



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](#)

 coursera



- [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 matplotlib). "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

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.bayareadschool.org/>