Weekly Progress Report

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**Domain:** Data Science / Machine Learning  
**Date of Submission:** [Insert Date]  
**Week Ending:** 01

**I. Overview:**

This week, the focus was on gaining an understanding of the internship environment and the USC\_TIA framework. Initial steps were taken on two main projects: **Prediction of Agriculture Crop** and **Smart City Traffic Patterns**. Parallel efforts were made to enhance Python programming skills and apply them within the project context.

**II. Achievements:**

**1. USC\_TIA Familiarization:**

* Studied USC\_TIA documentation to understand its architecture and core functionalities.
* Successfully set up the working environment and executed initial modules.

**2. Project Contributions:**

**Project 1: Prediction of Agriculture Crop**

* Analyzed relevant datasets (e.g., rainfall, soil type, temperature).
* Cleaned and preprocessed the data using Pandas and NumPy.
* Started building exploratory visualizations using Seaborn and Matplotlib.

**Project 2: Smart City Traffic Patterns**

* Collected traffic datasets from open sources.
* Investigated potential machine learning models for traffic prediction.
* Drafted initial problem statement and project scope.

**3. Learning Python:**

* Practiced essential Python libraries: **Pandas**, **NumPy**, **Matplotlib**, **Seaborn**, **Scikit-learn**.
* Implemented basic ML models (Linear Regression, Decision Trees) in practice notebooks.

**III. Challenges:**

**1. USC\_TIA Integration:**

* Difficulty integrating USC\_TIA modules with data pipeline tools (e.g., Jupyter, Pandas).
* Currently debugging module import issues and setting up a stable development workflow.

**2. Python Project Complexity:**

* Faced difficulty in feature selection and target variable definition for the agriculture dataset.
* Complexity in determining relevant traffic features like peak hours, signal duration, and vehicle flow.

**IV. Learning Resources:**

**1. USC\_TIA Documentation:**

* Explored official documentation and examples.
* Joined one introductory webinar for system understanding.

**2. Python Learning Resources:**

* Enrolled in "Python for Data Science" by IBM on Coursera.
* Participated in Kaggle kernels and discussions for real-world application.
* Solved coding challenges on HackerRank (Python & ML).

**V. Next Week's Goals:**

**1. USC\_TIA Enhancement:**

* Resolve integration challenges and begin connecting it with project pipelines.
* Explore advanced functionalities like API endpoints and data visualization tools.

**2. Project Development:**

* **Agriculture Crop Prediction**: Begin model training and cross-validation with Logistic Regression and Random Forest.
* **Traffic Patterns**: Perform time-series analysis and start model prototyping for traffic flow predictions.
* Collaborate with mentor(s) for review and optimization strategies.

**VI. Additional Comments:**

The initial week provided clarity on the projects and scope. Productive collaboration with teammates and mentors has helped smooth onboarding. Excited to delve deeper into both projects and see tangible outcomes in the upcoming weeks.