Getting started with Deep Learning (using Python)

Throughout this guide, feel free to skim/skip sections you know.

Python Basics
IDE setup (choose one):
Recommended >>> SublimeText 3: https://realpython.com/blog/python/setting-up-sublime-text-3-for-full-stack-python-development/
Pycharm Educational: https://www.jetbrains.com/pycharm-educational/
Pycharm Professional (free with student account): https://www.jetbrains.com/student/
Eclipse w/ Pydev plugin: https://eclipse.org/ and http://pydev.org/manual_101_install.html (install through the update site)

Learn Python:
Brush up on computer science topics you may have forgotten
Recommended >>> http://learnpythonthehardway.org/book/
http://www.codecademy.com/en/tracks/python
http://www.learnpython.org/

Most important parts are:
Functions
Classes
Inheritance
Dictionaries
Loops
List comprehensions
Indexing

Linear Algebra
http://betterexplained.com/articles/linear-algebra-guide/
http://machinelearningmastery.com/linear-algebra-machine-learning/
https://github.com/rougier/numpy-100
http://see.stanford.edu/materials/aimlcs229/cs229-linalg.pdf

Most important parts:
Matrix multiplications
Vector/matrix operations

Machine Learning
https://www.coursera.org/learn/machine-learning/
http://aimotion.blogspot.com/2011/10/machine-learning-with-python-linear.html

Most important parts:
Linear regression
Logistic regression
Regularization/cost functions/gradients

Theano
http://deeplearning.net/software/theano/tutorial/
https://github.com/goodfeli/theano_exercises
https://github.com/StartupML/Bastien-Theano-Workshop
http://underflow.fr/ai/lets-play-with-theano-547

Most important parts:
Pretty much everything.

Deep Learning
Recommended >>> http://www.deeplearningbook.org/
http://deeplearning.net/tutorial/
http://peterroelants.github.io/posts/neural_network_implementation_part01/
https://www.youtube.com/watch?v=afUvcD3tEoQ
https://github.com/mbeissinger/intro_deep
http://www.opendeep.org/docs
http://yyue.blogspot.com/2015/01/a-brief-overview-of-deep-learning.html (and comments)
http://cs231n.github.io/
http://karpathy.github.io/
http://cs224d.stanford.edu/syllabus.html
http://deeplearning.stanford.edu/tutorial/
http://nikhilbuduma.com/2014/12/29/deep-learning-in-a-nutshell/

Learn in this order:
- MLP (feedforward neural network)
fully-connected (dense) layers. your most basic layer type.
softmax classification layer.
- Autoencoder
same as MLP basic layer, just using weight transpose to 'undo' hidden transformation back to input state space.
- RNN
feedforward net with an extra hidden-to-hidden connection to keep track of state over time.
- CNN
uses convolution to learn image filters