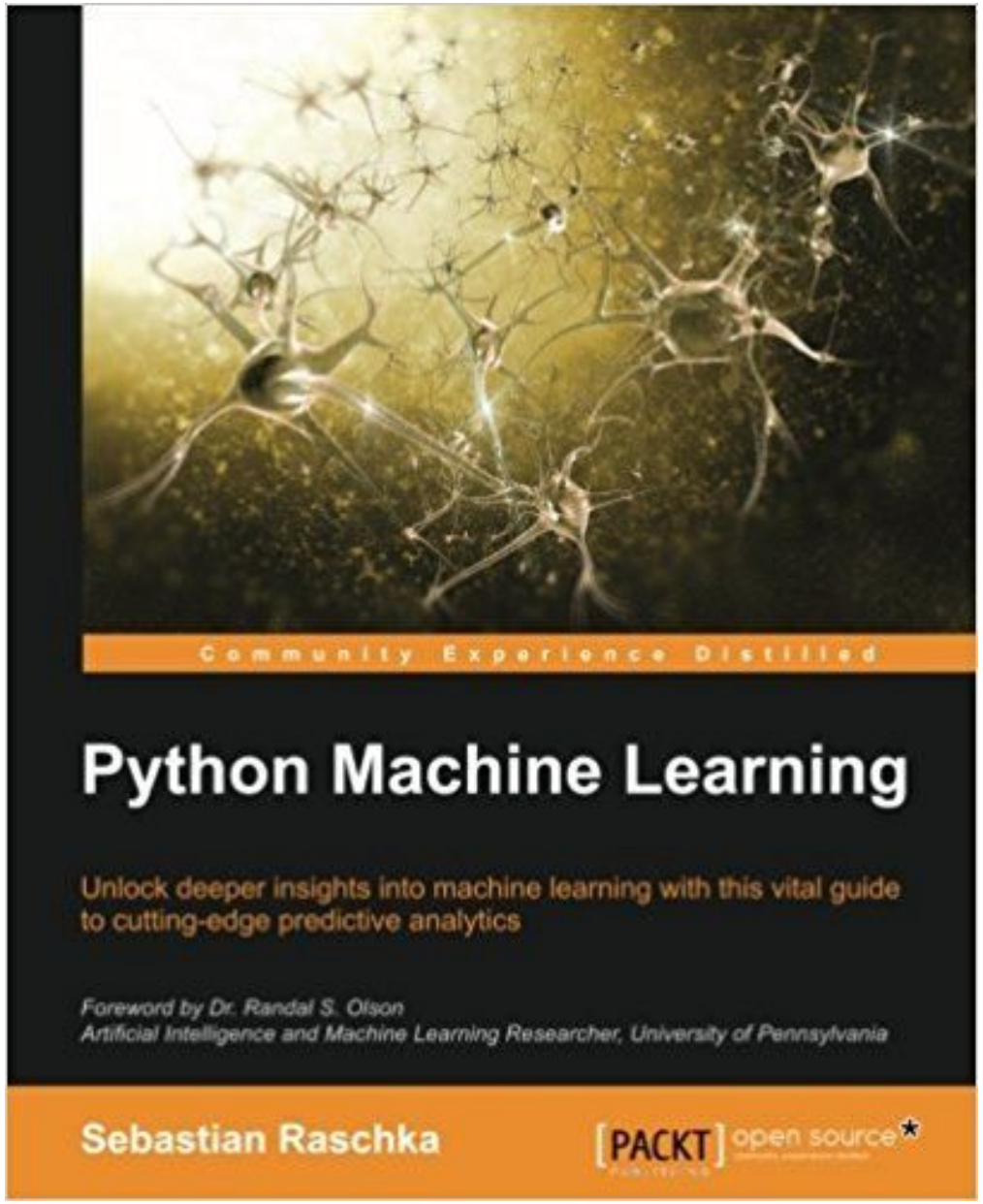
Machine learning crash course (self paced) (MLCC)



Hands-On Machine Learning with Scikit-Learn and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems - Aurélien Géron

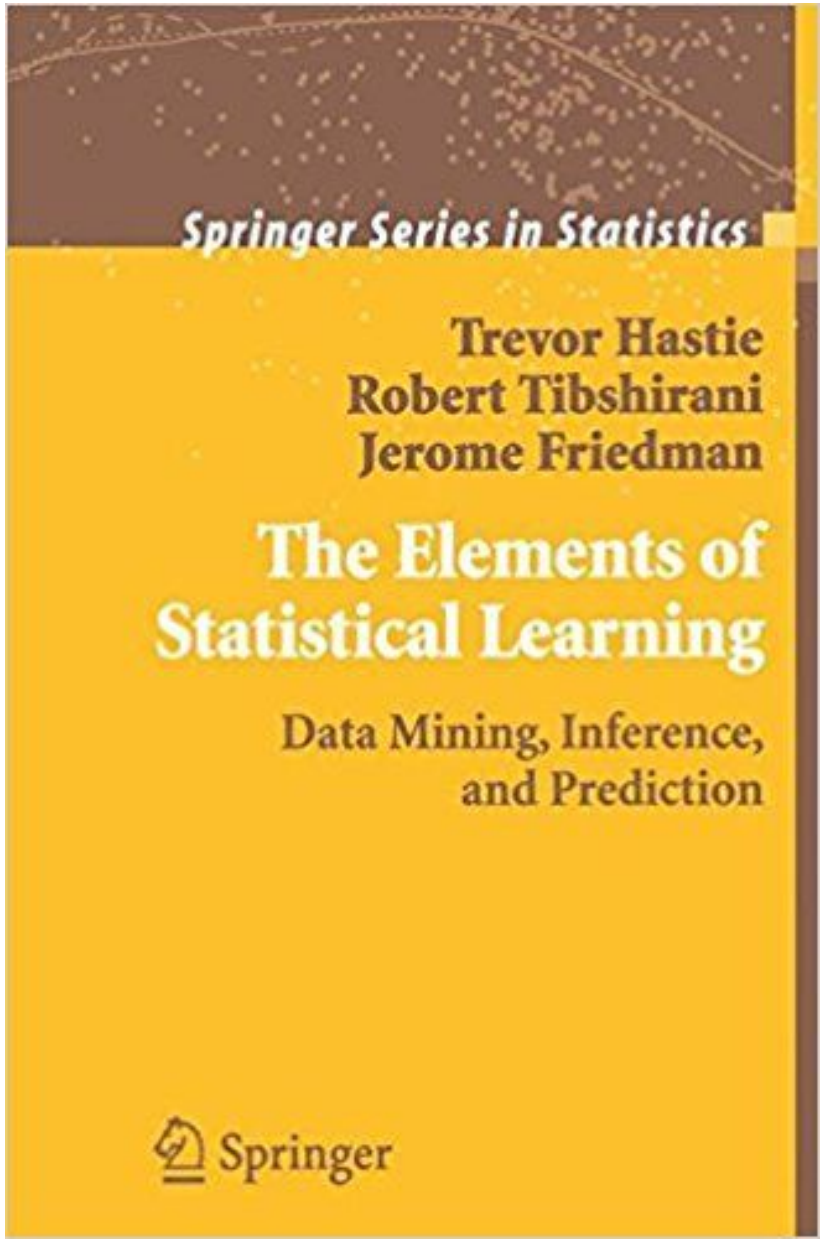


Python Machine Learning - Sebastian Roschka



Deep Learning
(Adaptive Computation and Machine Learning series)
- Ian Goodfellow

The Elements of Statistical Learning: Data Mining, Inference, and Prediction - Trevor Hastie



OpenIntro Statistics

Machine Learning (MOOC) - Andrew Ng (coursera.org)

Machine Learning
Stanford University

Deep Learning (MOOC)- Andrew Ng (coursera.org)

Deep Learning
deeplearning.ai

Class notes from Machine Learning - Andrew Ng

https://1drv.ms/f/s!AqPMqweMPzEegpsyjwSffQygj_En8w

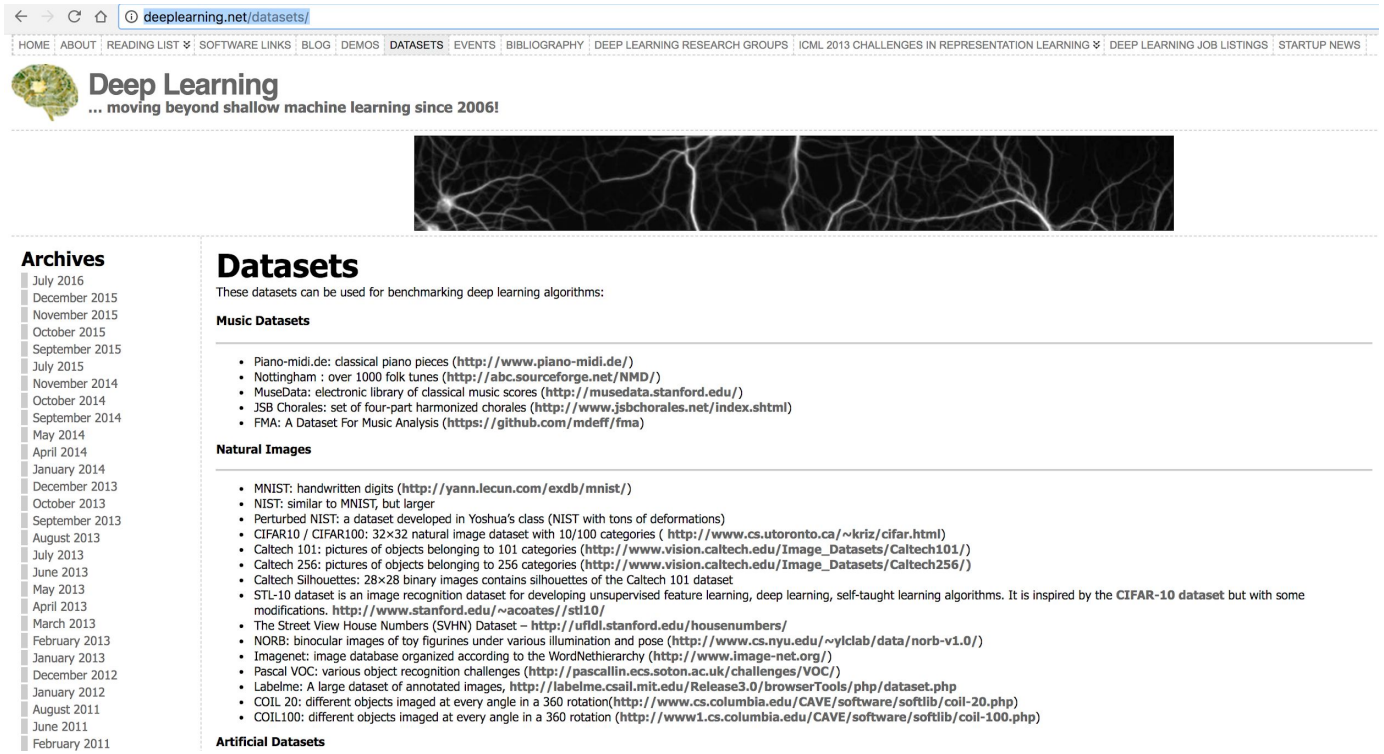
http://cs229.stanford.edu/syllabus.html

CS231n: Convolutional Neural Networks for Visual Recognition Stanford

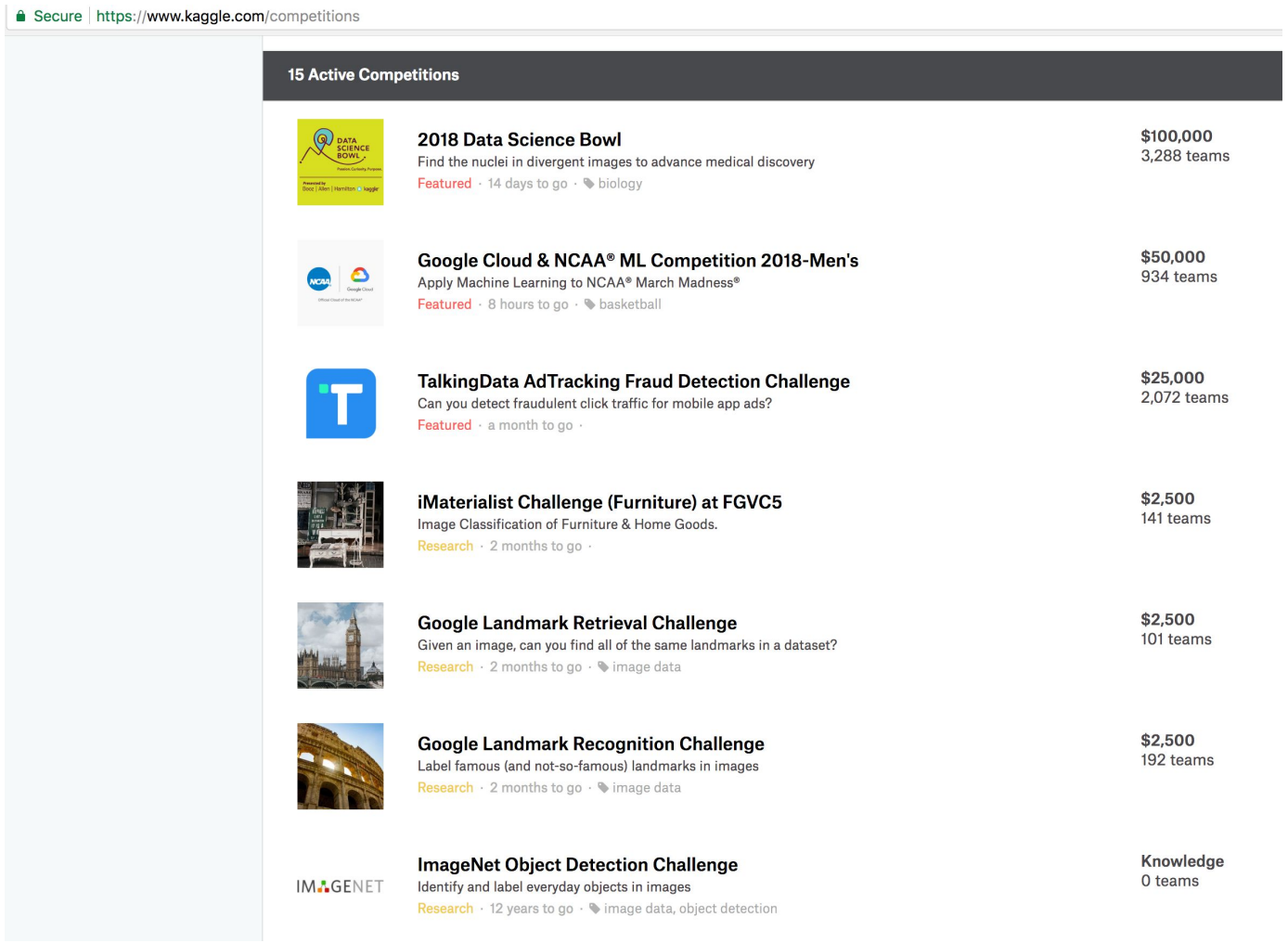
- http://cs231n.github.io/
- https://www.youtube.com/playlist?list=PL3FW7Lu3i5JvHM8ljYj-zLfQRF3EO8sYv

Dataset for Deep Learning

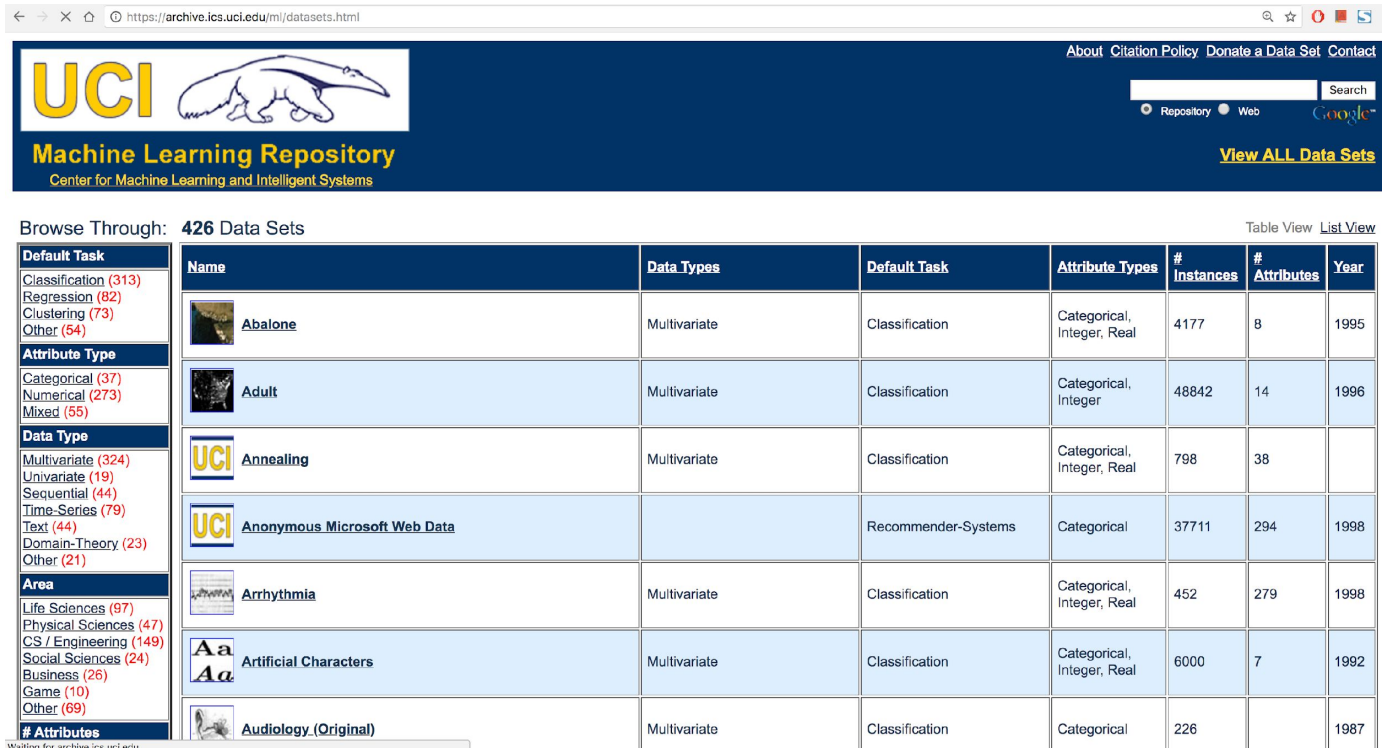
http://deeplearning.net/datasets/



Kaggle machine learning competition Kaggle.com



UCI machine learning repo for datasets



Blogs of AI, ML

- https://machinelearningmastery.com/blog/
- https://blog.algorithmia.com/
- https://aitopics.org/search
- https://machinelearnings.co/
- https://chatbotsmagazine.com/
- https://chatbotslife.com/
- http://www.33rdsquare.com/
- https://openai.com/blog
- https://intelligence.org/blog/
- https://www.reddit.com/r/artificial/
- https://aitopics.org/search
- https://machinelearnings.co/
- https://www.artificial-intelligence.blog/

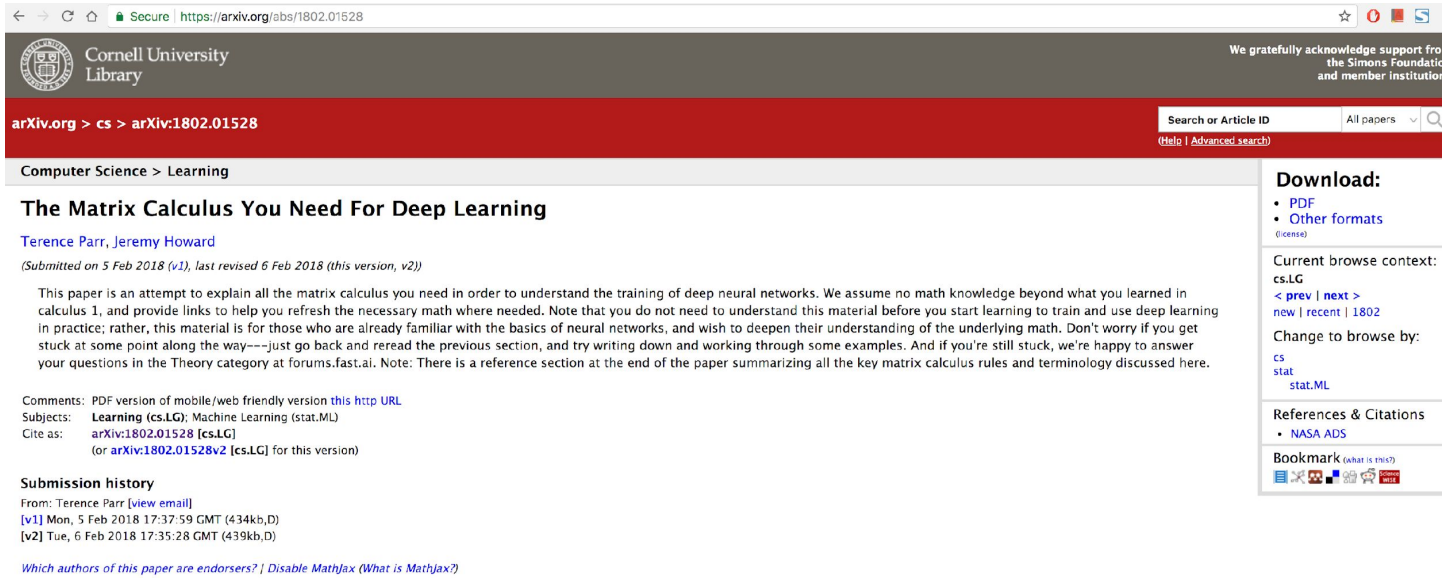
- Allen Institute for Artificial Intelligence
- **https://www.reddit.com/r/singularity/**
- **http://research.baidu.com/**
- **https://www.artificiallawyer.com/**
- **http://www.expertsystem.com/blog/**
- *https://aws.amazon.com/blogs/ai*
- **https://medium.com/ai-roadmap-institute**
- **https://deepmind.com/blog/**
- **https://www.inbenta.com/en/blog/**
- **https://blog.clarifai.com/**
- **https://www.datarobot.com/blog/**
- **https://medium.com/archieai**
- **https://www.singularityweblog.com/blog/**
- **https://iris.ai/blog/**
- **https://blogs.nvidia.com/**

More References

- Machine Learning Lecture Notes from MIT
- Challenges in Machine Learning and Data Mining
- Introduction to Statistical Learning
- Machine Learning Slides from Edx
- Matrix Cookbook
- Deep Learning Book
- Michael Nielsen's tutorials
- Convolutional Neural Network for Visual Recognition

- Basic Derivative Formula
- Oxford University Deep learning Course Material
- Deep Learning Mind Map
- MIT Course - Deep Learning for Self Driving Car
- CS231n: Convolutional Neural Networks for Visual Recognition
- Artificial Intelligence - A modern approach
- Mathematical Summary
- Kernel functions in machine learning
- Introduction to linear algebra
- Jupyter Notebook Tips
- Parallel Algorithms

Research papers



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arXiv.org > cs > arXiv:1802.01528

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Computer Science > Learning

The Matrix Calculus You Need For Deep Learning

Terence Parr, Jeremy Howard

(Submitted on 5 Feb 2018 (v1), last revised 6 Feb 2018 (this version, v2))

This paper is an attempt to explain all the matrix calculus you need in order to understand the training of deep neural networks. We assume no math knowledge beyond what you learned in calculus 1, and provide links to help you refresh the necessary math where needed. Note that you do not need to understand this material before you start learning to train and use deep learning in practice; rather, this material is for those who are already familiar with the basics of neural networks, and wish to deepen their understanding of the underlying math. Don't worry if you get stuck at some point along the way---just go back and reread the previous section, and try writing down and working through some examples. And if you're still stuck, we're happy to answer your questions in the Theory category at forums.fast.ai. Note: There is a reference section at the end of the paper summarizing all the key matrix calculus rules and terminology discussed here.

Comments: PDF version of mobile/web friendly version this http URL
Subjects: **Learning (cs.LG)**; Machine Learning (stat.ML)
Cite as: arXiv:1802.01528 [cs.LG]
(or arXiv:1802.01528v2 [cs.LG] for this version)

Submission history

From: Terence Parr [view email]
[v1] Mon, 5 Feb 2018 17:37:59 GMT (434kb,D)
[v2] Tue, 6 Feb 2018 17:35:28 GMT (439kb,D)

Which authors of this paper are endorsers? | Disable MathJax (What is MathJax?)

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References & Citations
- NASA ADS

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Articles on deep learning

- Understanding Neural Network: A beginner's guide
- Artificial Neural Network (ANN) in Machine Learning
- 30 Free Courses: Neural Networks, Machine Learning, Algorithms, AI
- Building Convolutional Neural Networks with Tensorflow
- A simple neural network with Python and Keras +
- Implementing a Neural Network from Scratch in Python
- Neural Networks: Crash Course On Multi-Layer Perceptron
- Understanding Neural Networks with TensorFlow Playground
- Making data science accessible – Neural Networks
- Must Know Tips/Tricks in Deep Neural Networks
- An Introduction to Implementing Neural Networks using TensorFlow
- Yet another introduction to Neural Networks
- Matrix Multiplication in Neural Networks
- Neural Networks: The Backpropagation algorithm in a picture
- Accelerating Convolutional Neural Networks on Raspberry Pi
- The Unreasonable Effectiveness of Recurrent Neural Networks
- Book: Neural Networks and Statistical Learning
- Neural Networks as a Corporation Chain of Command
- Recurrent neural networks, Time series data and IoT
- Predicting Car Prices Using Neural Network
- Beyond Deep Learning – 3rd Generation Neural Nets
- Use Neural Networks to Find the Best Words to Title Your eBook

Image Dataset for object detection

Dataset	Description
https://github.com/openimages/dataset	Open Images is a dataset of ~9 million URLs to images that have been annotated with image-level labels and bounding boxes spanning thousands of classes
http://cocodataset.org/#home	Image segmentation on household items
https://hci.iwr.uni-heidelberg.de/node/6132	Dataset image segmentation on traffic lights
http://www.cvlibs.net/datasets/kitti/	Computer vision for autonomous car
https://cs.stanford.edu/~roozbeh/pascal-context/	Semantic segmentation task by providing annotations for the whole scene
http://host.robots.ox.ac.uk/pascal/VOC/index.html	Object class recognition. Images are originally form flickr.

Computer Vision Reading Group

www.cs.ubc.ca/nest/lci/cvrg/

Computer Vision Reading Group

To **subscribe** to the mailing list for talk announcements, send a message to majordomo@cs.ubc.ca with the words `subscribe cvrg-l` in the body.

A list of upcoming papers can be found below. To be added to the schedule contact **Bicheng Xu** (bichengx@cs.ubc.ca).

Upcoming presentations

Date	Presenter	Paper or topic

Finished presentations, 2018

Date	Presenter	Paper or topic
Apr. 6	Candice	What have we learned from deep representations for action recognition? [link]
Mar. 23	Gursimran	A Simple Neural Network Module for Relational Reasoning [link]
Mar. 2	Polina	Inferring Semantic Layout for Hierarchical Text-to-Image Synthesis [link]
Feb. 16	Suhail	AttnGAN [link] Generative Adversarial Text to Image Synthesis [link]
Feb. 9	Borna	Mask R-CNN [link]
Feb. 2	Bicheng	Teaching Machines to Describe Images via Natural Language Feedback [link]
Jan. 26	Alireza	Is it hard to say I don't know?
Jan. 19	Bo Zhao	Inferring and Executing Programs for Visual Reasoning [link]

http://www.cs.ubc.ca/nest/lci/cvrg/