**Weekly Progress Report**

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Domain:Machine Learning

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**Week Ending: 04**

**I. Overview:**

This week, the primary focus was on understanding about the basic machine learning concepts and contributing to various machine learning projects. Additionally, efforts were made to leverage learning resources for skill enhancement.

**II. Achievements:**

1. ML Terminologies Familiarization:

- Explored various ML documentation to grasp core functionalities.

- Successfully executed basic Classification and Regression tasks, showcasing initial proficiency.

**2. ML Project Contributions:**

**Name of the project:-**

- Quality Prediction in a Mining Process

-The target is to predict the % of Silica in the end of the process, which is the concentrate of iron ore and its impurity (which is the % of Silica)

- Engaged in effective collaboration with team members.

**3.Learning Classification and Regression:**

- Acquired proficiency in essential Python libraries, such as Scikit-Learn,Matplotlib,TensorFlow,Seaborn,NLTK .

- Applied Python skills to real-world problems within USC\_TIA context.

III. Challenges:

**1. USC\_TIA Integration:**

- Encountered challenges during USC\_TIA integration.

- Ongoing efforts to troubleshoot and ensure successful integration.

**2. Python Project Complexity:**

- Faced complexity in understanding deep learning concepts of the Python project.

- Seeking guidance to overcome challenges and enhance understanding.

**IV. Learning Resources:**

1. USC\_TIA Documentation:

- Utilized USC\_TIA official documentation for reference and troubleshooting.

- Attended relevant webinars and online tutorials to deepen understanding.

**2. Python Learning Resources:**

- Engaged with Udemy’s official python basic to advanced course to strengthen Python skills.

- Participated in Leetcode’s live hackathons for practical application.

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

**1. USC\_TIA Enhancement:**

- Address integration challenges and explore advanced USC\_TIA features.

- Collaborate with peers to contribute to USC\_TIA improvement discussions.

**2.ML Project Development:**

- Tackle more complex tasks within the Python integrated machine learning

projects to increase contribution.

- Seek feedback from mentors and peers for continuous improvement.

**VI. Additional Comments:**

Introduction to machine learning: Machine learning is a field of artificial intelligence that enables systems to learn and improve from experience without being explicitly programmed.

Types of machine learning systems: Machine learning systems can be categorized into three main types—supervised learning, unsupervised learning, and reinforcement learning—based on the nature of the training data and the learning process.

Supervised machine learning: In supervised learning, the algorithm is trained on a labeled dataset, where each input is paired with its corresponding output, enabling the model to make predictions or classifications on new, unseen data.

Regression: Regression is a type of supervised machine learning algorithm that predicts a continuous output variable based on input features, aiming to establish a mathematical relationship between them.