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Lab 03

ITAI 1378 Comp Vision-Artificial Intelligence

Professor: Anna Devarakonda

Reflection on GitHub and Jupyter Notebook Lab Session

GitHub Repository Link: https://github.com/AbdullahFaiza/jupyter-exploration

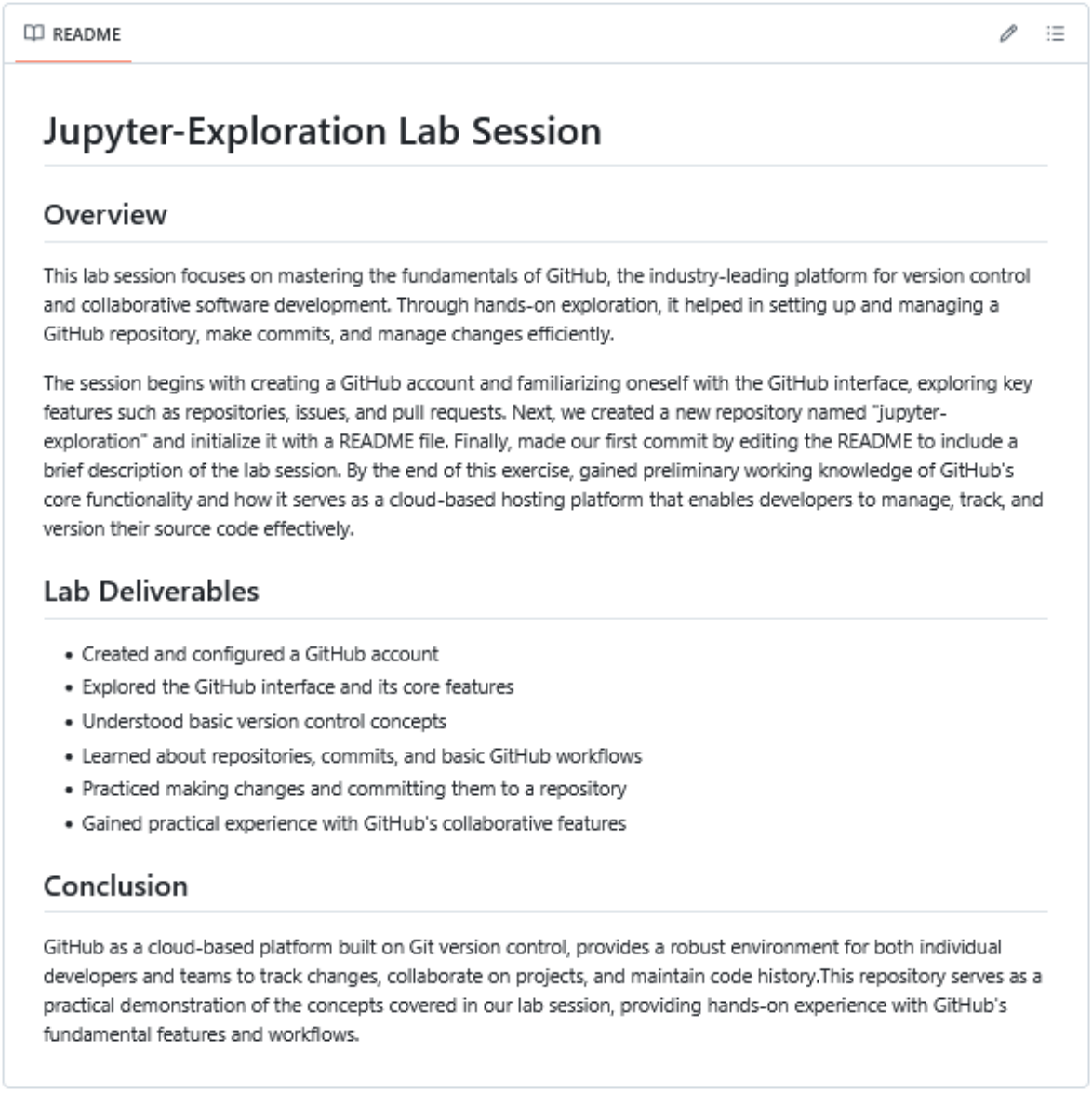
INTRODUCTION:

This journal documents my experience with a comprehensive lab session focused on two fundamental tools in modern software development: GitHub and Jupyter Notebooks. The session was structured to provide hands-on experience with version control systems and interactive computing environments. Through this hands-on experience, I gained foundational knowledge on managing code repositories and utilizing interactive notebooks for coding and documentation.

WHAT I DID:

GitHub Setup and Exploration

- Created a new GitHub account and familiarized myself with the platform's dashboard interface
- Explored core GitHub features including repositories, issues, and pull requests
- Successfully created a new repository named "jupyter-exploration"
- Initialized the repository with a README file and made my first commit with a detailed description of the lab session



README

Jupyter-Exploration Lab Session

Overview

This lab session focuses on mastering the fundamentals of GitHub, the industry-leading platform for version control and collaborative software development. Through hands-on exploration, it helped in setting up and managing a GitHub repository, make commits, and manage changes efficiently.

The session begins with creating a GitHub account and familiarizing oneself with the GitHub interface, exploring key features such as repositories, issues, and pull requests. Next, we created a new repository named "jupyter-exploration" and initialize it with a README file. Finally, made our first commit by editing the README to include a brief description of the lab session. By the end of this exercise, gained preliminary working knowledge of GitHub's core functionality and how it serves as a cloud-based hosting platform that enables developers to manage, track, and version their source code effectively.

Lab Deliverables

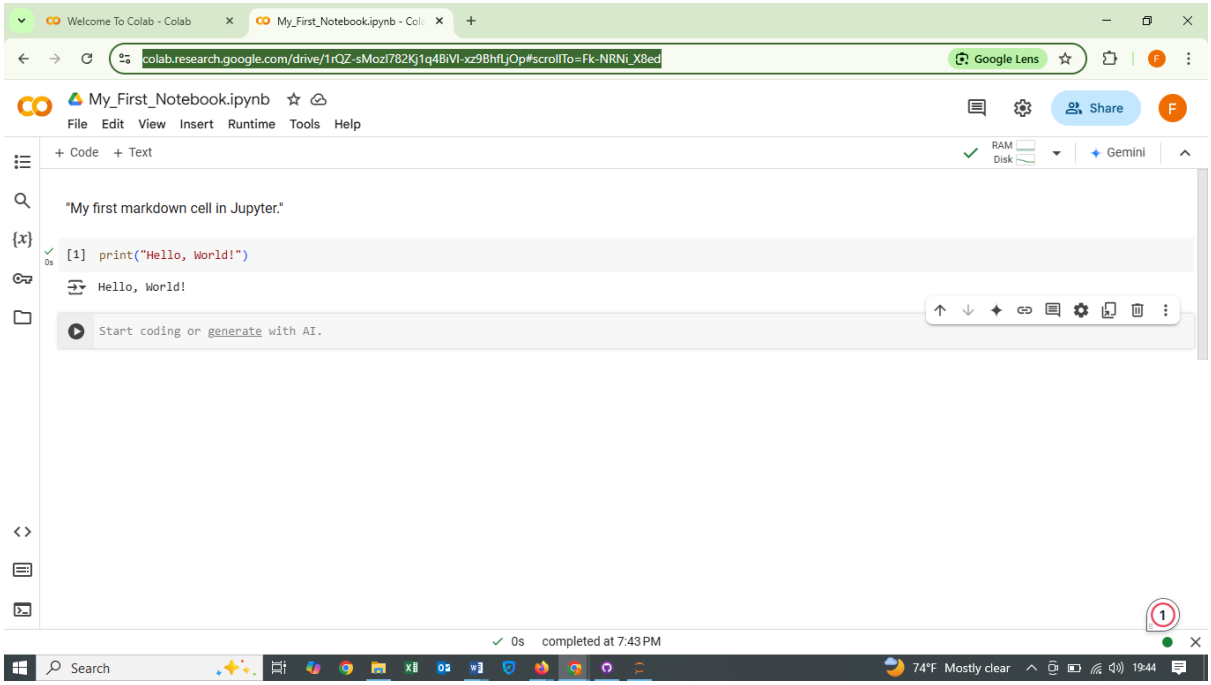
- Created and configured a GitHub account
- Explored the GitHub interface and its core features
- Understood basic version control concepts
- Learned about repositories, commits, and basic GitHub workflows
- Practiced making changes and committing them to a repository
- Gained practical experience with GitHub's collaborative features

Conclusion

GitHub as a cloud-based platform built on Git version control, provides a robust environment for both individual developers and teams to track changes, collaborate on projects, and maintain code history.This repository serves as a practical demonstration of the concepts covered in our lab session, providing hands-on experience with GitHub's fundamental features and workflows.

Jupyter Notebook Implementation

1. Explored multiple environments for Jupyter Notebook usage: I worked with Jupyter Notebooks in both online and offline environments. I explored **Google Colab** and **AWS SageMaker Studio Lab** for cloud-based notebook usage, and I also used a locally installed and configured **Jupyter Notebook** locally for comparison
2. Created my first Jupyter Notebook, added a Markdown cell with a text description, and inserted a code cell containing a simple Python program (print("Hello, World!")). I executed the cells to observe the outputs.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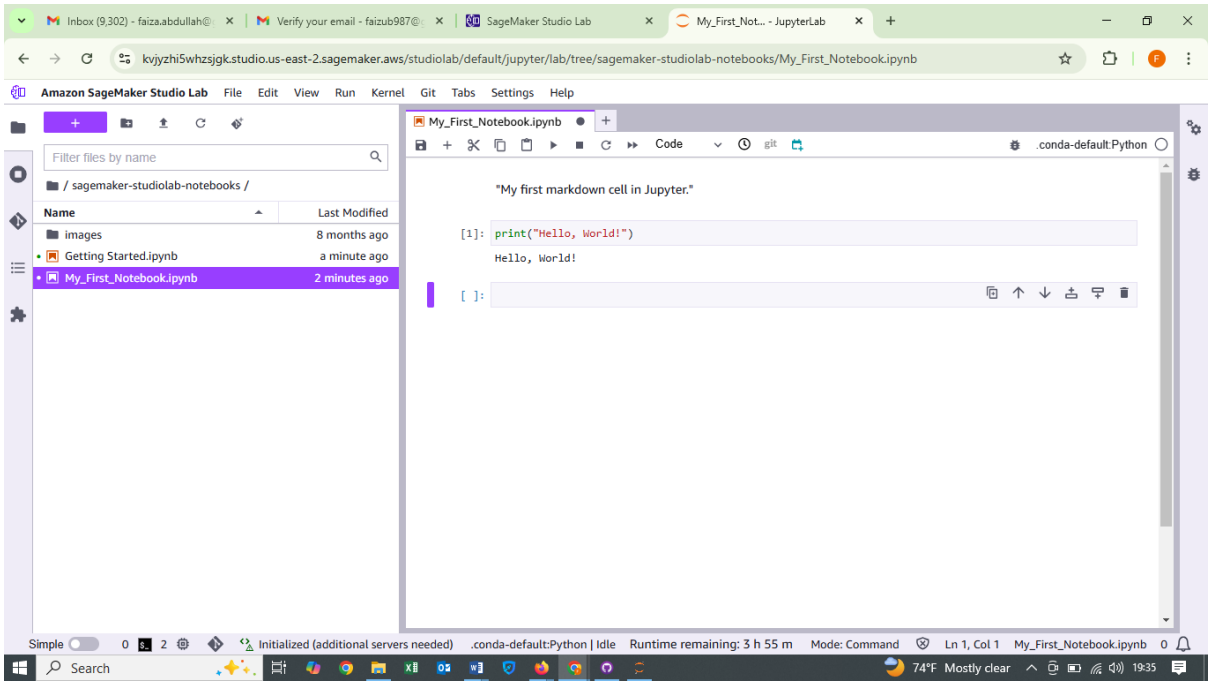
Inbox (9,302) - faiza.abdullah@
Verify your email - faizub987@
SageMaker Studio Lab
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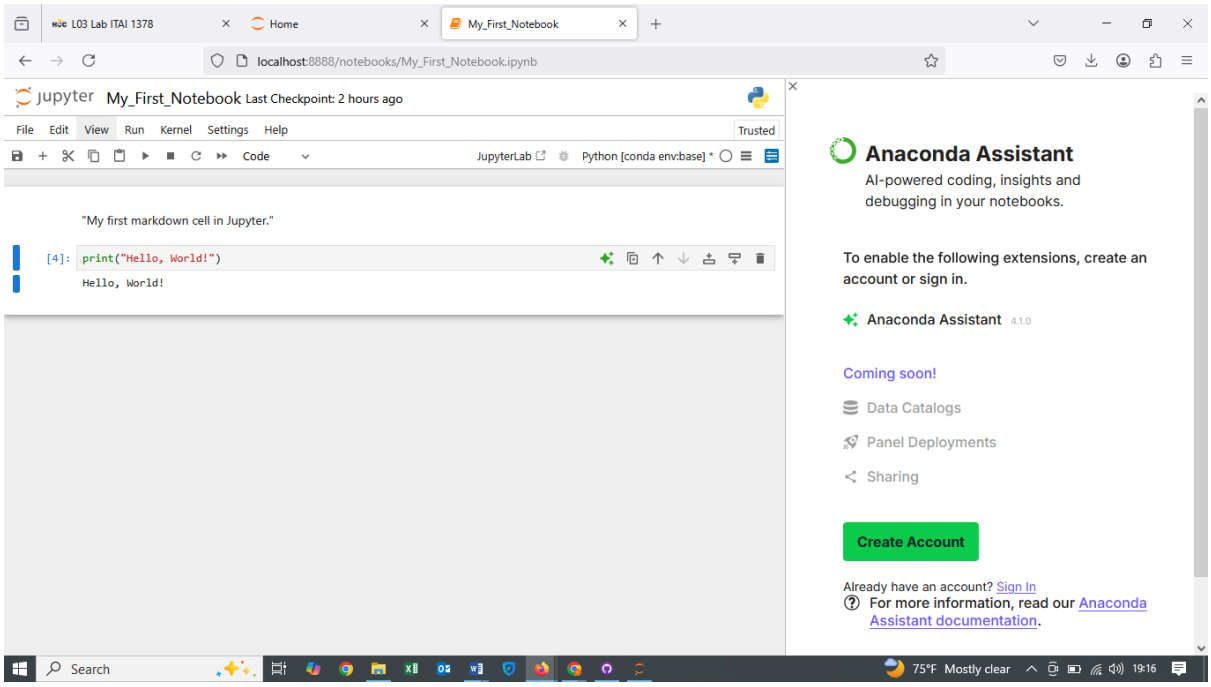
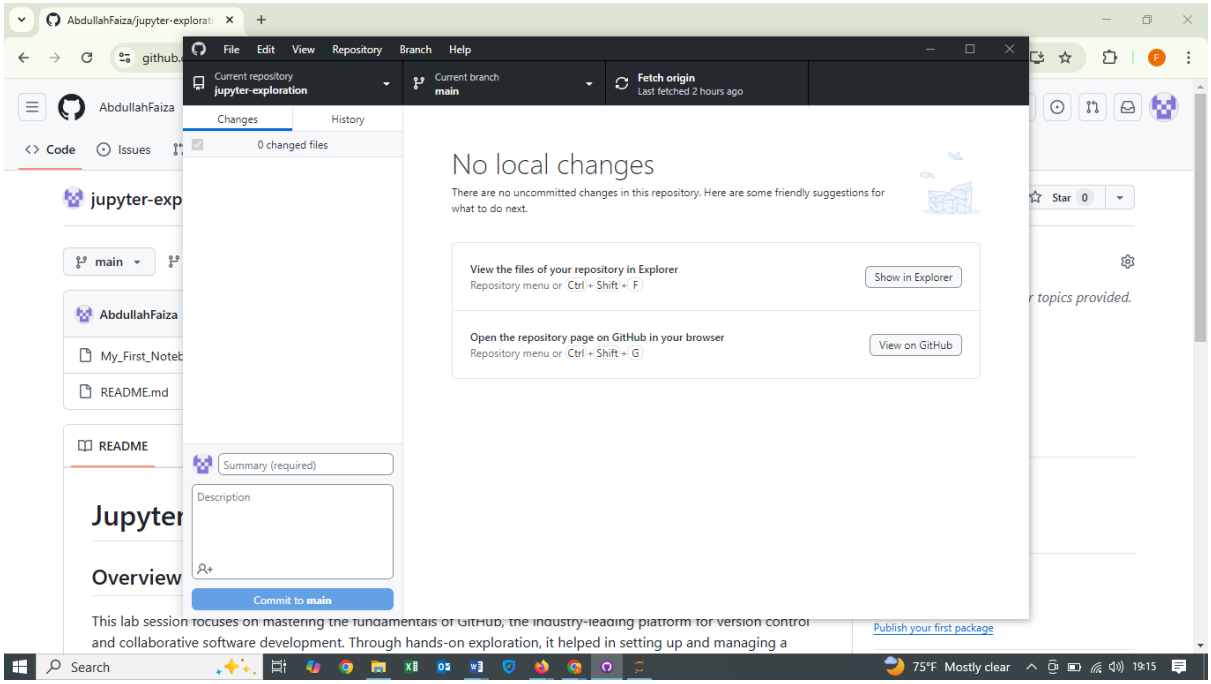
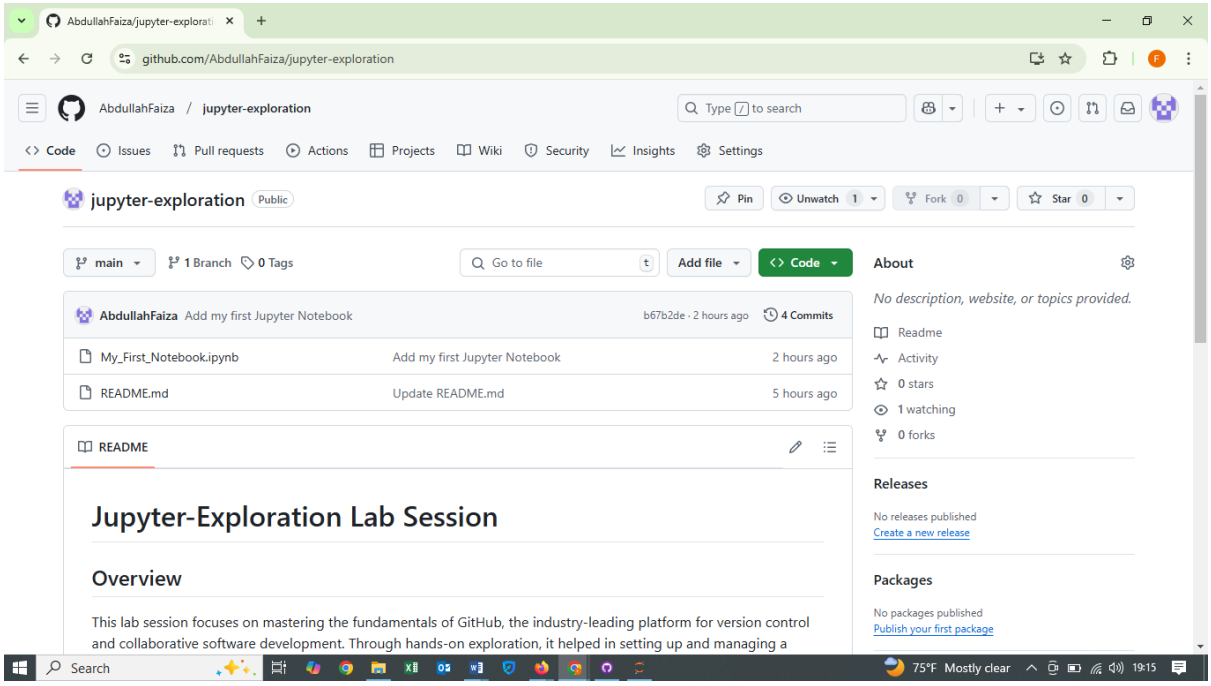


3. Implemented version control integration: I learned how to save and share Jupyter Notebooks. I downloaded my notebook as a .ipynb file and uploaded it to my GitHub repository using GitHub Desktop. This involved cloning the repository, adding the notebook file, committing the changes, and pushing them to the GitHub repository.





WHAT I LEARNED:

This lab session introduced me to version control principles using GitHub and interactive coding using Jupyter Notebooks. I learned how GitHub enables efficient collaboration and project management through repositories and commits. Understanding version control is essential for tracking code changes, preventing data loss, and working effectively in teams. Working with Jupyter Notebook provided hands-on experience with interactive computing. I gained insights into Markdown formatting for documentation and code execution in a structured manner. The ability to execute code snippets independently and visualize results instantly is particularly beneficial for data analysis and machine learning tasks.

Technical Challenges and Solutions

1. Environment Setup Challenges:
    - Initially faced decision paralysis between online and local setup
    - Resolved by testing multiple environments to understand their strengths
2. Version Control Learning Curve:
    - Successfully navigated initial complexity of Git concepts
    - Mastered basic workflow using GitHub Desktop's intuitive interface

Questions or Comments

Question: How to manage multiple versions of a Jupyter Notebook effectively within a GitHub repository.

Areas for Further Exploration

1. Advanced GitHub Features:
    - Interest in learning more about branching and merge conflicts
    - Curious about collaborative features for team projects
2. Jupyter Notebook Capabilities:
    - Would like to explore advanced markdown formatting
    - Interested in learning about notebook extensions and additional features

Feedback:

- The structured approach of the lab session made learning manageable
- Practical hands-on experience was invaluable for understanding concepts
- Having multiple options for Jupyter environments provided good flexibility

CONCLUSION:

This lab session was an excellent introduction to GitHub and Jupyter Notebooks, providing a solid foundation for future programming and data analysis work. Understanding version control and interactive computing are crucial skills that will be valuable in academic and professional settings. I am excited to continue exploring these tools and integrating them into my workflow for efficient and organized coding practices.

CITATIONS:

https://colab.research.google.com/drive/1rQZ-sMozl782Kj1q4BiVl-xz9BhfLjOp#scrollTo=Fk-NRNi_X8ed

https://studiolab.sagemaker.aws/users/FaizaAbdullah

https://kvjyzhi5whzsjgk.studio.us-east-2.sagemaker.aws/studiolab/default/jupyter/lab/tree/sagemaker-studiolab-notebooks/My_First_Notebook.ipynb

http://localhost:8888/notebooks/My_First_Notebook.ipynb

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https://eagleonline.hccs.edu/courses/278598/files/70586630?module_item_id=18927437

https://www.youtube.com/watch?v=yjjE-MJD5TI

https://www.youtube.com/watch?v=ktN5tDfQ_g8

https://www.youtube.com/watch?v=Oaj3RBIoGFc

https://github.com/AbdullahFaiza/jupyter-exploration