1. Machine Learning and Natural language Process Collection

[**Sam’s list**](https://sgfin.github.io/learning-resources/)

* MIT’s Sam Finlayson has released a relatively comprehensive list of resources on various topics in machine learning. It covers all kinds of fields relative to machine learning, such as Classic Machine Learning, Deep Learning, and Natural Language Processing.

1. Machine Learning Course Note

[**Stanford CS229 Course Notes**](http://cs229.stanford.edu/syllabus-spring2021.html)

* Coverage of basics (bias/variance, regularization, etc), but also more advanced topics (mixture models, EM, ensembles, PCA, etc)

1. Gradient Descent in Optimization

[**A Blog Article on Optimization Techniques**](http://ruder.io/optimizing-gradient-descent/)

* Overview of most common gradient descent-based optimization strategies

1. Deep Learning Course Note

[**Stanford CS231 Course Notes**](http://cs231n.github.io/)

[**Stanford CS231 Lecture Collection**](https://www.youtube.com/playlist?list=PLC1qU-LWwrF64f4QKQT-Vg5Wr4qEE1Zxk)

[**MIT Science of Deep Learning Course Notes**](https://people.csail.mit.edu/madry/6.883/)

* Coverage of ML basics (loss functions, linear classifiers, backpropagation, etc), with a focus on establishing intuition for the concepts
* Covers the basics of deep learning (neural networks, training, regularization, etc.)
* Detailed walkthrough of neural network theory, along with implementation in NumPy
* Additional background on convolutional architectures for vision applications

1. [**Deep Learning Textbook**](http://www.deeplearningbook.org/)

* Covers everything from machine learning, probability, and linear algebra basics necessary for deep learning to current research
* Very detailed coverage of feedforward networks, convolutional networks, and recurrent networks

1. Natural Language Processing Textbook

[**NLP by Eisenstein**](https://cseweb.ucsd.edu/~nnakashole/teaching/eisenstein-nov18.pdf)

[**Speech and Language Processing**](https://web.stanford.edu/~jurafsky/slp3/ed3book.pdf)

* Covers everything about text-processing, N gram language model, and word embedding, and mentioned Neural network in Language Model
* Coverage everything, we need to know about Machine Translation, Transfer learning and Pre-trained language model

1. Some Helpful Website

* [Stanford cs230](https://github.com/afshinea/stanford-cs-230-deep-learning) and also [Stanford cs230 but more text](https://stanford.edu/~shervine/teaching/cs-230/cheatsheet-deep-learning-tips-and-tricks)
* [Architecture overview](https://www.datasciencecentral.com/profiles/blogs/concise-visual-summary-of-deep-learning-architectures)
* [Troubleshooting neural networks](http://josh-tobin.com/troubleshooting-deep-neural-networks)
* Adding More