Roadmap for learning Machine Learning (More focus on DL):

- General Notes

-- Roadmaps nature

-- Recall DL vs Classical

-- Paid courses & certificates

- financial aid system

-- MOOCs assignments

-- Can't understand something?

- When to start learning ML

- Roadmap as following

- Andrew Ng Coursera Course

-- [https://www.coursera.org/learn/machin...](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Fwww.coursera.org%2Flearn%2Fmachine-learning&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

--- [https://www.youtube.com/playlist?list...](https://www.youtube.com/playlist?list=PLLssT5z_DsK-h9vYZkQkYNWcItqhlRJLN)

--- [https://medium.com/analytics-vidhya/p...](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Fmedium.com%2Fanalytics-vidhya%2Fpython-implementation-of-andrew-ngs-machine-learning-course-part-1-6b8dd1c73d80&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

- Kaggle

-- Browse scikit-learn library

- use their NN tool (and others if want)

-- [https://blogs.mathworks.com/loren/201...](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Fblogs.mathworks.com%2Floren%2F2015%2F06%2F18%2Fgetting-started-with-kaggle-data-science-competitions%2F&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

-- Kaggle: titanic (classification) and Boston housing prices competitions (regression).

--- [https://www.kaggle.com/c/titanic](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Fwww.kaggle.com%2Fc%2Ftitanic&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

--- [https://www.kaggle.com/c/house-prices...](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Fwww.kaggle.com%2Fc%2Fhouse-prices-advanced-regression-techniques&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

- Go deeper in Neural Networks

-- Why NN? -- Deeper understanding

--- Backpropagation

--- You may listen to 1 or more lecture of these:

--- [https://www.youtube.com/watch?v=Ih5Mr...](https://www.youtube.com/watch?v=Ih5Mr93E-2c)

--- [https://www.youtube.com/watch?v=uXt8q...](https://www.youtube.com/watch?v=uXt8qF2Zzfo)

--- [https://www.youtube.com/watch?v=d14TU...](https://www.youtube.com/watch?v=d14TUNcbn1k)

--- On paper: Compute/Trace an example: [https://mattmazur.com/2015/03/17/a-st...](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Fmattmazur.com%2F2015%2F03%2F17%2Fa-step-by-step-backpropagation-example%2F&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

-- Reimplement NN from scratch

--- Multi-class classification (softmax)

--- Multi-label classification (sigmoid)

--- Regression

--- Try AE with your network

-- Learn dropout and implement it

-- FYI: NN/ML Arabic playlist: [https://www.youtube.com/playlist?list...](https://www.youtube.com/playlist?list=PLQkyODvJ8ywsLydDYORIlJxV9KarhXp9O)

-- Maybe read NN chapter from a book

- Evaluation metrics

-- [https://towardsdatascience.com/metric...](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Ftowardsdatascience.com%2Fmetrics-to-evaluate-your-machine-learning-algorithm-f10ba6e38234&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

-- Later: [https://medium.com/@jonathan\_hui/map-...](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Fmedium.com%2F%40jonathan_hui%2Fmap-mean-average-precision-for-object-detection-45c121a31173&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

- AFTER you finish the above, do the following time split strategy

- Next 25% of time for classical/projects - 75% for deep learning

- 25% of your time for classical ML

-- kaggle projects / Kaggle blogs

-- [https://www.coursera.org/specializati...](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Fwww.coursera.org%2Fspecializations%2Faml&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

-- Google ML doc: [https://github.com/hktxt/bookshelf/bl...](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Fgithub.com%2Fhktxt%2Fbookshelf%2Fblob%2Fmaster%2FMachine%2520Leraning%2FRules%2520of%2520Machine%2520Learning%2520Best%2520Practices%2520for%2520ML%2520Engineering.pdf&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

-- Feature Engineering for Machine Learning: Principles and Techniques for Data Scientists

- 75% of your time for deep learning

-- [https://www.coursera.org/specializati...](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Fwww.coursera.org%2Fspecializations%2Fdeep-learning&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

--- [https://www.youtube.com/channel/UCcIX...](https://www.youtube.com/channel/UCcIXc5mJsHVYTZR1maL5l9w/playlists)

-- [FYI] [https://classroom.udacity.com/courses...](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Fclassroom.udacity.com%2Fcourses%2Fud730&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

-- Frameworks (TF/Pytorch) - study while learning

-- Either learn 2D vision or nlp (later after work learn 2nd)

--- Vision key problems: classification, detection, segmentation, pose estimation, object traction, action detection/recognition

--- stanford courses

---- Vision: [http://cs231n.stanford.edu/syllabus.html](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=http%3A%2F%2Fcs231n.stanford.edu%2Fsyllabus.html&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

---- NLP: [http://web.stanford.edu/class/cs224n/](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=http%3A%2F%2Fweb.stanford.edu%2Fclass%2Fcs224n%2F&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

- More on the road

-- ML book, e.g. Bishop

-- Understand more models, fields, more experience

-- Field follow up: E.g. in Vision (CVPR, ICCV, ECCV)

-- DL Experience: Paper-to-code skill

-- Vision elements (later): [https://classroom.udacity.com/courses...](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Fclassroom.udacity.com%2Fcourses%2Fud810&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

-- Abstracting skills

- Other ML areas (later)

-- Generative models

--- PGM, EM (GMM), VI, MCMC

--- DL: VAE, GAN - Study GAN)

---- [https://medium.com/@jonathan\_hui/gan-...](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Fmedium.com%2F%40jonathan_hui%2Fgan-some-cool-applications-of-gans-4c9ecca35900&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

---- [https://github.com/nashory/gans-aweso...](https://www.youtube.com/redirect?v=qpEjE0blSUA&event=video_description&q=https%3A%2F%2Fgithub.com%2Fnashory%2Fgans-awesome-applications&redir_token=3tAzqCzqsb5fcNKdJtQWfdZsNst8MTU1NjYxNzQ5NUAxNTU2NTMxMDk1)

-- Reinforcement Learning

-------- Updates/Additions

----- - What if you are also interested in competitive programming?

-- ML is time-consuming to be good. In this case, divide your vacation to 50% competitive and 50% for ML