IMPROVED SOURCE OF DRINKING WATER

Presented by :

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OUTLINE

- Problem Statement
- Proposed Solution
- System Development Approach
- Algorithm & Deployment
- Result
- Conclusion
- Future Scope
- References

PROBLEM STATEMENT

Access to safe and improved sources of drinking water remains a serious concern in many parts of India, particularly in rural and socio-economically disadvantaged regions. Despite national and global initiatives like the Sustainable Development Goals (SDGs), significant disparities exist in water availability, quality, and accessibility across different states and communities. The problem is exacerbated by migration trends, inadequate infrastructure, and a lack of data-driven policy interventions. Understanding these disparities and identifying patterns is essential to drive actionable and inclusive solutions.

PROPOSED SOLUTION

- This project proposes a comprehensive data-driven analysis of the **78th Round of the Multiple Indicator Survey (MIS)** to:
- Assess the percentage of population with access to improved drinking water sources across India.
- Correlate this data with other crucial indicators such as **clean cooking fuel usage** and **internal migration**.
- Identify regional and demographic disparities using data visualization and statistical tools.
- Provide insights for targeted policy recommendations to bridge water access inequalities and support SDG progress.

SYSTEM DEVELOPMENT APPROACH

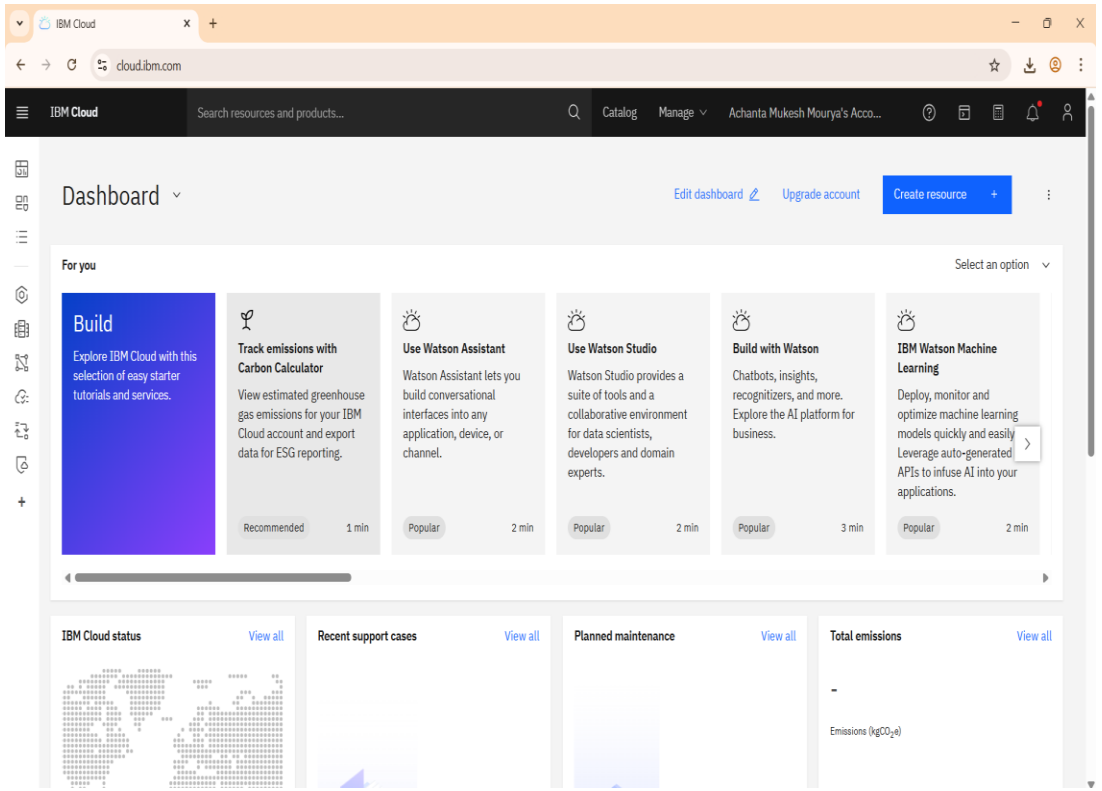
- Technologies & Tools Used:
- IBM Cloud Pak for Data – For data ingestion, preparation, and visualization
- IBM Watson Studio – For building and training data analysis models
- IBM Cloud Object Storage – To securely store MIS survey data
- Python (via Jupyter Notebooks on Watson Studio) – For analysis and visualization
- Approach:
- Data Collection & Storage
  - Upload and manage 78th Round MIS datasets on IBM Cloud Object Storage.
- Data Preparation
  - Clean, preprocess, and explore data using IBM Watson Studio (Python notebooks).
- Data Analysis & Visualization
  - Generate charts (bar graphs, heatmaps, pie charts) showing disparities in water access.
- Correlation Analysis
  - Analyze patterns between water access, clean fuel usage, and migration trends using statistical functions in Watson Studio.
- Optional Deployment
  - Use IBM Cloud Dashboards or Watson Machine Learning for interactive data insights and reports (if forecasting is added).

ALGORITHM & DEPLOYMENT

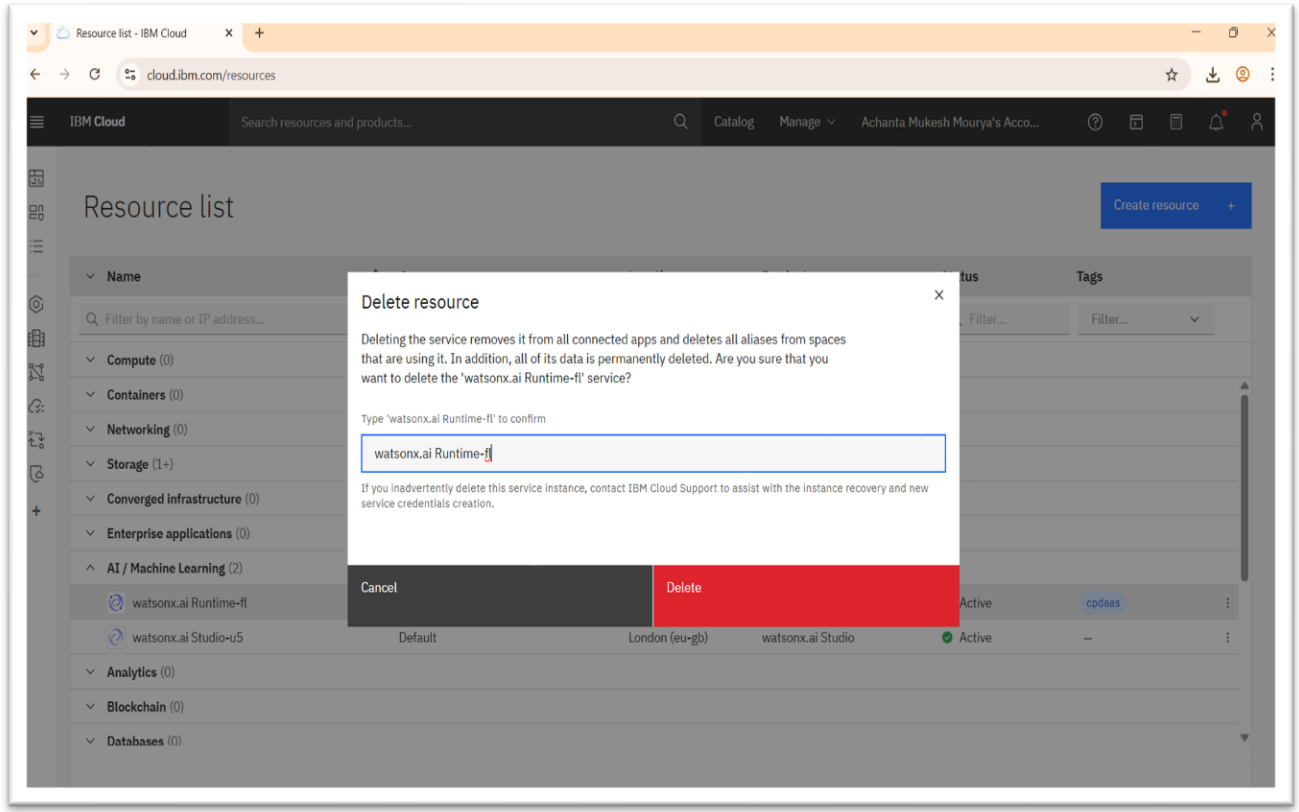
- **Data Processing & Analysis Workflow:**
- **Step 1:** Import and preprocess MIS survey data.
- **Step 2:** Filter data to focus on water access, fuel usage, and migration indicators.
- **Step 3:** Apply grouping and aggregation by region, income group, or rural/urban split.
- **Step 4:** Visualize disparities using:
  - Bar graphs
  - Heatmaps
  - Pie charts
- **Step 5:** Deploy insights through an interactive dashboard or summary report for policymakers (optional, if time permits).

RESULT

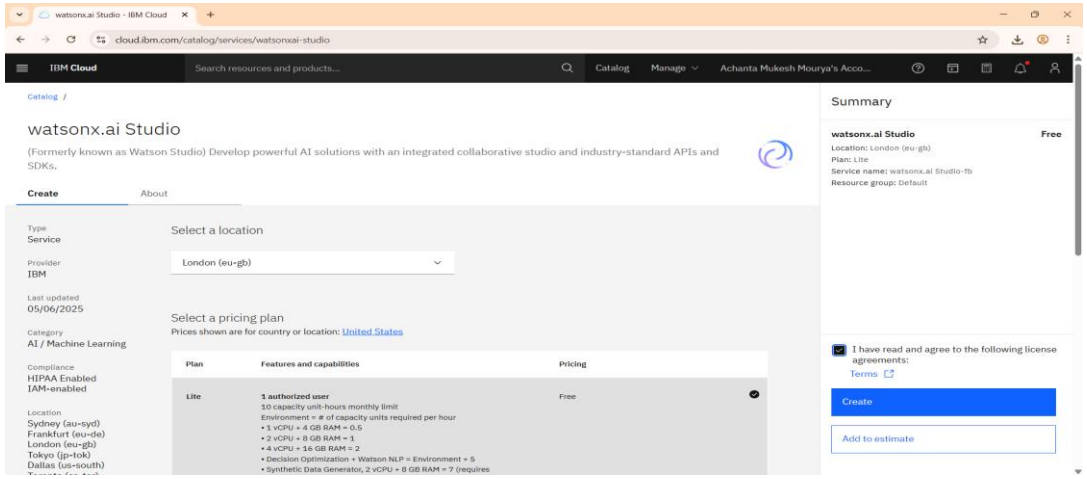
Step 1 : Login to the **IBM** Cloud Account



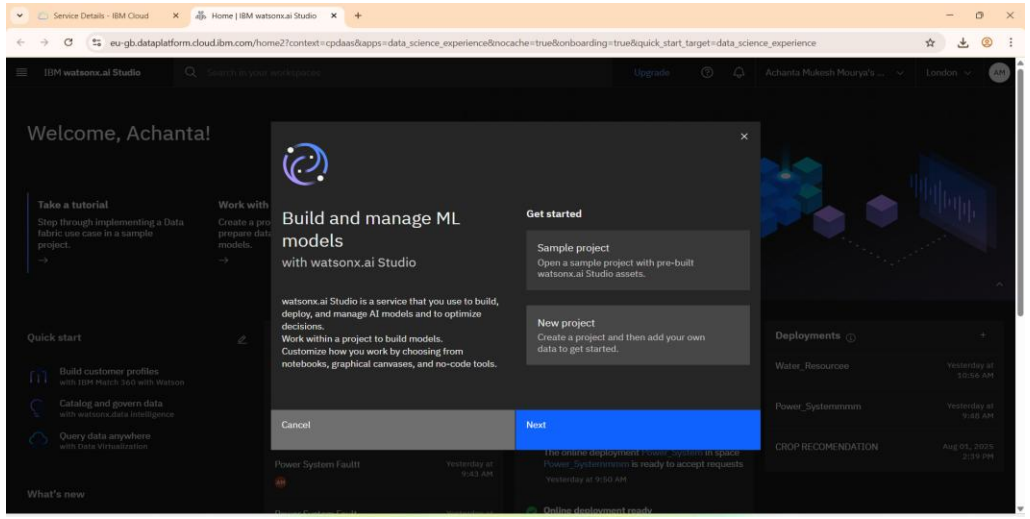
Step 2 : Go to **Navigation Menu** and click on **Resource list** and than delete all the resources list



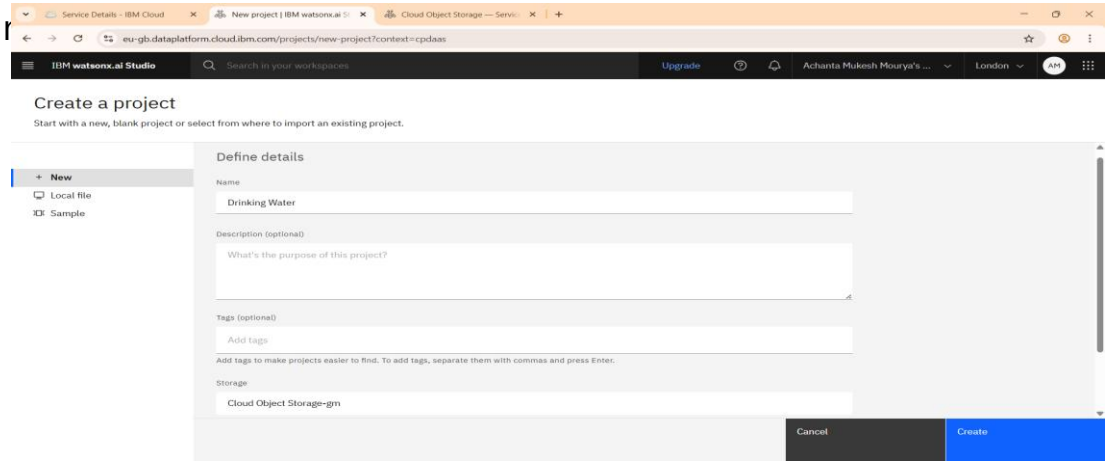
Step 3: Search the File **Watsonx.ai Studio** after that select the location and click on check box and than click on Create button



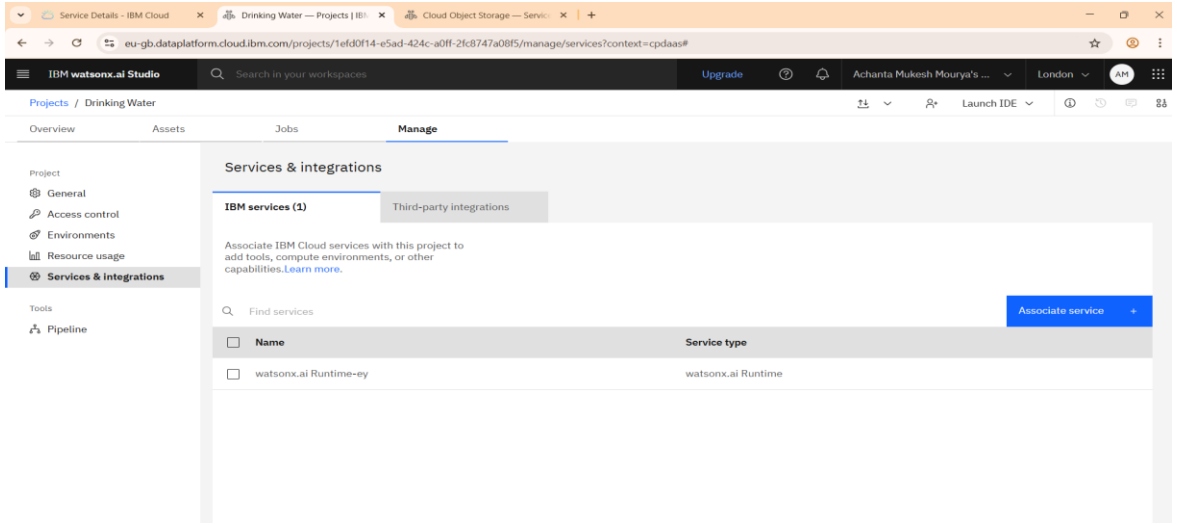
Step 4: Click on **New Project** and click next button



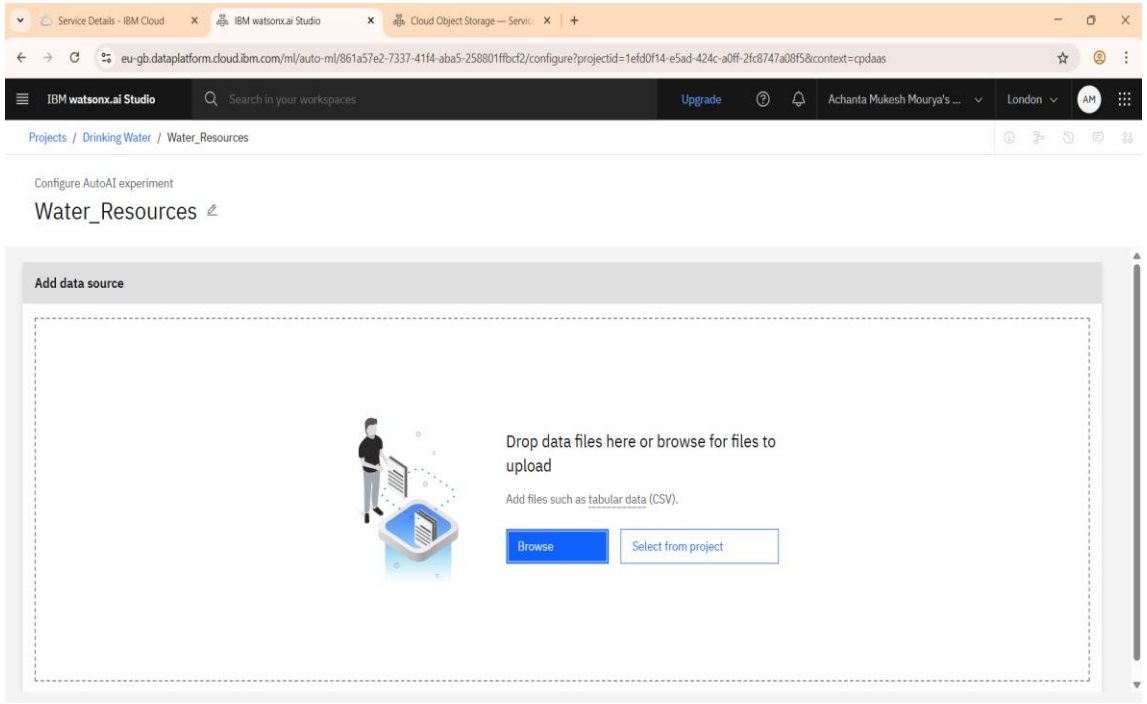
Step 5: Give the name and Scroll down then you will see select **storage service** option below that you will see Add option click on that and then click on **Free Pricing plan** and Click on Create Button after that select 2nd option which is **Refresh** button and the storage will be created after that click on Create button



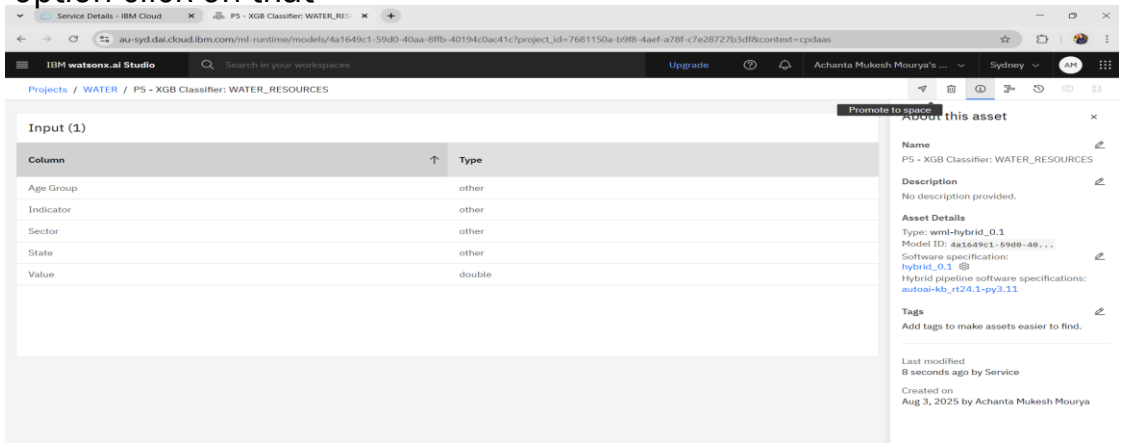
Step 6: Click on **Manage** and Select the **Services & integrations** and select the **Associate service** and move to check box and than click on Associate Button



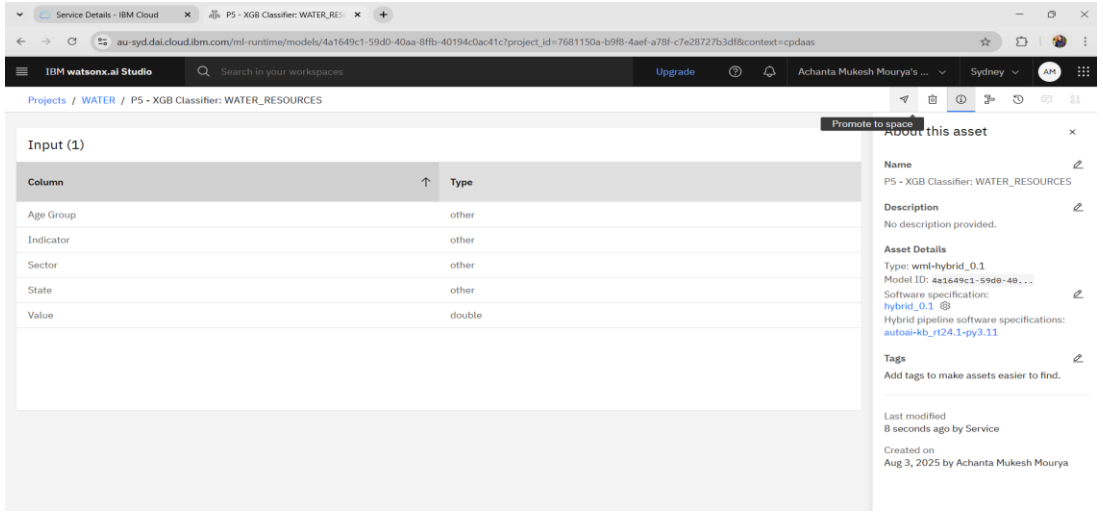
Step 7: Click on Overview and select **Build machine learning models automatically** option and give the name and click on Create button after creating the project click on **Browse** button and select the file after that you will see Configure details than click on **No** option and lastly click any Prediction column after clicking that run the Experiment.



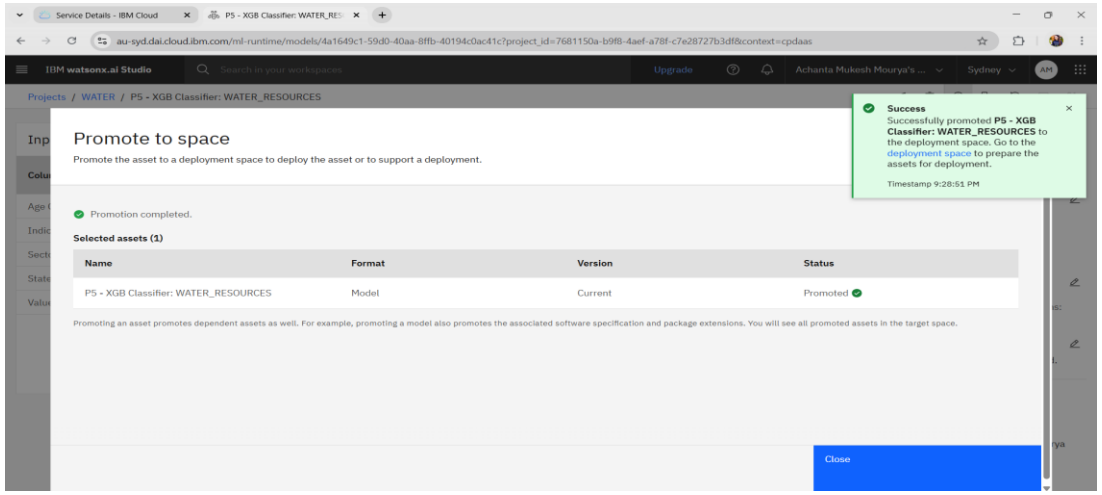
Step 8: Scroll down you will see **Save as** option click on that after that click on **View project** then you will see at the right side **Promote to space** option click on that



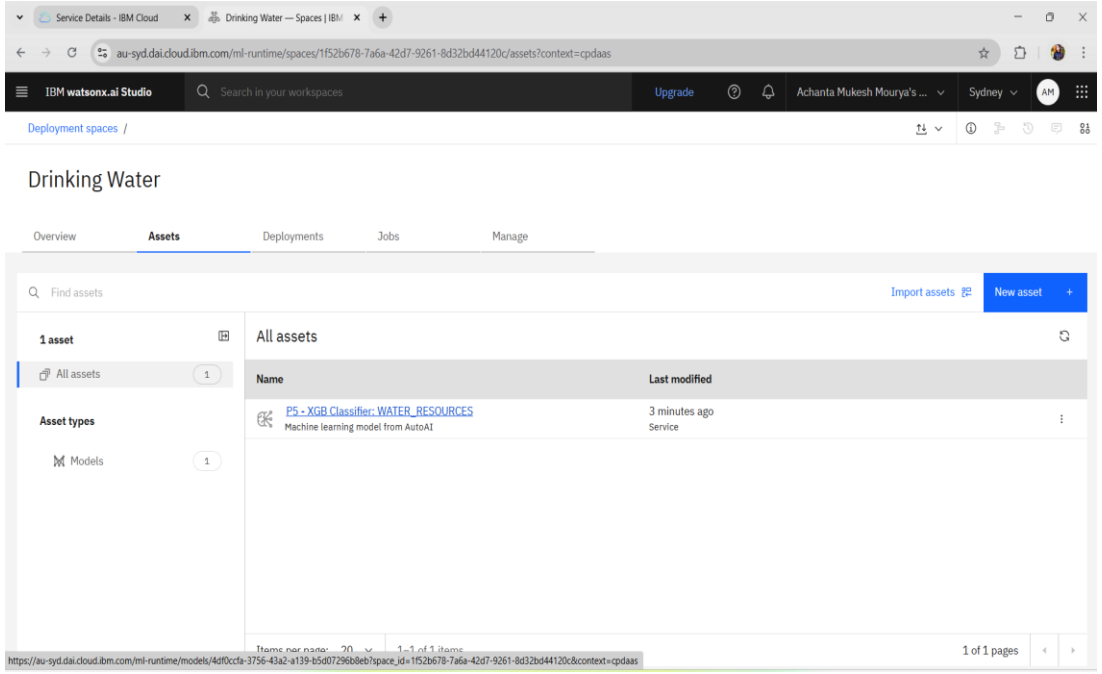
Step 9: click on **create new deployment space** and again give a name to it and then scroll down you will see a **watsonx.ai Runtime (optional)** option select on that and now you will see a **watsonx.ai Runtime – wj** option click on that then click on **create** button again and click on **Promote** button



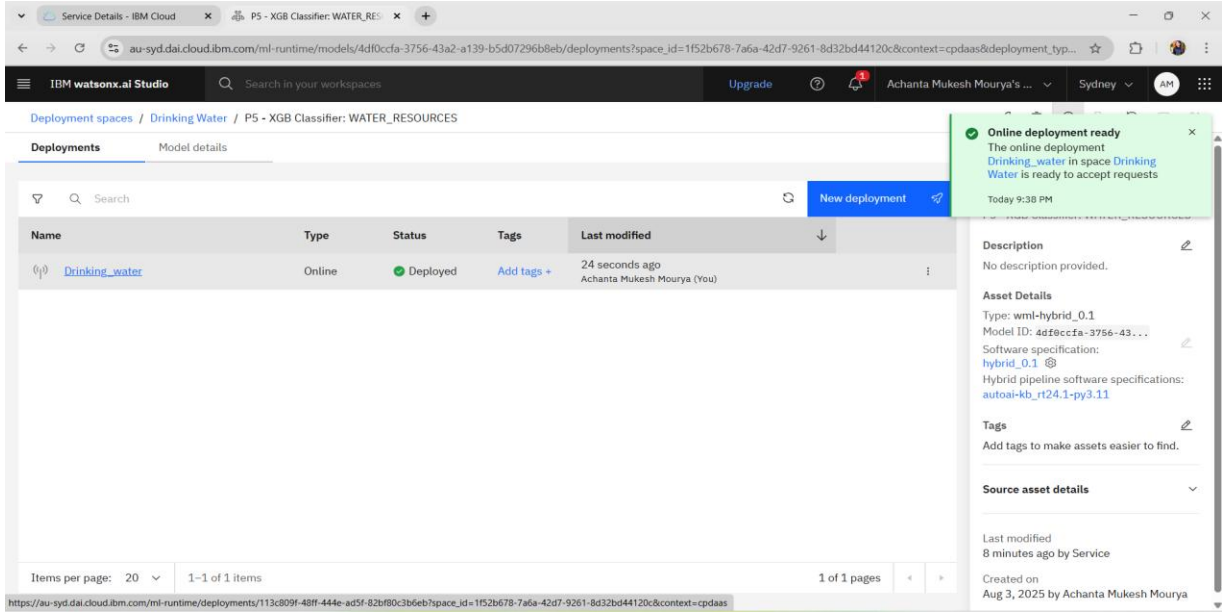
Step 10: click on the **Deployment** space button which you will see at bottom



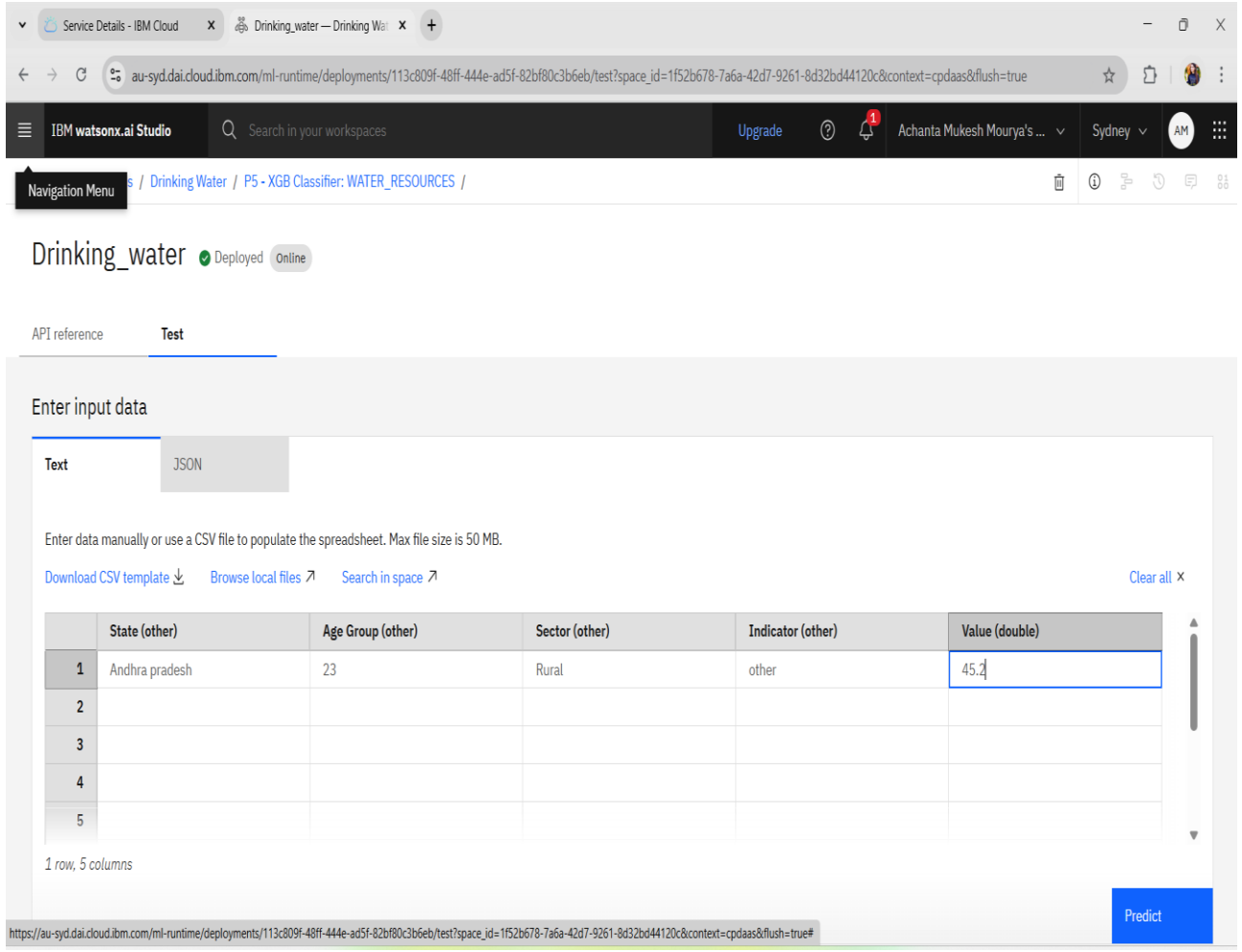
Step 11: click on the **name of the tittle** which you will see in bluecolour after that click on **New Deployment** button then again give the name to it and click on **create** button



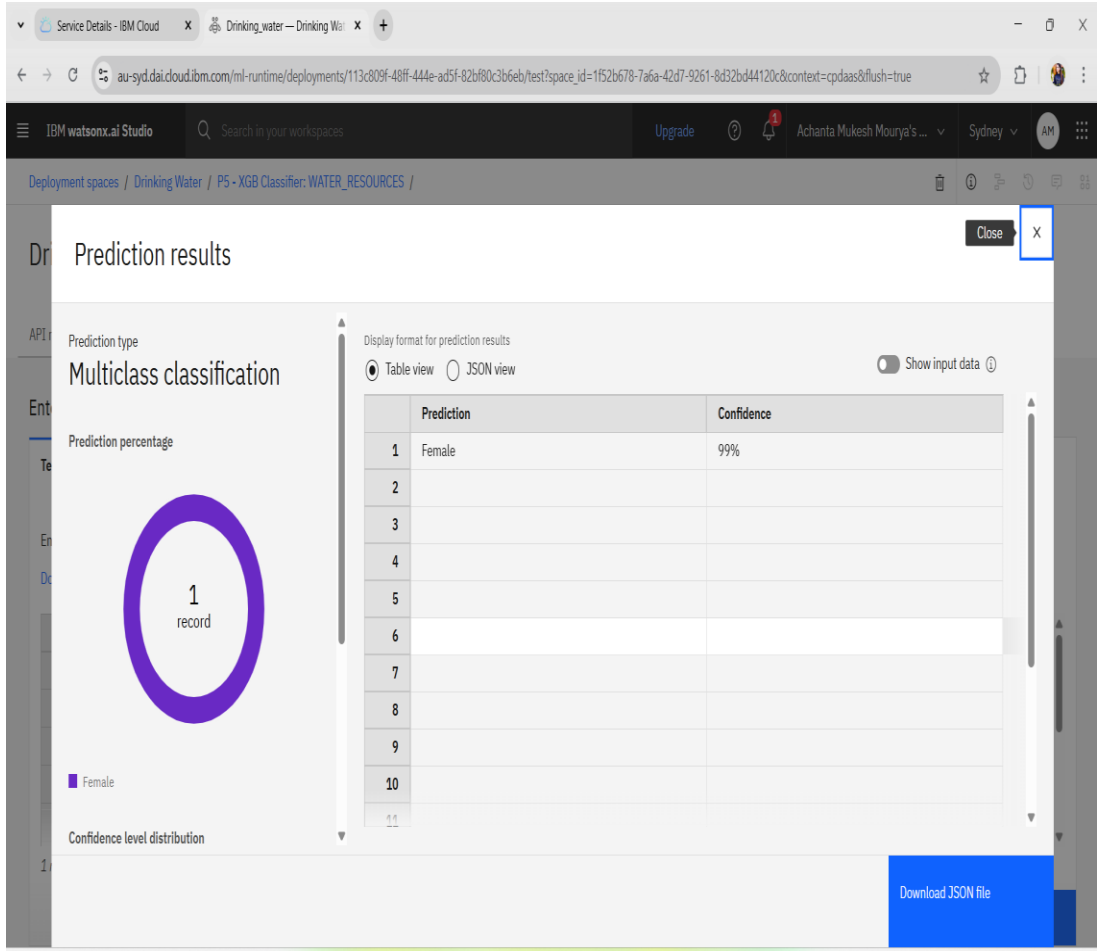
Step 12: After Installing You can now deploy your project by clicking on your **project title** option



Step 13: Now click on **Test case** and you can give the details in the particular columns and click on **predict** button



Step 14: You can Check the result of your given input finally



CONCLUSION

- The study highlights significant **regional disparities** in access to improved drinking water in India.
- Strong **correlation observed** between water access and use of clean cooking fuel, as well as migration patterns.
- Findings suggest that **evidence-based, region-specific interventions** are crucial.
- These insights can directly inform policymakers working toward **achieving SDG 6: Clean Water and Sanitation**.

FUTURE SCOPE

- Expand the model to include **real-time water quality monitoring** data.
- Integrate **GIS mapping** to create geographic dashboards for better visualization.
- Collaborate with NGOs and government bodies for **on-ground validation**.
- Extend analysis to **climate factors** and their impact on water availability.

REFERENCES

•National Sample Survey Office (NSSO) – 78th Round Multiple Indicator Survey

•Ministry of Jal Shakti, Government of India

•United Nations Sustainable Development Goals (SDG6)

•Python documentation (pandas, matplotlib)

•WHO/UNICEF Joint Monitoring Programme for Water Supply

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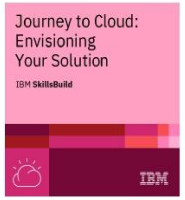

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THANK YOU