Project - Train a Deep Learning Model from Scratch

Deep Learning with PyTorch: Zero to GANs

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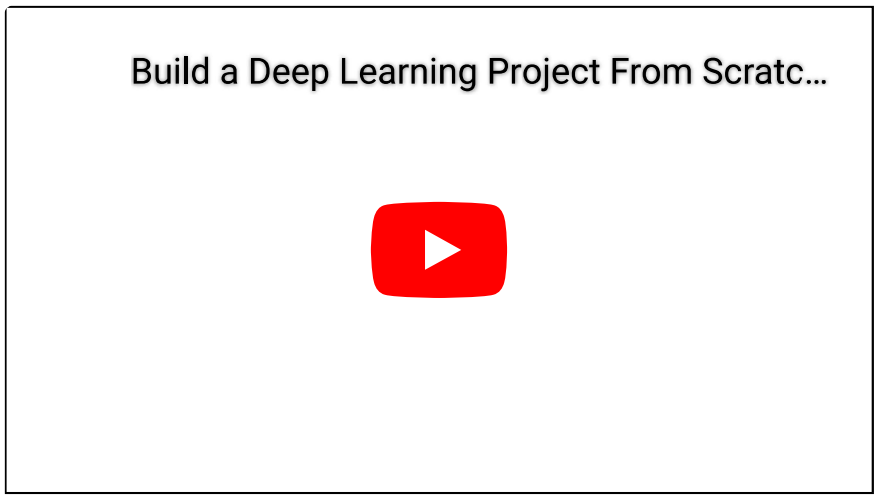

For the course project, you will pick a dataset of your choice and apply the concepts learned in this course to train deep learning models end-to-end with PyTorch, experimenting with different hyperparameters & metrics.

1. Find a dataset online (see the "Where to Find Datasets" section below)
2. Understand and describe the modeling objective clearly
    A. What type of data is it? (images, text, audio, etc.)
    B. What type of problem is it? (regression, classification, generative modeling, etc.)
3. Clean the data if required and perform exploratory analysis (plot graphs, ask questions)
4. Modeling
    A. Define a model (network architecture)
    B. Pick some hyperparameters

    D. Make predictions on samples
    E. Evaluate on the test dataset
    F. Save the model weights
    G. Record the metrics
    H. Try different hyperparameters & regularization
5. Conclusions - summarize your learning & identify opportunities for future work
6. Publish and submit your Jupyter notebook
7. (Optional) Write a blog post to describe your experiments and summarize your work. Use Medium or Github pages.

Note: There is no starter notebook for the course project. Please use the "New Notebook" button on Jovian to create a new notebook, "Run on Colab" to execute it, and "jovian.commit" to record versions.

Example notebooks for reference:

- https://jovian.ai/aakashns/simple-cnn-starter
- https://jovian.ai/aakashns/transfer-learning-pytorch
- https://jovian.ai/aakashns/06b-anime-dcgan
- https://jovian.ai/aakashns/05b-cifar10-resnet

Use the following sources to find interesting datasets:

- https://www.kaggle.com/datasets (use the `opendatasets` library for downloading datasets)
- https://course.fast.ai/datasets
- https://github.com/ChristosChristofidis/awesome-deep-learning#datasets
- https://www.kaggle.com/competitions (check the "Completed" tab)
- https://www.analyticsvidhya.com/blog/2018/03/comprehensive-collection-deep-learning-datasets/
- https://lionbridge.ai/datasets/top-10-image-classification-datasets-for-machine-learning/
- https://archive.ics.uci.edu/ml/index.php
- https://github.com/awesomedata/awesome-public-datasets
- https://datasetsearch.research.google.com/

- https://nsepy.xyz/
- https://nsetools.readthedocs.io/en/latest/usage.html
- https://www.kaggle.com/rohanrao/nifty50-stock-market-data

Indian Air Quality Data

- https://www.kaggle.com/rohanrao/air-quality-data-in-india

Indian Covid-19 Dataset

- https://api.covid19india.org/

World Covid-19 Dataset

- https://www.kaggle.com/imdevskp/corona-virus-report

USA Covid-19 Dataset

- https://www.kaggle.com/sudalairajkumar/covid19-in-usa

Megapixels Dataset for Face Detection, GANs, Human Localization

- https://megapixels.cc/datasets/ (Contains 7 different datasets)

Agriculture based dataset

- https://www.kaggle.com/srinivas1/agricuture-crops-production-in-india
- https://www.kaggle.com/unitednations/global-food-agriculture-statistics
- https://www.kaggle.com/kianwee/agricultural-raw-material-prices-19902020
- https://www.kaggle.com/jmullan/agricultural-land-values-19972017

India Digital Payments UPI

- https://www.kaggle.com/lazycipher/upi-usage-statistics-aug16-to-feb20

India Consumption of LPG

- https://community.data.gov.in/domestic-consumption-of-liquefied-petroleum-gas-from-2011-12-to-2017-18/

India Import/Export Crude Oil

- https://community.data.gov.in/total-import-v-s-export-of-crude-oil-petroleum-products-by-india-

US Unemployment Rate Data

- https://www.kaggle.com/jayrav13/unemployment-by-county-us

India Road accident Data

- https://community.data.gov.in/statistics-of-road-accidents-in-india/

Data science Jobs Data

- https://www.kaggle.com/sl6149/data-scientist-job-market-in-the-us
- https://www.kaggle.com/jonatancr/data-science-jobs-around-the-world
- https://www.kaggle.com/rkb0023/glassdoor-data-science-jobs

H1-b Visa Data

- https://www.kaggle.com/nsharan/h-1b-visa

Donald Trump's Tweets

- https://www.kaggle.com/austinreese/trump-tweets

Hilary Clinton and Trump's Tweets

- https://www.kaggle.com/benhamner/clinton-trump-tweets

Asteroid Dataset

- https://www.kaggle.com/sakhawat18/asteroid-dataset

Solar flares Data

- https://www.kaggle.com/khsamaha/solar-flares-rhessi

Human face generation GANs

- https://www.kaggle.com/arnaud58/flickrfaceshq-dataset-ffhq

F-1 Race Data

- https://www.kaggle.com/cjgdev/formula-1-race-data-19502017

Automobile Insurance

- https://www.kaggle.com/aashishjhamtani/automobile-insurance






- https://www.kaggle.com/skihikingkevin/pubg-match-deaths?

CS GO

- https://www.kaggle.com/mateusdmachado/csgo-professional-matches
- https://www.kaggle.com/skihikingkevin/csgo-matchmaking-damage

Dota 2

- https://www.kaggle.com/devinanzelmo/dota-2-matches

Cricket

- https://www.kaggle.com/nowke9/ipldata
- https://www.kaggle.com/jaykay12/odi-cricket-matches-19712017

Basketball

- https://www.kaggle.com/ncaa/ncaa-basketball
- https://www.kaggle.com/drgilermo/nba-players-stats

Football

- https://www.kaggle.com/martj42/international-football-results-from-1872-to-2017
- https://www.kaggle.com/abecklas/fifa-world-cup
- https://www.kaggle.com/egadharmawan/uefa-champion-league-final-all-season-19552019