CAPSTONE PROJECT

TRACKING MATERNAL HEALTH PROGRESS TOWARD SDG 3.1: A GLOBAL DATA ANALYSIS LEVERAGING IBM CLOUD

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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**

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PROBLEM STATEMENT

Example: Despite concerted global efforts, maternal mortality remains a persistent challenge, particularly in low- and middle-income countries. United Nations Sustainable Development Goal 3.1 aspires to reduce the global maternal mortality ratio to less than 70 per 100,000 live births by 2030. Accurately tracking progress toward this target demands robust analysis of multi-dimensional, country-specific datasets on maternal health—spanning indicators like antenatal care coverage and skilled birth attendance. Traditional methods often fall short in providing actionable, data-driven insights across diverse socioeconomic and geographic contexts, thereby impeding effective policy formulation and intervention strategies.

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PROPOSED SOLUTION

To address this critical challenge, we propose an intelligent analytics platform utilizing IBM Cloud Lite Services to systematically analyze and visualize global maternal health trends. The envisioned system will:

- Integrate country-wise maternal health datasets from verified sources (such as the SDG National Indicator Framework).

- Conduct comprehensive data preprocessing, ensuring data quality and enhancing reliability.

- Employ advanced analytics and machine learning to uncover key patterns, disparities, and influencing factors.

- Deliver dynamic, interactive dashboards for policymakers, health professionals, and researchers to monitor real-time progress toward SDG 3.1 and identify high-risk areas.

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SYSTEM APPROACH

Core Technology Stack:

- IBM Cloud Lite Services: Centralized data processing, storage, and deployment.

- IBM Watson Studio for data analytics and machine learning.

- IBM Cloud Object Storage for secure, scalable data management.

- Programming Language: Python for robust data manipulation and ML implementations.

- Libraries/Frameworks: pandas, numpy, scikit-learn, matplotlib, seaborn, plotly for data analytics and visualization; Streamlit or Flask for rapid dashboard development.

- Data Source: SDG National Indicator Framework maternal health datasets.

ALGORITHM & DEPLOYMENT

:

- **Algorithm Selection:**
  - Utilization of descriptive analytics for trends and variance.
  - Application of regression and clustering models to reveal determinants of maternal mortality..

- **Data Input:**
  - Maternal mortality rates, antenatal visit statistics, skilled health personnel coverage, and related sociodemographic indicators.

- **Training Process:**
  - Extensive data cleaning, handling of missing values, and feature engineering to enrich analytic potential.
  - Model training and validation using cross-validation, with performance measured through accuracy metrics such as R^2 and RMSE..

- **Development:.**
  - Implementation of an intuitive, interactive dashboard hosted on IBM Cloud, ensuring secure access and seamless scalability for end users.

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RESULT
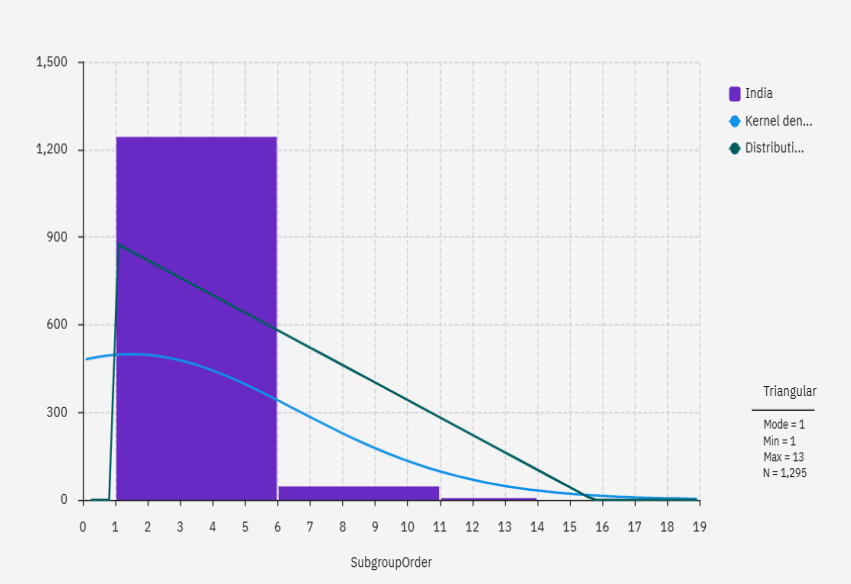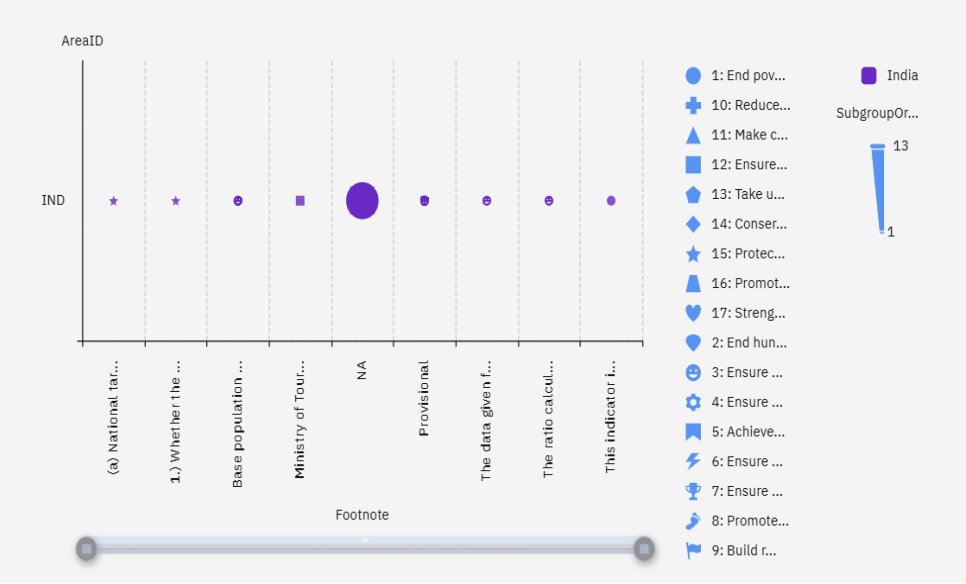
CONCLUSION

- This project introduces a powerful, cloud-based analytic solution that empowers stakeholders to make informed, data-driven decisions in their quest to reduce maternal mortality. Our platform not only enhances visibility into global and local trends but also facilitates proactive, targeted interventions. Throughout development, key challenges included ensuring data consistency and scalability, both of which were effectively addressed via IBM Cloud's robust services.
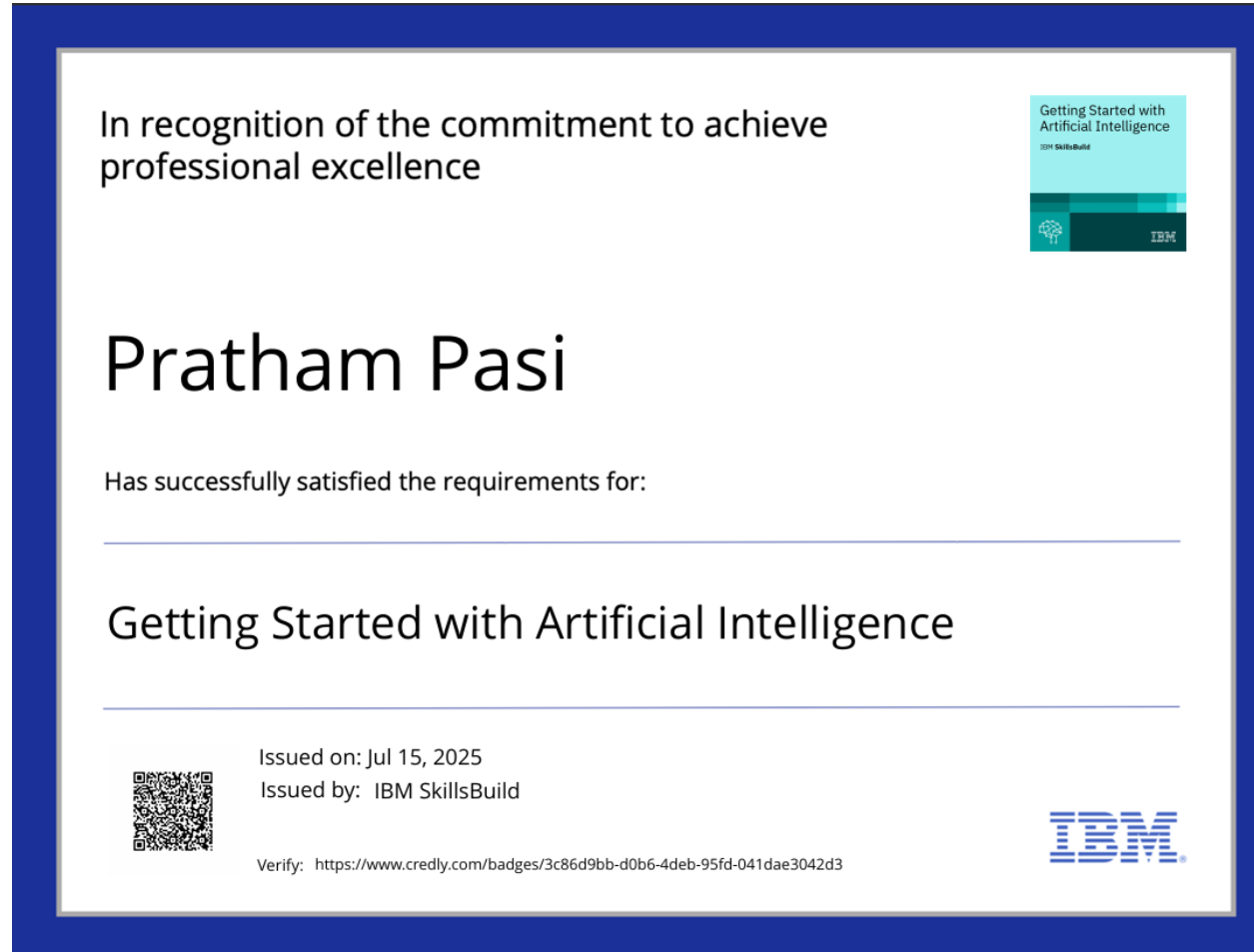
FUTURE SCOPE

- Integration of real-time health data feeds and predictive analytics.

- Expansion to additional health indicators and SDGs.

- Deployment of localized dashboards for region-specific analysis.

- Incorporation of advances in AI—such as deep learning—for even more accurate forecasting and policy recommendations.

REFERENCES

- SDG National Indicator Framework: https://www.data.gov.in/resource/sustainable-development-goals-national-indicator-framework-version-31-2021

- Research articles on maternal mortality analytics, data science methodologies, and best practices for using IBM Cloud in public health.

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GIT-HUB LINK

- https://github.com/pratham133/Project.git

THANK YOU