

# IBM VIRTUAL INTERNSHIP USING IBM CLOUD

## IMPROVED SOURCE OF DRINKING WATER

Presented By:

Sri Sai Satya Manideep Gannavaram  
KL University  
CSE

# OUTLINE

- Problem Statement
- Proposed System/Solution
- System Development Approach
- Algorithm & Deployment
- Result (Output Image)
- Conclusion
- Future Scope
- References

---

# PROBLEM STATEMENT

Many parts of India still face problems in getting safe and reliable drinking water. Even though there are government programs and global goals like the Sustainable Development Goals (SDGs), big differences remain between states and between rural and urban areas. In some regions, most people have access to clean water, while in others the situation is much worse. This project uses data from the 78th Round of the Multiple Indicator Survey (MIS) to study how much of the population has access to improved drinking water. It also looks at related points like the use of clean cooking fuel and migration, to understand where the gaps are and what changes are needed.

# PROPOSED SOLUTION

- **Data Collection:**

- I uploaded the MIS 78th Round dataset on drinking water access into **IBM Watson Studio** using IBM Cloud Lite.

- **Data Preparation:**

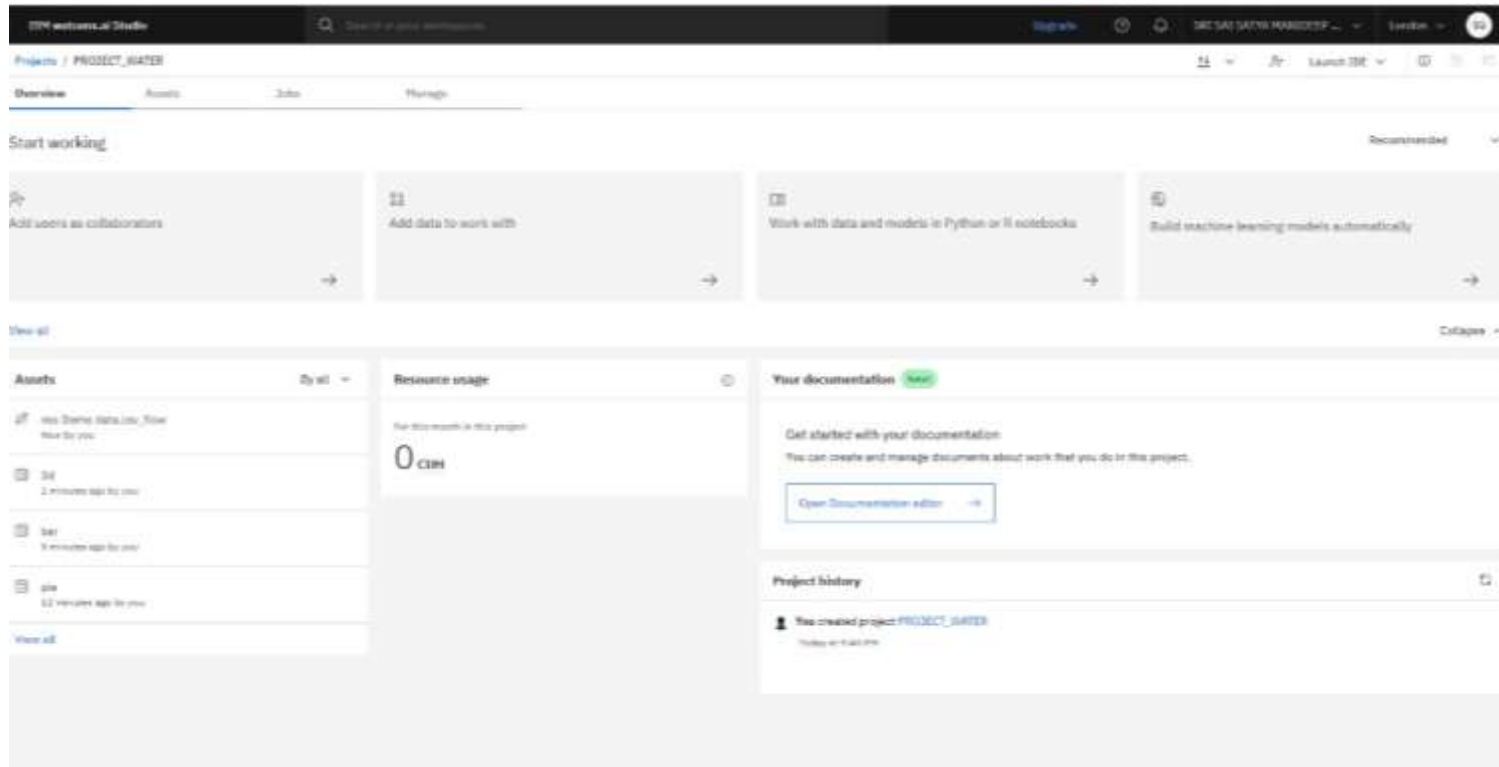
- Using **Data Refinery**, I cleaned the data by fixing column types and removing empty values.
- Key fields like **State**, **Rural/Urban**, and **% of Access** were prepared for analysis.

- **Data Analysis & Visualization:**

- I created **bar, pie, and 3D charts** using Watson Studio's tools to show water access by state and compare rural vs urban areas.

- **Project Output:**

- All the visuals and results were saved in the IBM Cloud project and used for my internship PPT



# PROPOSED SOLUTION SCREENSHOT

“Project set up in IBM Cloud using Watson Studio and Cloud Object Storage for data analysis.”

# SYSTEM APPROACH

## ■ System Requirements:

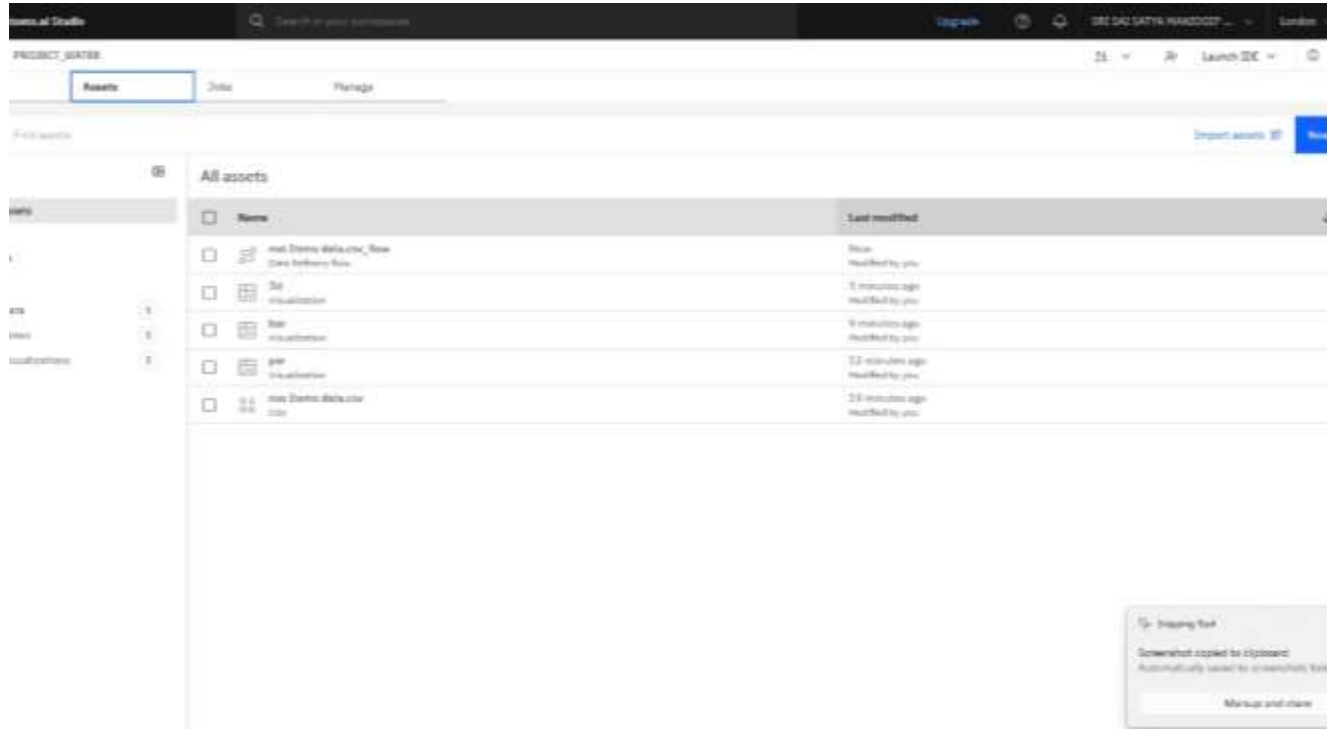
- I created an **IBM Cloud Lite account** and set up a project.
- I used **Watson Studio** for all the data work and **Cloud Object Storage** to keep the dataset safe.
- Everything was done on my laptop using only cloud tools (no extra software needed).

## ■ Libraries & Tools I Used:

- **IBM Watson Studio Data Refinery** – for cleaning and preparing the dataset.
- **Pandas, Matplotlib, and Seaborn** – used inside Watson Studio for extra checks and visualizations.
- **Built-in IBM visualization tools** – to make the bar chart, pie chart, and 3D chart quickly.

## ■ What I Did:

- I uploaded the MIS 78th Round dataset into **Assets** in Watson Studio.
- I cleaned the data (fixed columns, removed blanks) in **Data Refinery**.
- I used the visualization features to create charts that show water access patterns.
- All outputs were saved and used directly in my PPT.



# SYSTEM APPROACH SCREENSHOT

- “MIS 78th Round dataset uploaded and stored in IBM Watson Studio Assets for analysis.”

# ALGORITHM & DEPLOYMENT

- Data Input:

- I used the MIS 78th Round dataset on **Improved Drinking Water** from AI Kosh.
- Important fields like **State**, **Rural/Urban**, and **% of Water Access** were selected for analysis.

- Processing Steps:

- In **IBM Watson Studio Data Refinery**, I cleaned the dataset by fixing column types and removing empty values.
- I organized the data so it could be easily compared across states and sectors.

- Visualization & Analysis:

- I used **IBM Watson Studio's visualization tools** to create **bar, pie, and 3D charts**.
- These charts highlighted **state-wise differences** and **rural vs urban patterns**.

- Deployment:

- All work was **kept in IBM Cloud**, so the dataset, cleaned data, and charts stayed linked to the project.
- Screenshots of the visuals and process were taken and added into the PPT for final reporting.



**Steps (1)**

1. Convert column type

Automatically converted one or more columns to inferred data types. Strings that are converted to datetime use a dot (.) for the decimal separator.

[Auto-generated](#)

**Now stop**

	State String	Age Group String	Sexes String	Gender String	Indicator String
1	All India	15 years and above	All	Male	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
2	All India	15 years and above	All	Female	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
3	All India	15 years and above	All	Person	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
4	All India	15 years and above	Rural	Male	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
5	All India	15 years and above	Rural	Female	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
6	All India	15 years and above	Rural	Person	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
7	All India	15 years and above	Urban	Male	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
8	All India	15 years and above	Urban	Female	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
9	All India	15 years and above	Urban	Person	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
10	All India	12 years and above	All	Male	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
11	All India	12 years and above	All	Female	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
12	All India	12 years and above	All	Person	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
13	All India	10 years and above	Rural	Male	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
14	All India	10 years and above	Rural	Female	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
15	All India	10 years and above	Rural	Person	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
16	All India	10 years and above	Urban	Male	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
17	All India	10 years and above	Urban	Female	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
18	All India	10 years and above	Urban	Person	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
19	Andaman & Nicobar Islands	15 years and above	All	Male	Percentage of Persons Who Used Mobile Telephone with Active Sim Card
20	Andaman & Nicobar Islands	15 years and above	All	Female	Percentage of Persons Who Used Mobile Telephone with Active Sim Card

Full data set: 644 rows, 6 columns

**About this asset**

**Name**  
res Items data.ref.flow

**Description**  
What is the purpose of this Data Refinery flow?

**Asset details**  
Steps: 1

**Associated assets**  
Source: res Items data.ref.  
Target: res Items data.ref, shaped

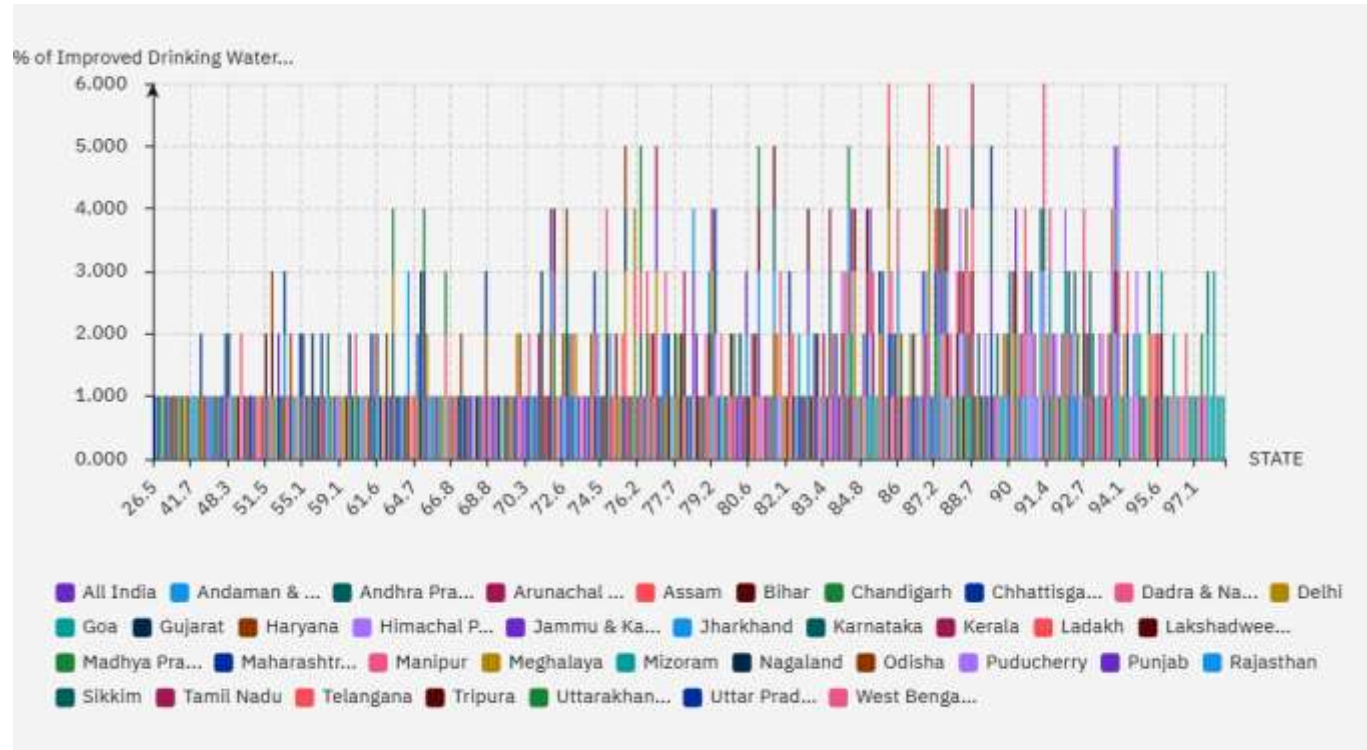
Last modified: Not set  
Created on: Not set

# ALGORITHM & DEPLOYMENT SCREENSHOT

“Data Refinery used in IBM Watson Studio to prepare and structure the dataset for analysis.”

# RESULT

- A **Bar Chart** was made to compare state-wise access to improved drinking water.
- A **Pie Chart** showed how the data is distributed across states and gave a clear view of the proportions.
- A **3D Chart** was built to highlight **Rural vs Urban vs All** access levels for each state.
- These visuals clearly showed which states have high access, which states lag behind, and how rural and urban areas differ.
- I created **different charts** using IBM Watson Studio to show the findings from the MIS 78th Round dataset.

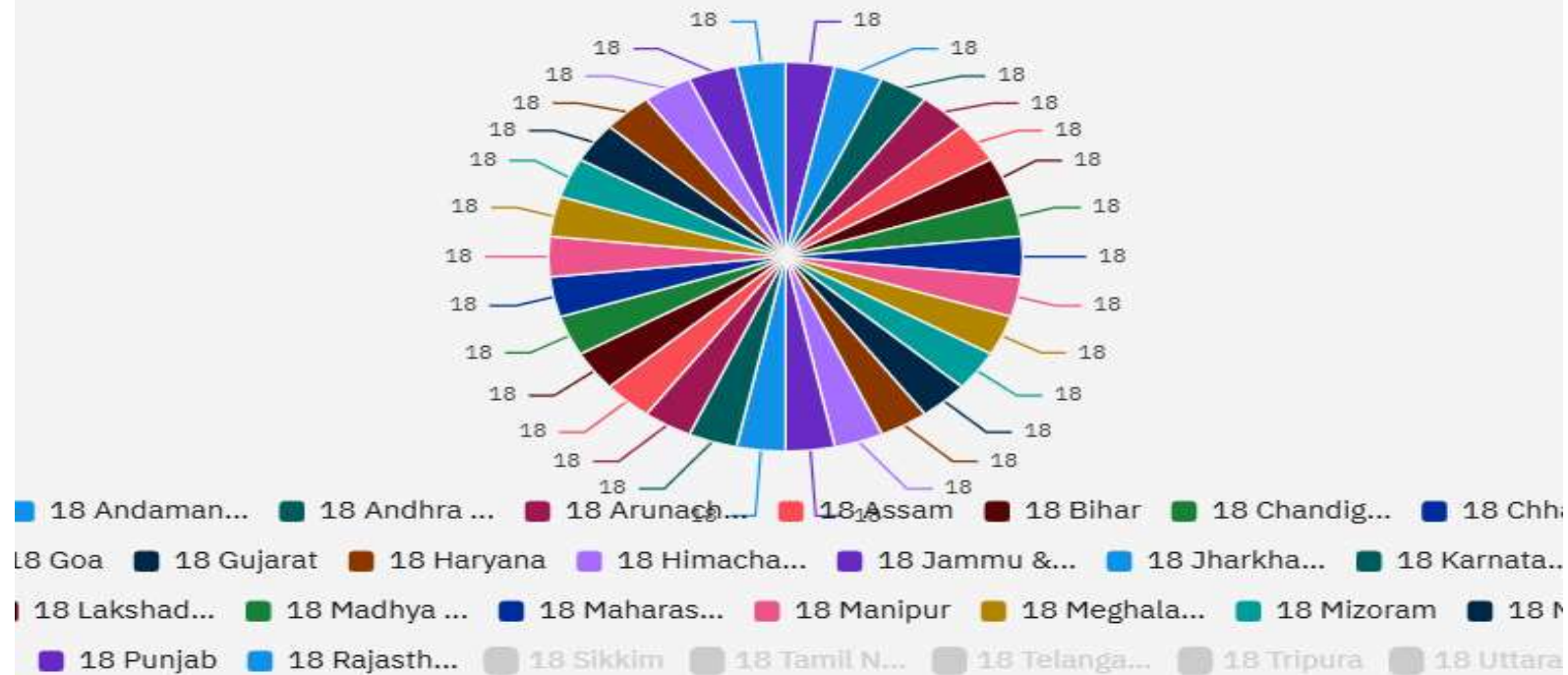


# BAR CHART SCREENSHOT

“Bar Chart – State-wise access to improved drinking water”

### “State-wise Distribution of Drinking Water Data (MIS 78th Round)”

“Proportion of records for each state showing access to improved drinking water sources”

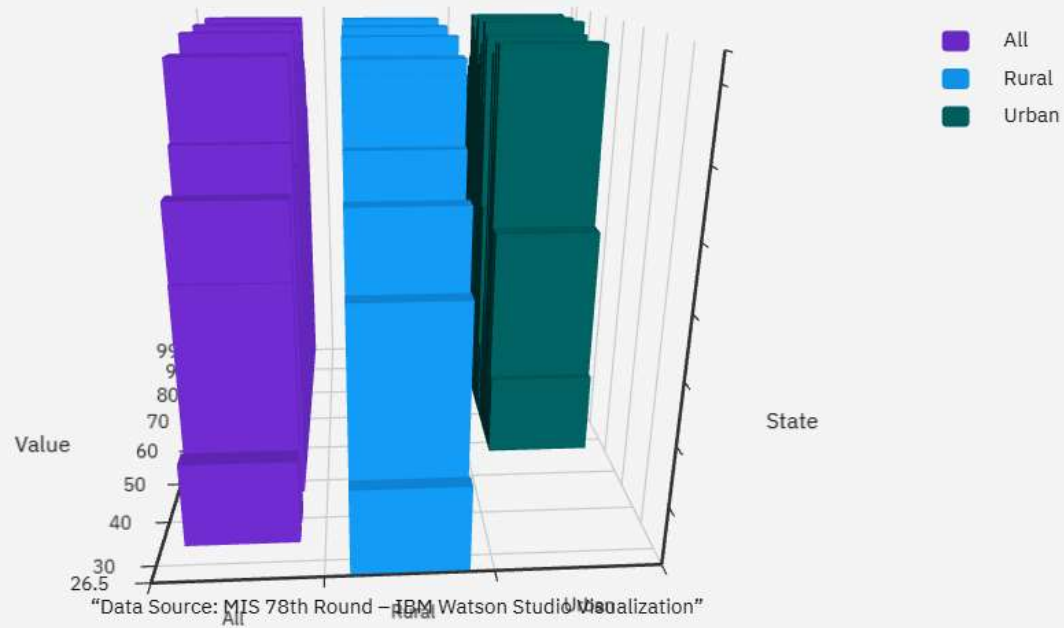


**PIE CHART  
SCREENSHOT**

“Pie Chart – Distribution of water access across states”

### “3D Visualization of Improved Drinking Water Access by State”

“Comparative representation of water access across states with demographic depth”



3D CHART  
SCREENSHOT

“3D Chart – Rural vs Urban vs All comparison”

---

# CONCLUSION

- The MIS 78th Round data showed that **access to improved drinking water is uneven across India**.
- Some states like Kerala, Goa, and Punjab have very high access levels**, while others like Bihar and Jharkhand are still behind.
- Rural areas generally have slightly lower access** compared to urban areas, which shows the need for more focus on villages.
- Using **IBM Cloud and Watson Studio** made it easy to clean the data, create visuals, and understand the patterns clearly.
- The findings can help **policy makers and organizations** see where more work is needed to improve drinking water access.

# FUTURE SCOPE

- The same method can be used on **larger or newer surveys** to track changes in water access over time.
- **AI models** can be added later to predict which areas might face water shortages in the future.
- Linking with **IoT devices or sensors** can help monitor water quality in real time.
- The visuals can be expanded into a **dashboard for government and public use**.

# REFERENCES

- AI Kosh Dataset – *Improved Source of Drinking Water, MIS 78th Round*
- IBM Cloud Documentation – <https://cloud.ibm.com/docs>
- IBM Watson Studio User Guide – <https://dataplatform.cloud.ibm.com>
- Sustainable Development Goals (SDG 6 – Clean Water and Sanitation) – <https://sdgs.un.org/goals>



In recognition of the commitment to achieve  
professional excellence



Sri Sai Satya Manideep Gannavaram

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 17, 2025

Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/a6f172d8-e84f-4e42-aef6-ef1afe087d33>



**IBM**  
**CERTIFICATE-1**

**(GETTING  
STARTED WITH  
AI)**

In recognition of the commitment to achieve  
professional excellence



Sri Sai Satya Manideep Gannavaram

Has successfully satisfied the requirements for:

---

Journey to Cloud: Envisioning Your Solution

---



Issued on: Jul 20, 2025  
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/81599093-ebfc-4152-b1bf-30c78b784ee1>



**IBM**  
**CERTIFICATE-2**  
**(JOURNEY TO**  
**CLOUD)**

# IBM CERTIFICATE-3 (RAG LAB)

IBM SkillsBuild

Completion Certificate



This certificate is presented to

SRI SAI SATYA MANIDEEP GANNAVARAM

for the completion of

**Lab: Retrieval Augmented Generation with  
LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 29 Jul 2025 (GMT)

**Learning hours:** 20 mins



**THANK YOU**