

Links, books, data sets etc. that may be useful for the course project or further studies.

Book References (Which I have been recommended)

- [Pattern Recognition and Machine Learning, C. Bishop](#)
One of the best references to start studying machine learning.
- [Machine Learning: A Probabilistic Perspective](#)
A fantastic and extremely comprehensive book on machine learning.
- [Deep Learning, I. Goodfellow et. al](#)
Geared more towards unsupervised machine learning, development of the hierarchy of concepts approach to understanding more complex phenomena. A bit narrower scope but a vast amount of material.

Some References From the Previous Offering

Book References

- http://www.amazon.com/Elements-Statistical-Learning-Prediction-Statistics/dp/0387848576/ref=sr_1_1?ie=UTF8&qid=1459424813&sr=8-1
This book is often mentioned as the machine learning bible. Covers a lot of stuff, and not too hard to read.
- http://www.amazon.com/Introduction-Statistical-Learning-Applications-Statistics/dp/1461471370/ref=pd_bxgy_14_img_2?ie=UTF8&refRID=1X42ZZPABWRSYY08GCV7
A much shorter and simpler book by the same authors as the one above. This is the best book I've come across when it comes to explaining intuitively how different methods work. Skips over some of the mathematical details however.
- http://www.amazon.com/Foundations-Machine-Learning-Adaptive-Computation-ebook/dp/B009093G7Q/ref=sr_1_1?s=books&ie=UTF8&qid=1459425070&sr=1-1L
Good book if you really want to dig deep into the mathematical foundations of machine learning methods.
- <http://www.gaussianprocess.org/gpml/> (for free)
An in depth book about Gaussian processes and very useful if you want to use Gaussian processes for research purposes.

Online resources

- <http://scikit-learn.org/stable/documentation.html>
The scikit-learn documentation has lots of tutorials and guides for doing various machine learning tasks. Also a handy flow chart for picking an algorithm.
- <https://www.coursera.org/learn/machine-learning>
Free online course on machine learning. Very pedagogical and focuses a lot on intuitive understanding.
- <http://colah.github.io>
Blog with lots of interesting articles about machine learning, with cool visualizations. A lot of it is about neural networks which is not covered in our course, but still interesting.

- <http://neuralnetworksanddeeplearning.com>
Free online book about neural networks and deep learning. This is a rather short, very well-written book. I don't recommend this for the course project, but it's a good read if you want to learn about some cutting-edge stuff.

Data sets

- <https://www.kaggle.com>
Lots of machine learning competitions. You can get the data sets even for finished competitions. Some "competitions" are simpler, and just intended for learning.
- <https://archive.ics.uci.edu/ml/datasets.html>
Lots of data sets within different topics
- <http://yann.lecun.com/exdb/mnist/>
The famous MNIST data set of handwritten digits. The website also lists the performance of lots of various algorithms applied to this data set.
- <https://asaip.psu.edu/resources/datasets>
[Not necessarily] "Astronomical datasets provided by educators to exercise statistical and computational methods" (including the dataset used in our textbook)