# MACHINE LEARNING

## IMPROVED SOURCE OF DRINKING WATER

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# OUTLINE

- **Problem Statement** (Should not include solution)
- **Proposed System/Solution**
- **System Development Approach** (Technology Used)
- **Algorithm & Deployment**
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

# PROBLEM STATEMENT

- Access to safe and improved sources of drinking water remains a critical issue in India, especially in rural and underdeveloped regions. Despite ongoing efforts under the Sustainable Development Goals (SDGs), inequalities persist in water accessibility across states and socio-economic groups. This project aims to analyze data from the 78th Round of the Multiple Indicator Survey (MIS) to assess the percentage of the population with access to improved drinking water sources. It will also explore related indicators such as use of clean cooking fuel and migration trends. By identifying patterns and disparities, the study will generate actionable insights to support evidence-based policymaking. The ultimate goal is to help ensure equitable access to clean water and contribute to India's progress on SDG targets.

# PROPOSED SOLUTION

- The proposed system aims to address the challenge of predicting improved source of drinking water. This involves leveraging data analytics and machine learning techniques to forecast demand patterns accurately. The solution will consist of the following components:
- Data Collection:
  - Gather historical data on state,indicator,subindicator,sector,value.
  - Utilize real-time data sources.
- Data Preprocessing:
  - Clean and preprocess the collected data to handle missing values, outliers, and inconsistencies.
  - Feature engineering to extract relevant features from the data that might impact improved source of drinking water
- Machine Learning Algorithm:
  - Implement a machine learning algorithm, such as a decision tree regression.
  - Consider incorporating other factors like source of drinking water.
- Deployment:
  - Develop a user-friendly interface or application that provides real-time predictions.
  - Deploy the solution on a scalable and reliable platform, considering factors like server infrastructure, and user accessibility.
- Evaluation:
  - Assess the model's performance using appropriate metrics such as Mean Absolute Error (MAE), Root Mean Squared Error (RMSE), or other relevant metrics.
  - Fine-tune the model based on feedback and continuous monitoring of prediction accuracy.

# SYSTEM APPROACH

The "System Approach" section outlines the overall strategy and methodology for developing and implementing the improved source of drinking water. Here's a suggested structure for this section:

- Technology Used: IBM cloud lite
- Libraries: pandas,numpy
- Visualization: matplotlib,seaborn
- Tools: IBM Watson Studio

# ALGORITHM & DEPLOYMENT

- This project may apply basic statistics or ML for pattern recognition:
- **Algorithm Selection:**
  - Decision Trees Regression
- **Data Input:**
- Survey responses on water access, cooking fuel, migration
- **Deployement:**
- IBM Cloud Lite for scalable processing

- **Evaluation:**
- Insight-focused rather than accuracy-focused

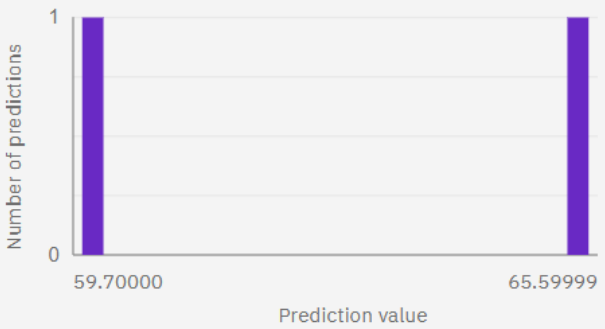
# RESULT

## Prediction results

Prediction type

Regression

**Prediction distribution**




Display format for prediction results

(•) Table view ( ) JSON view

Show input data

| | Prediction |
|---|---|
| 1 | 65.5999984741211 |
| 2 | 59.70000076293945 |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |

Download JSON file

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# CONCLUSION

- The study identifies key disparities in access to improved drinking water using the MIS dataset.IBM Cloud Lite supports fast, scalable processing.Insights from the project can guide targeted policy interventions to improve access.

# FUTURE SCOPE

- Use advanced ML models for forecasting
- Integrate real-time monitoring data
- Automate interactive dashboards
- Expand analysis to other SDG indicators

# REFERENCES


- AI Kosh Dataset: https://aikosh.indiaai.gov.in
- IBM Cloud Lite Documentation
- SDG Reports: Clean Water & Sanitation
- MIS 78th Round – MoSPI (Govt. of India)

# IBM CERTIFICATIONS

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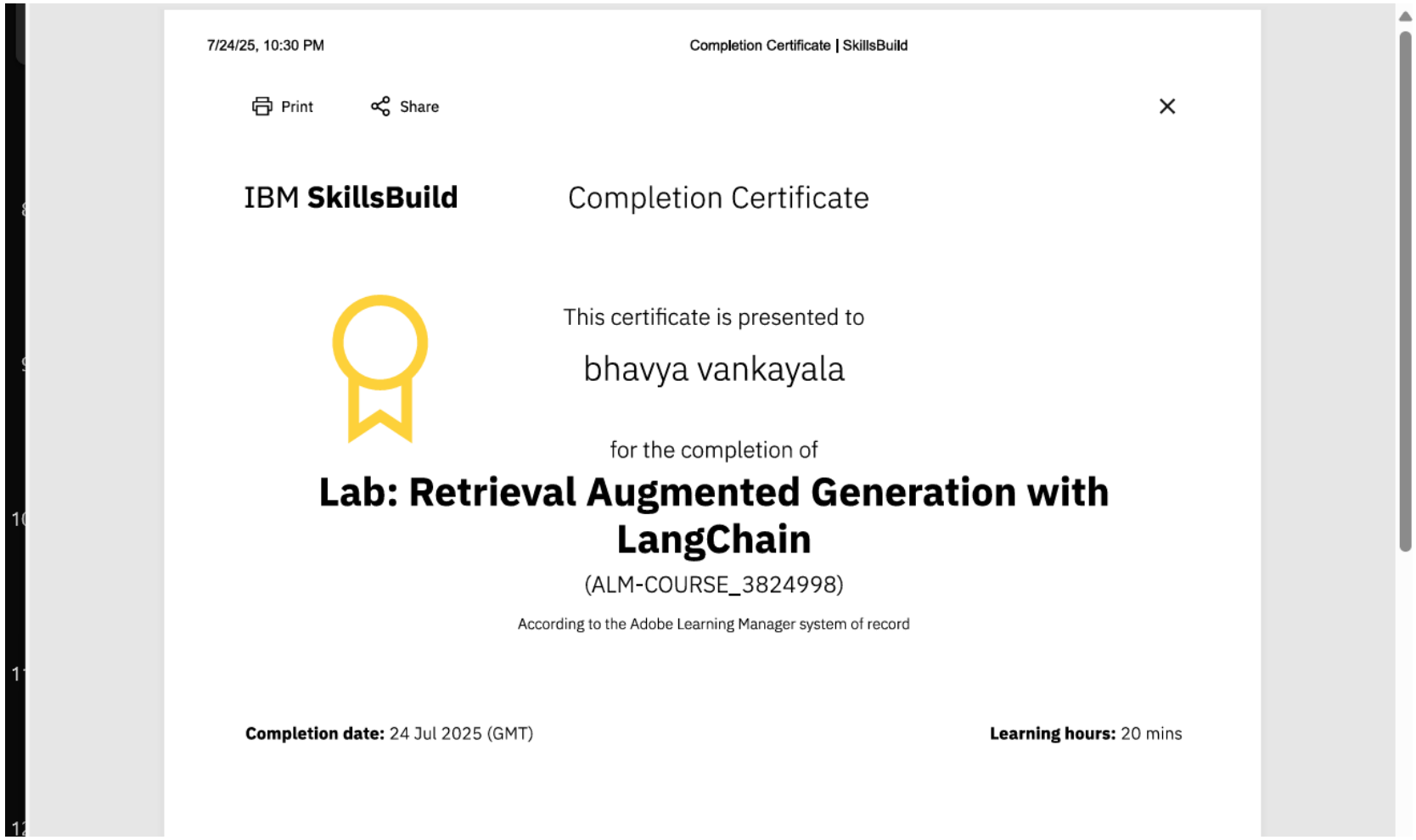

# THANK YOU

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