

CLOUD COMPUTING ASSIGNMENT

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CSE_28

Fine-Tune & Evaluate LLMs with Amazon SageMaker

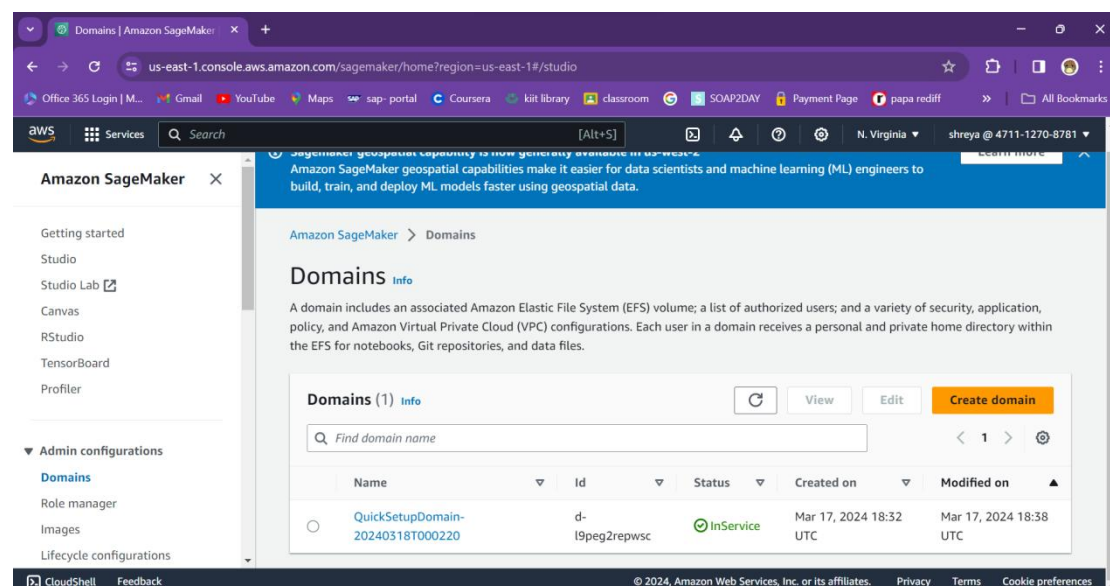
Introduction

Large Language Models (LLMs) have revolutionized the field of natural language processing (NLP) by demonstrating remarkable capabilities in tasks like text generation, translation, and question answering. However, their generic nature often requires fine-tuning for optimal performance on specific domains or tasks. This report explores the potential of Amazon SageMaker, a cloud-based machine learning platform, for fine-tuning and evaluating LLMs.

We will delve into the benefits of using SageMaker for LLM fine-tuning, including its integration with popular deep learning frameworks, ease of deployment, and scalability. We'll then showcase a practical example of fine-tuning an LLM on SageMaker for a specific task, demonstrating the process step-by-step. Finally, we'll discuss evaluation techniques for fine-tuned LLMs and how SageMaker can facilitate this process.

Working

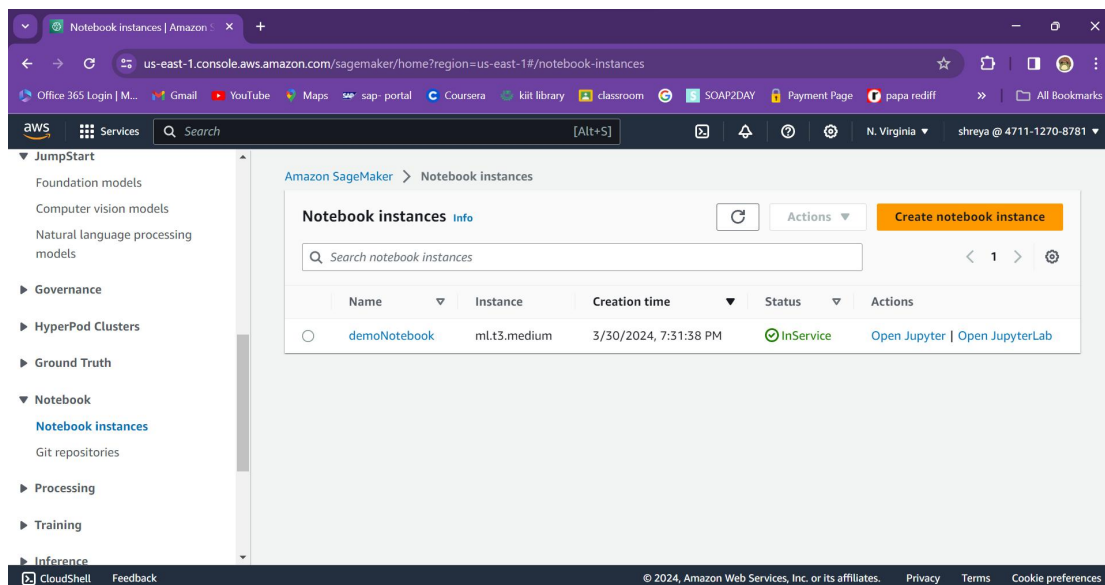
1. Creating SageMaker Domain:



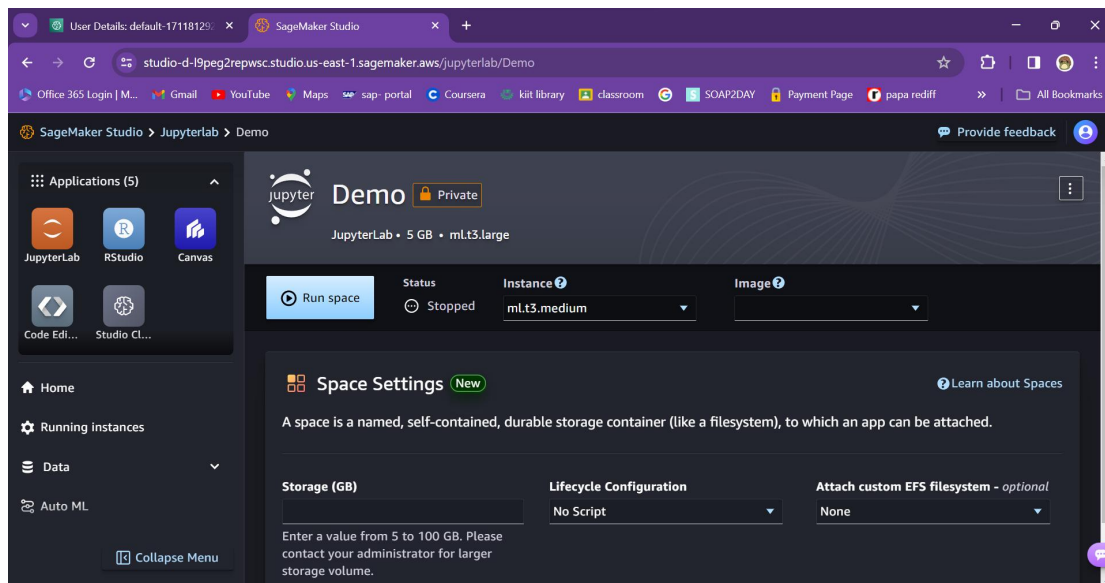
The screenshot displays the Amazon SageMaker Domains console. The left sidebar shows navigation options like 'Getting started', 'Studio', 'Studio Lab', 'Canvas', 'RStudio', 'TensorBoard', 'Profiler', 'Admin configurations', 'Domains', 'Role manager', 'Images', and 'Lifecycle configurations'. The main content area is titled 'Domains' and includes a description: 'A domain includes an associated Amazon Elastic File System (EFS) volume; a list of authorized users; and a variety of security, application, policy, and Amazon Virtual Private Cloud (VPC) configurations. Each user in a domain receives a personal and private home directory within the EFS for notebooks, Git repositories, and data files.' Below this, there is a table with one domain listed:

Name	Id	Status	Created on	Modified on
QuickSetupDomain-20240318T000220	d-l9peg2repwsc	InService	Mar 17, 2024 18:32 UTC	Mar 17, 2024 18:38 UTC

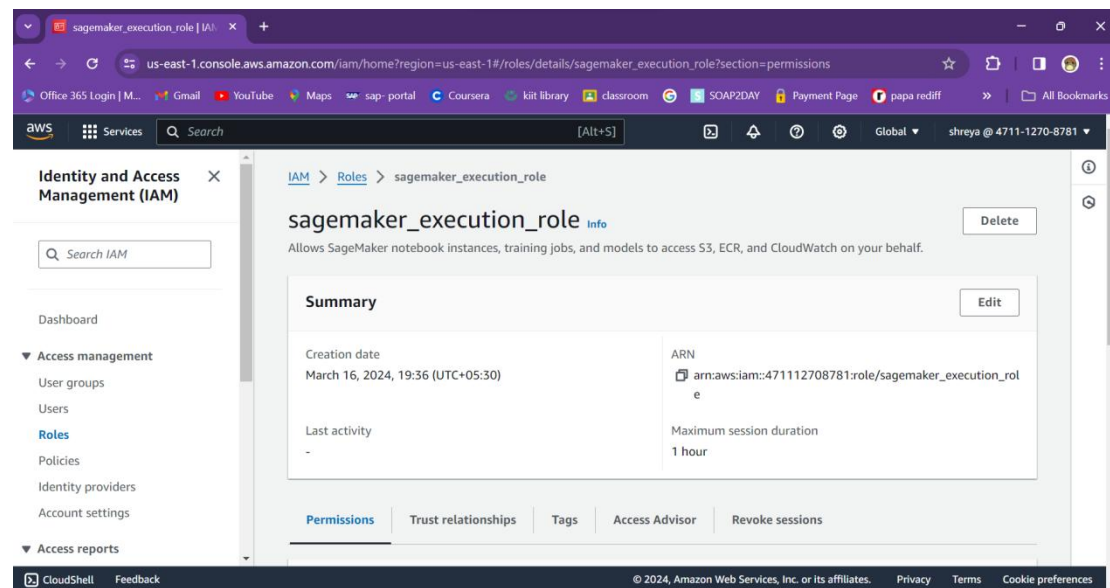
2. Creating Notebook Instance:



3. We deploy our model through the given code via SageMaker Studio's Jupyter Lab



4. We create a another User with SageMaker access to test/predict from the deployed model.



Conclusion

This report has highlighted the capabilities of Amazon SageMaker as a powerful platform for fine-tuning and evaluating LLMs. By leveraging SageMaker's infrastructure and tools, developers can streamline the LLM fine-tuning process, ensuring efficient development cycles and optimal model performance. The provided example demonstrated the practical application of SageMaker for fine-tuning, and the discussion on evaluation techniques emphasized the importance of rigorous model assessment. Moving forward, SageMaker can be expected to continue evolving with new functionalities and integration, further simplifying and accelerating LLM development for various NLP applications.