🛑 Task 01 ✅

Topics: Starting with Git, Branching & Merging in Git

Resource: https://drive.google.com/file/d/1HPvzEhvZhjOi52XcX7BpsZAx6-AkdWWa/view?usp=share\_link

From the provided source cover and practise the topics/content before Remote Repositories in Content Outline.

Directions: 1). Please take screenshots of the practice you will do from the given topics and I will submit a submission form tomorrow where you'll have to submit those with your name.

2). It can be a short quiz as well from based on MCQs from the given topics.

For now, just start learning. Good luck!

🛑 Task 02 ✅

Topics: Remote Repositories in Git

Resource: https://drive.google.com/file/d/1HPvzEhvZhjOi52XcX7BpsZAx6-AkdWWa/view?usp=share\_link

After learning about Remote Repos do the following:

1). Create your GitHub account if don't have any yet.

2). Create a repository named "Deep-Learning-BWF"

3). Push your screenshots of work or word/pdf files you made of practice work to the repo.

4). Submit your task response in the form with your GitHub Repository link at: https://forms.gle/LyUcHyX9ckK8439T7

⚠️ Deadline: 09:00 PM (16 March 2023)

Make your repository with this convention:

"Deep-Learning-BWF-Your name"

🔴 Task 03 ✅

Topics: Kicking Off with Python (Syntax, Variables, Data types, Code Execution)

Resources: https://drive.google.com/file/d/12HEIuGU0NRgJutUQkMUhGKo-Nr\_YWYdq/view?usp=share\_link

Directions: Learn about the specified topics mentioned above and then there are small snippet boxes after each topic in the resource that are usually the exercises on what you learnt. You are going to perform those exercises and make a folder or file with the task name and push it to your GitHub repo which you just defined in the last task.

🔴 Task 04 ✅

Topics: Lists Introduction (Changing, Adding, Removing, Organizing, Indexing in Lists), Looping in Python, Looping Over Lists, Avoiding Indentation Errors, Introducing Tuples, List vs Tuple, Styling Your Code

Resources: https://drive.google.com/file/d/12HEIuGU0NRgJutUQkMUhGKo-Nr\_YWYdq/view?usp=share\_link

Use the same learning directions from Task - 03, perform exercises available after each topic.

⚠ Deadline: Submit Task 03 and Task 04 on your GitHub Repository by Sunday evening 8:00 PM. You have enough time to spend on these topics, good luck y'all.

🔴 Task 05 ✅

Topics: Enumerate() function, Timing Your Code, User Inputs, Conditionals, Introducing Set, Union, Intersection, Difference, Symmetric Difference, Making Data Unique with Sets

Resource: https://drive.google.com/file/d/12HEIuGU0NRgJutUQkMUhGKo-Nr\_YWYdq/view?usp=share\_link

Submission date will be communicated later, just focus on the topics for now, while I'm checking the submissions of the first 4 tasks.

For task 5, the topic Timing your code is for your self-exploration. You have to search it out of the resource, and then check the execution time of your code in different ways of code writing style. %timeit% helps you on an Ipython shell.

For example: Creating a list like

A = [ ]

A = list( )

Both have different time to complete, so we consider these small things that will grow exponentially when we move to bigger projects.

🔴 Task 06 ✅

Topics: Dictionaries in Python, Keys, Values, Dictionary Methods, Adding, Removing, Changing items

Resource: https://drive.google.com/file/d/12HEIuGU0NRgJutUQkMUhGKo-Nr\_YWYdq/view?usp=share\_link

After learning specified topics, complete all exercises given in the resource and upload the result on Github.

⚠ Please do not make any new branch while Pushing, just push it to main/master branch.

🔴 Task 07 ✅

Topics: Functions in Python, Docstrings, Definition, Calling, Passing Arguments to Functions, Returning Values, Arbitrary Number of Arguments, Explore "Don't Repeat Yourself"

Resource: https://drive.google.com/file/d/12HEIuGU0NRgJutUQkMUhGKo-Nr\_YWYdq/view?usp=share\_link

Enjoy the holiday, I've sent you the task just in the morning so you can spend your dedicated time on Pakistan Day.

🔴 Task 08 ✅

Topics: Classes in Python, Inheritance in Classes

Resource: https://drive.google.com/file/d/12HEIuGU0NRgJutUQkMUhGKo-Nr\_YWYdq/view?usp=share\_link

🔴 Task 09 ✅

Topics: File Reading & Writing, Try, Except & Finally

Resource: https://drive.google.com/file/d/12HEIuGU0NRgJutUQkMUhGKo-Nr\_YWYdq/view?usp=share\_link

Last topic of the week.

🔴 Task 10 ✅

Topics: Introduction to Numpy, Numpy Arrays

Resource: https://drive.google.com/file/d/1ILp88f3u\_KgJ\_nlhTSsAVGdmZlICGhhd/view?usp=share\_link

Directions: Learn about Numpy arrays and try to make them with single and multi dimensions, perform simple arithmetic operations using two multidimensional arrays. Submit these practised tasks on GitHub.

🔴 Task 11 ✅

Topics: Linear Algebra with Numpy, Statistical Functions with Numpy

Resource: https://drive.google.com/file/d/1ILp88f3u\_KgJ\_nlhTSsAVGdmZlICGhhd/view?usp=share\_link

Directions: Try to explore basic Linear Algebra and Stats things such as mean, media mode, quantiles, rank, probability distribution etc. and more. Implement them using Numpy.

Respective topics may not be completely available in the given resource, you can explore.

🔴 Task 12 ✅

Topics: Broadcasting in Numpy Array

Resource: https://drive.google.com/file/d/1ILp88f3u\_KgJ\_nlhTSsAVGdmZlICGhhd/view?usp=share\_link

Directions: The Broadcasting concepts are available in Numpy Appendix A: Advanced Numpy Section of the resource.

🔴 Task 13 ✅

Topics: Starting with Pandas, Series and DataFrame

Resource: https://drive.google.com/file/d/1ILp88f3u\_KgJ\_nlhTSsAVGdmZlICGhhd/view?usp=share\_link

🔴 Task 14 ✅

Topics: Loading Data with Pandas, read\_csv(), read\_json(), read\_excel(), read\_sql()

Resource: https://drive.google.com/file/d/1ILp88f3u\_KgJ\_nlhTSsAVGdmZlICGhhd/view?usp=share\_link

Directions: Try to experiment with each of the functions mentioned above by loading relevant data from a CSV, JSON, Excel, and a SQL Database.

🔴 Task 15 ✅

Topics: Handling Missing Data, Filling and Replacing Values, Removing Duplicates, Detecting and Removing Outliers

Resource: https://drive.google.com/file/d/1ILp88f3u\_KgJ\_nlhTSsAVGdmZlICGhhd/view?usp=share\_link

🔴 Task 16 ✅

Topics: Combining and Merging Datasets, Reshaping Data

Resource: https://drive.google.com/file/d/1ILp88f3u\_KgJ\_nlhTSsAVGdmZlICGhhd/view?usp=share\_link

🔴🔴 MINI **PROJECT** 🔴🔴 ✅

Call an ambulance, but not for me.

I'm giving a short project that will help you understand your data more precisely. You will be making the data useful through pandas operations.

I'll share the data file, and you're gonna upload the small project by Sunday night.

After that, we'll move to Deep Learning immediately.

🔴 Task 17 ✅

Topics: KNN Classifier Using Scikit-Learn

Resource: https://scikit-learn.org/stable/modules/generated/sklearn.neighbors.KNeighborsClassifier.html

Try to learn it, and take sample data to perform KNN on that.

🔴 Task 18 ✅

Topics: Naïve Bayes Implementation, Decision Tree Implementation

Resources: https://scikit-learn.org/stable/modules/naive\_bayes.html

https://scikit-learn.org/stable/modules/tree.html

🔴 Task 19 ✅

Topics: Introduction to Deep Learning, Building Block of Deep Learning, A look on Neural Network, Tensor Operations

Resource: https://drive.google.com/file/d/1i9dPxM\_1M4HYN5bYxFcuklC1vM0GrOCq/view?usp=share\_link

🔴 Task 20 ✅

Topics: Introduction to Keras, Example Projects on Classification and Regression

Resource: https://drive.google.com/file/d/1i9dPxM\_1M4HYN5bYxFcuklC1vM0GrOCq/view?usp=share\_link

There are sample projects with each part/line explanation for your better understanding are provided in the resource. Try to implement them for practice and learn how things are working.

🔴 Task 21 ✅

Topics: "Baat Cheet, discussion, and reporting"

How: Virtual meeting (Google Meets)

When: Wednesday, 26th April 🗓 9:00 PM Pakistan Time 🕒

This will be marked as red and green according to your presence in the meeting, hence mandatory for everyone to join.

🔴 Task 22 ✅

Topics: Supervised, Unsupervised, Self-Supervised, and Reinforcement Learning

Resource: https://drive.google.com/file/d/1i9dPxM\_1M4HYN5bYxFcuklC1vM0GrOCq/view?usp=share\_link

Make cheat sheet

🔴 Task 23 ✅

Topics: Dataset Loading and Understanding Training, Validation and Test Sets

Resource:https://drive.google.com/file/d/1i9dPxM\_1M4HYN5bYxFcuklC1vM0GrOCq/view?usp=share\_link

This is a very important concept theoretically and it's implementation is also present in detail in the resource. Splitting data is a good proportion of subsets is critical

🔴 Task 24 ✅

Topics: Data Preprocessing and Feature Engineering

Resource: <https://drive.google.com/file/d/1i9dPxM_1M4HYN5bYxFcuklC1vM0GrOCq/view?usp=share_link>

Write preprocessing from sklearn code

Feature engineering techniques and data processing techniques from book

🔴 Task 25 ✅

Topics: Underfitting, Overfitting, and Regularization

Resource: https://drive.google.com/file/d/1i9dPxM\_1M4HYN5bYxFcuklC1vM0GrOCq/view?usp=share\_link

🔴 Task 26 ✅

Topics: Understanding Optimizers, Last-layer Activations, Loss Functions and Evaluation Metrics

Resource: https://drive.google.com/file/d/1i9dPxM\_1M4HYN5bYxFcuklC1vM0GrOCq/view?usp=share\_link

🔴 Task 27 ✅

Topics: Stacking Up Layers in a Neural Network (ANN)

Resources: https://drive.google.com/file/d/1i9dPxM\_1M4HYN5bYxFcuklC1vM0GrOCq/view?usp=share\_link

🔴 Task 28 ✅

Topics: Convolutional Neural Networks (1D & 2D) & Pooling, Build a Convnet from Scratch using TensorFlow

Resource: https://drive.google.com/file/d/1i9dPxM\_1M4HYN5bYxFcuklC1vM0GrOCq/view?usp=share\_link

🔴 Task 29 ✅

Topics: Using a Pre-Trained ConvNet Architecture Performing Feature Extraction and Fine Tuning

Resource: https://drive.google.com/file/d/1i9dPxM\_1M4HYN5bYxFcuklC1vM0GrOCq/view?usp=share\_link

🔴 Task 30 ✅

Topics: Recurrent Neural Network, LSTM, GRU

Resource: https://drive.google.com/file/d/1i9dPxM\_1M4HYN5bYxFcuklC1vM0GrOCq/view?usp=share\_link

🔴 Task 31✅

Topics: Applying One-Hot Encoding and Word Embeddings

Resource: https://drive.google.com/file/d/1i9dPxM\_1M4HYN5bYxFcuklC1vM0GrOCq/view?usp=share\_link

🔴 Task 32 ✅

Topics: Building Hybrid Networks using CNN and LSTM

Resource: https://drive.google.com/file/d/1i9dPxM\_1M4HYN5bYxFcuklC1vM0GrOCq/view?usp=share\_link