This document is a report on my internship at CodeSpeedy Technology Pvt. Ltd.

Topic 1: Contrastive Loss for Supervised Classification in Machine Learning

May 10, 2020
Implemented contrastive loss function and explained its practical usage.

Sources:

- http://yann.lecun.com/exdb/publis/pdf/hadsell-chopra-lecun-06.pdf
- https://gombru.github.io/2019/04/03/ranking_loss/
- https://dl.acm.org/doi/pdf/10.1145/3267935.3267946
- https://arxiv.org/pdf/1807.03748.pdf
- https://towardsdatascience.com/contrastive-loss-explaned-159f2d4a87ec
- https://github.com/adambielski/siamese-triplet
- Libraries: numpy

Topic 2: ML | VGG-16 Implementation in Keras

May 12, 2020
Implemented VGG-16 model for image classification using the concept of transfer learning.

Sources:

- https://github.com/keras-team/keras
- https://arxiv.org/pdf/1409.1556.pdf
- https://towardsdatascience.com/step-by-step-vgg16-implementation-in-keras-for-beginners-a833c686ae6c
- https://medium.com/@1297rohit/transfer-learning-from-scratch-using-keras-339834b153b9
- https://github.com/iamtrask/Grokking-Deep-Learning
- https://neurohive.io/en/popular-networks/vgg16/
- http://image-net.org/
- https://github.com/fchollet/deep-learning-models
- https://towardsdatascience.com/vgg-neural-networks-the-next-step-after-alexnet-3f91fa9ffe2c
- Libraries: Numpy, Keras, Scipy, Matplotlib

Topic 3: Find variance of a list in python

May 13, 2020
Calculated variance using 3 methods in python. 1 mean -> square differences -> variance
2. Statistics module 3. Numpy module

Sources:

- https://docs.python.org/3/library/statistics.html
- https://www.geeksforgeeks.org/python-variance-of-list/
- https://docs.scipy.org/doc/numpy/reference/generated/numpy.var.html
- Libraries: statistics, numpy

Topic 4: Python nmaxmin module

May 13, 2020
Implemented nmaxmin module and used both functions of the module in python

Sources:

- https://github.com/amrs-tech/nmaxmin
- https://pypi.org/project/nmaxmin/
- https://www.geeksforgeeks.org/python-nmaxmin-module/
- Libraries: nmaxmin

Topic 5: Pair and Triplet iteration in Python List

May 15, 2020
Used list comprehension and zip() function to create iterables of 2 and 3 consecutive elements of a list in python

Sources:

- https://www.geeksforgeeks.org/python-triplet-iteration-in-list/
- https://www.geeksforgeeks.org/python-pair-iteration-in-list/
- Libraries: None

Topic 6: How to access elements in a pandas series

May 16, 2020
Used .loc, .iloc, .at, .iat attributes of pandas series individually to access elements in a pandas series.

Sources:

- https://pandas.pydata.org/pandas-docs/stable/reference/series.html
- Libraries: Pandas

Topic 7: Identifying product bundles from sales data using python machine learning

May 18, 2020
Provided market basket analysis of frequent itemset using apriori algorithm

Sources:

- https://towardsdatascience.com/market-basket-analysis-978ac064d8c6
- https://woocommerce.com/products/product-bundles/
- Libraries: apyori, pandas

Topic 8: Keras Conv2D with examples in Python

May 18, 2020
Provided in-depth information about Conv2D class of keras and its parameters used in constructing a CNN architecture.

Sources:

- https://keras.io/api/applications/vgg/#vgg16-function
- https://keras.io/api/layers/convolution_layers/
- Libraries: Keras, Tensorflow

Topic 9: Iterative method to check if two trees are mirror of each other in Python

May 20, 2020
Implemented inorder and reverse inorder traversal of two trees to check if they are mirror of each other

Sources:

- https://www.geeksforgeeks.org/iterative-method-check-two-trees-mirror/

Topic 10: Building bot for playing google chrome dinosaur game

May 21, 2020
Built a bot to play the offline google chrome dinosaur game using image processing

Sources:

- https://www.geeksforgeeks.org/google-chrome-dino-bot-using-image-recognition-python/
- Jspaint.app
- https://www.youtube.com/watch?v=bf_UOFFaHiY
- Libraries: PIL, pyscreenshot, pyautogui, time, numpy

Topic 11: Reading blob object in python using wand library

June 3, 2020
Wrote about opening and reading a binary large object(blob) image using wand library.

Sources:

- http://docs.wand-py.org/en/0.4.1/guide/read.html#read-a-blob

Topic 12: sklearn.metrics.mean_absolute_error

June 9, 2020
Explained and implemented Mean Absolute Error for two observation sets.

Sources:

- https://scikit-learn.org/stable/modules/model_evaluation.html#mean-absolute-error
- https://en.wikipedia.org/wiki/Mean_absolute_error

Topic 13: Ball catcher game in Python

June 15, 2020
Developed a ball catcher game using Q-learning algorithm.

Sources:

- https://www.youtube.com/watch?v=o5GiQkCIbAY
- https://www.pygame.org/docs/ref/draw.html
- https://en.wikipedia.org/wiki/Q-learning
- Libraries: NumPy, Pygame, random, sys

Topic 14: Python program to implement Linear Exponentiation

June 17, 2020
Applied linear exponentiation formula in Python on linear and nonlinear function along with the article.

Sources:

- https://en.wikipedia.org/wiki/Extrapolation
- https://numpy.org/devdocs/reference/generated/numpy.linspace.html
- https://stackoverflow.com/questions/2745329/how-to-make-scipy-interpolate-give-an-extrapolated-result-beyond-the-input-range
- Libraries: NumPy, random

Topic 15: numpy.extract() in Python

June 22, 2020
Explained the usage of numpy.extract() function with example

Sources:

- https://numpy.org/doc/stable/reference/generated/numpy.extract.html
- https://numpy.org/install/