Useful Resources

Below is a compilation of web links. Hopefully these resources will help improve your learning experience.

Informative Web Sites

- Java Applets for Machine Learning Note: The applets are in German ** Page not accesible. Message: The page you want to visit cannot be displayed.
- A Brief Introduction to Machine Learning by Gunnar Ratsch
- CS229 Machine Learning - Stanford - This is the Stanford CS course on Machine Learning that Prof Ng has taught for a number of years. The material parallels the Coursera course, but covers some additional topics and goes into much more depth on the mathematics.
- Dive into Machine Learning compiles a variety of resources, taking a hack-first approach so you can get "hooked." Prof. Ng's course is the centerpiece.
- Cornell Virtual Workshop Training on programming languages, parallel computing, code improvement, and data analysis.

Linear Algebra

- Introduction to Linear Algebra
- CS 229 Section notes on Linear Algebra
- Free linear algebra book with solutions

Writing Equations in Forum Posts

- Short Guide to LaTex Math Here is a quick guide to entering equations using LaTeX. The directives are inserted between two dollar signs. For example, the fraction for one half is entered as \$\$ \frac{1}{2}\$\$,(without any escapes before the dollar signs) and displays as $\frac{1}{2}$.
- LaTex Math Tutorial

Online E-Books

- Introduction to Machine Learning by Nils J. Nilsson
- Introduction to Machine Learning by Alex Smola and S.V.N. Vishwanathan
- Introduction to Data Science by Jeffrey Stanton The link appears to be dead, here is another.
- Bayesian Reasoning and Machine Learning by David Barber
- Understanding Machine Learning, © 2014 by Shai Shalev-Shwartz and Shai Ben-David
- Elements of Statistical Learning, by Hastie, Tibshirani, and Friedman
- Pattern Recognition and Machine Learning, by Christopher M. Bishop

Textbook information

- (none)

Advanced classes online

- Andrew Ng's advanced lectures - YouTube
- Machine Learning - CosmoLearning
- Machine Learning - AcademicEarth
- Learning from Data - Caltech
- Machine Learning - MIT
- Machine Learning - U. of Washington - via Coursera
- Big Data, Large Scale Machine Learning - NYU (not a MOOC)
- Machine Learning UBC 2013 - Youtube
- Neural Networks Demystified

Machine Learning frameworks and libraries in Python

- PyBrain: Various machine learning algorithms for Python programmers. Focuses on neural networks.
- PyML: Machine Learning object oriented framework for Linux and Mac OS X focused on classification and regression by Asa Ben-Hur.
- scikit-learn: Comprehensive Machine Learning toolkit for Python (based on SciPy with numpy and mathplotlib). "ipython -pylab" provides interactive environment like Octave - scikit-learn provides optimized implementations of pretty well everything (using fast libraries like liblinear and libsvm). Should be used instead of Octave for research prototyping, production and especially for education.
- tensor-flow: open source software library for machine learning.

Machine Learning frameworks and libraries in C++

- mlpack: a scalable C++ machine learning library.
- SHARK: a fast, modular, feature-rich open-source C++ machine learning library.
- Dlib-ml: A Machine Learning Toolkit.
- Waffles: A collection of command-line tools for researchers in machine learning, data mining, and related fields. All of the functionality is also provided in a clean C++ class library.
- MLC++: a library of C++ classes for supervised machine learning.

Machine Learning frameworks and libraries in Java

- Weka: A collection of machine learning algorithms for data mining tasks.
- Apache Mahout: A scalable machine learning library .
- LIBLINEAR : LIBLINEAR -- A Library for Large Linear Classification. I think this link was mentioned in one of the lectures.
- Deeplearning4j: Open-source, distributed, deep-learning library for the JVM. Integrated with Hadoop and Spark, DL4J is designed to be used on distributed GPUs and CPUs.

Machine Learning Data Sets

- Links to many ML data repositories
- UCI Machine Learning Repository - Univ of California Irvine
- Kaggle: Machine Learning and data mining activities
- COCO-Text: Dataset for Text Detection and Recognition

Octave packages

- http://octave.sourceforge.net/ GNU Octave packages development and repository.

Octave online

- http://octave-online.net/

Translation Projects

- Mexico Study Group Notes

Useful papers

- Massive collection of academic papers are available here: Machine Learning Library.

General

- Domingos, Pedro. "A few useful things to know about machine learning." Communications of the ACM 55, no. 10 (2012): 78-87
- Shewchuk, Jonathan Richard. "An Introduction to the Conjugate Gradient Method Without the Agonizing Pain." 1994
- To understand cost functions better An Introduction To Understanding Cost Functions

Boosting

- Friedman, J. H. "Greedy Function Approximation: A Gradient Boosting Machine." (Feb. 1999a)
- Ridgeway, Greg. "Generalized Boosted Models: A guide to the gbm package." Update 1 (2007): 1.
- Rojas, Raúl. "AdaBoost and the Super Bowl of Classifiers A Tutorial Introduction to Adaptive Boosting." Freie University, Berlin (2009).

Outlier and Anomaly Detection

- Chandola, Varun, Arindam Banerjee, and Vipin Kumar. "Outlier detection: A survey." ACM Computing Surveys, to appear (2007).
- Kriegel, Hans-Peter, Peer Kröger, and Arthur Zimek. "Outlier detection techniques." In Tutorial at the 13th Pacific-Asia Conference on Knowledge Discovery and Data Mining. 2009.

SVM

- "An Idiot's Guide to Support Vector Machines"

http://web.mit.edu/6.034/wwwbob/svm-notes-long-08.pdf

Interesting applications

- Castillo, Carlos, Marcelo Mendoza, and Barbara Poblete. "Information credibility on Twitter." In Proceedings of the 20th international conference on World wide web, pp. 675-684. ACM, 2011.
- Norman, Kenneth A., Sean M. Polyn, Greg J. Detre, and James V. Haxby. "Beyond mind-reading: multi-voxel pattern analysis of fMRI data."Trends in cognitive sciences 10, no. 9 (2006): 424-430.
- Pereira, Francisco, Tom Mitchell, and Matthew Botvinick. "Machine learning classifiers and fMRI: a tutorial overview." Neuroimage 45, no. 1 Suppl (2009): S199.
- Dean Pomerleau Autonomous Driving (link)

Deep Learning School, Sept. 2016 (URL includes links to video archives)

https://www.bayareadlschool.org/