

Weekly Report: Nusrat Jahan Nuha-Alpha AI

Week-02 (April 28 - May 2)

1. Course Documentation

Machine Learning Specialization: Advanced Learning Algorithm

- Completed the first two weeks of content from the *Advanced Learning Algorithm* course.
- Reviewed the layers of a neural network.
- Learned forward propagation in depth with hands-on coding examples.
- Studied efficient implementations of neural networks.
- Refined the basics of matrix multiplication through coding exercises.
- Learned how to implement a neural network model using TensorFlow.

Separate functions are used to design the network architecture and compile the model before training. Also explored how these functions work internally.

- Reinforced understanding of activation functions such as ReLU and Sigmoid, along with different use cases for both the functions.
- Learned about the integration of softmax regression with neural networks for multiclass classification.

2. Session on Object-Oriented Programming (OOP)

- Attended a session on OOP and Data Structures & Algorithms (DSA).

Key Takeaways

- Reviewed the basic concepts of OOP in Python, including its purpose, structure, and common conventions.
- Studied constructors for python classes, their purposes and types.
- Learned about methods and their types in OOP.
- Understood the importance of the `self` parameter; which stores the information for individual instances.
- Reviewed the four pillars of OOP:
 - Abstraction - Hides the complexity of the system and makes implementation easier.
 - Encapsulation - Establishes access control across the classes and instances.
 - Inheritance - Ensures modularity and reusability of code.
 - Polymorphism - Enables reusability of code across objects of different classes.
- Practiced OOP concepts with hands-on coding examples along with preparing documentation.

- Explored decorators and dunder methods, used them in code examples to visualize their purpose.

3. Session on Git and GitHub

- Attended a session on version control system; reviewing why we need Git and Github for our work.

Key Takeaways

- Learned about basic Git operations:
 - git status, git add, git merge, git fetch, git pull - Their use cases and importance in the version controlled environment.
 - gitignore file - Helps Git ignore changes to the specified files, preventing them from being staged or committed.
 - Local and remote repositories - How they differ from each other and purpose in the version control system.
 - git stash, git stash pop - How these commands help save work from getting lost and reduce complications when switching branches.

- Reviewed the concepts of git rebase and GitHub Actions as instructed.
The first one is used for streamlining commit history, and the latter is useful for automating workflows in CI/CD pipelines.

4. Session on Agile Methodology

- Attended a session on Agile methods. Learned about other used methods as well.

Key Takeaways

- Learned about the Scrum and Kanban frameworks, and Cloudly mostly uses Scrum.
- Learned about the key roles involved in scrum framework (e.g., Scrum Master, Product Owner, Development Team).
- Learned about Scrum events (e.g., Sprint Planning, Daily Stand-ups, Sprint Review) and their purposes.
- Gained knowledge about Scrum deliverables (e.g., Product Backlog, Sprint Backlog, Increment)
- Learned about tools used to implement scrum method. (e.g., Jira, Trello). Jira is preferred over Trello because of its versatility and more advanced functionality. Cloudly uses Jira for their everyday tasks.