Weekly Report: Rafid Ul Karim - Alpha AI

Week 5 (April 21 - April 25)

1. Maveric MRO Library Refactoring & Testing

a. Progress & Learnings:

- Contributed to the Maveric project by extending the *MRO_Library* with:
    - Detailed docstrings following consistent formatting and semantic clarity.
    - Complete Python type hinting to improve code readability and robustness.
- Developed and validated unit tests for the majority of core functions in the library.
- The process of enhancing and testing the library provided in-depth exposure to the MRO (Mobility Robustness Optimization) pipeline.

b. Key Concepts Covered:

- Familiarization with MRO subcomponents:
    - *UE Data structures, Hysteresis, Time to Trigger (TTT), and Neighbor cell handling.*
- Importance of code documentation and type annotations for maintainability in collaborative ML/telecom projects.
- Testing principles including mocking dependencies and asserting system behavior.

c. Deliverables/Resources::

- Refactored *MRO_Library* codebase with updated docstrings and type hints.
- Completed unit tests, now integrated with the existing Maveric testing framework.
- Generated new data assets for test coverage and simulations involving mobility scenarios.

2. DRMS (Digital Resource Management System) – Project Kickoff

a. Progress & Learnings:

- Initiated development of the DRMS project – a cloud-native application leveraging AWS services (DynamoDB and S3).
- Designed and finalized the Software Requirements Specification (SRS) for the project.

b. Key Concepts Covered:

- Use of DynamoDB for hierarchical data modeling involving admins and nested employee entries.
- Introduction to AWS S3 for object storage workflows tied to image/resource handling.
- RESTless architecture considerations with direct AWS SDK usage to simplify interactions.

c. Deliverables/Resources:

- SRS document outlining project scope, architecture, and core functionality.
- Repository link: https://github.com/RafidUl-Karim/DRMS