CAPSTONE PROJECT

PREDICTING ELIGIBILITY FOR NSAP SCHEME USING MACHINE LEARNING

Presented By:

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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

- The National Social Assistance Program (NSAP) provides financial assistance to BPL individuals who are elderly, widowed, or disabled.
- Identifying the appropriate scheme manually is time-consuming, error-prone, and often leads to delays.
- Incorrect scheme allocation can prevent deserving beneficiaries from receiving timely aid.
- There is a need for a more reliable and faster method of categorizing applicants.

PROPOSED SOLUTION

- To address inefficiencies in manual screening, we propose an AI-based multi-class classification system that predict the appropriate NSAP sub scheme based on applicant data. Uses the demographic and socio-economic features as input. Ensures faster, more accurate scheme categorization. Is deployed on IBM Cloud Lite for scalability and accessibility
- **Data Collection:** Uses the AI Kosh dataset on NSAP scheme.
- **Data Preprocessing:** Clean and preprocess the collected data to handle missing values, outliers, and inconsistencies.
- **Machine Learning Algorithm:** Train classification model (e.g decision tree, random forest or SVM).
- **Evaluation:** Validate the model using accuracy, precision, recall, and F1 score.

SYSTEM APPROACH

The "System Approach" section outlines the overall strategy and methodology for developing and implementing the predicting the eligibility for NSAP scheme using machine learning . Here's a suggested structure for this section:

- System requirements
  - IBM Cloud (Mandatory)
  - IBM Watson studio for model development and deployment.
  - IBM cloud object storage for dataset handling

ALGORITHM & DEPLOYMENT

- In the Algorithm section, describe the machine learning algorithm chosen for predicting eligibility for NSAP scheme using ML. Here's an example structure for this section:
- **Algorithm Selection:**
  - Used Auto AI on IBM Watson to choose the best multi-class classifier (e.g., Random Forest), suited for predicting NSAP schemes from structured data.
- **Data Input:**
  - Inputs include finyear, lgdstatecode, statename, lgddistrictcode, districtname, totalbeneficiaries, totalmale, totalfeamle and other socio-economic factors from the AI Kosh dataset.
- **Training Process:**
  - Performed data cleaning, encoding, and an 80-20 train-test split. Auto AI handled hyperparameter tuning and model evaluation using cross-validation.
- **Prediction Process:**
  - Deployed model on IBM Watson Machine Learning as an API. Takes applicant data and predicts the eligible NSAP scheme in real time.

RESULT

IBM watsonx.ai Studio | Search in your workspaces | Upgrade | SHWETA MUDAKUDE's Acc... | London | SM

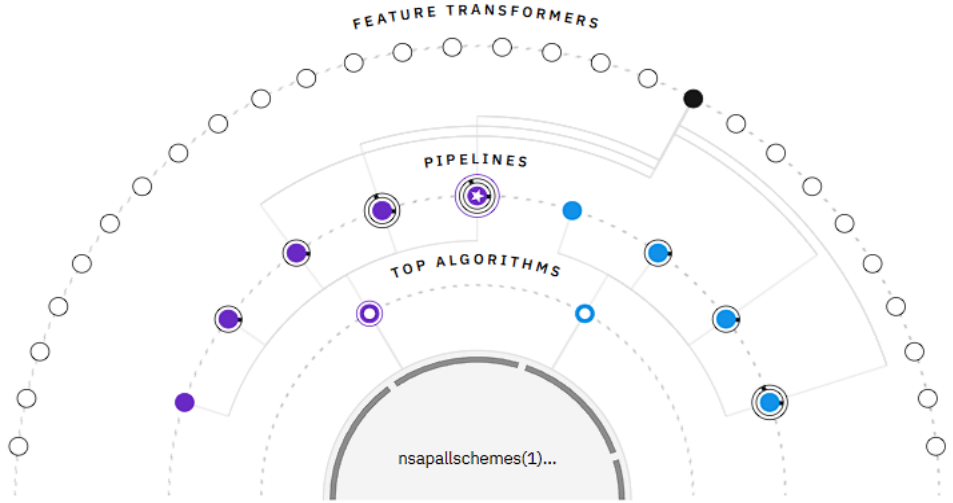
Projects / NSAP_Scheme / NSAP_demo

Experiment summary | Pipeline comparison

★ Rank by: Accuracy (Optimized) | Cross validation score

Relationship map

Prediction column: schemecode



Progress map

Swap view

Experiment completed

9 PIPELINES GENERATED

9 pipelines generated from algorithms. See pipeline leaderboard below for more detail.

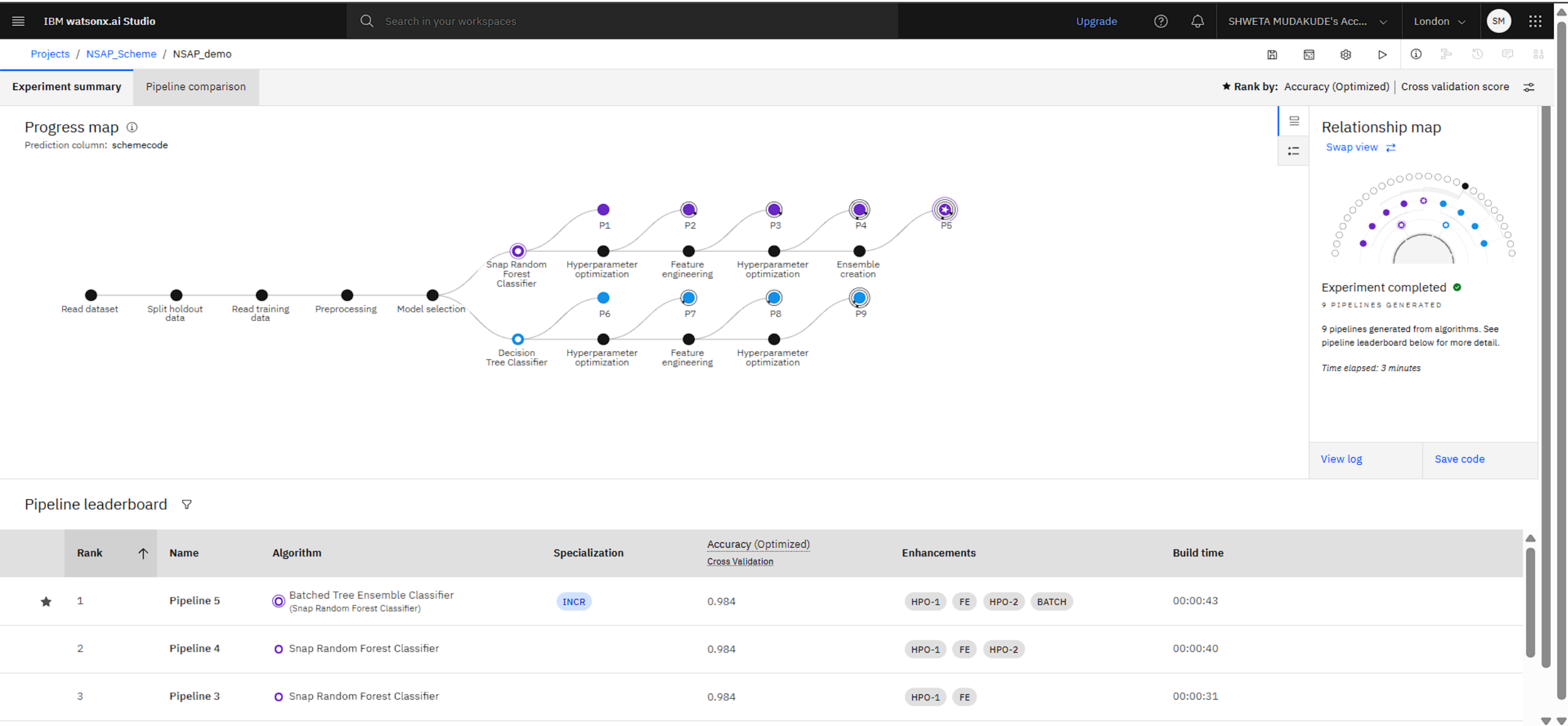
Time elapsed: 3 minutes

View log | Save code

Pipeline leaderboard

	Rank	Name	Algorithm	Specialization	Accuracy (Optimized) Cross Validation	Enhancements	Build time
★	1	Pipeline 5	Batched Tree Ensemble Classifier (Snap Random Forest Classifier)	INCR	0.984	HPO-1 FE HPO-2 BATCH	00:00:43
	2	Pipeline 4	Snap Random Forest Classifier		0.984	HPO-1 FE HPO-2	00:00:40
	3	Pipeline 3	Snap Random Forest Classifier		0.984	HPO-1 FE	00:00:31

RESULT



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	3	Pipeline 3	Snap Random Forest Classifier		0.984	HPO-1 FE	00:00:31

RESULT

Prediction results

Close

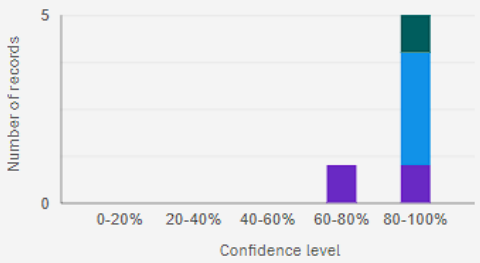
Prediction type

Multiclass classification

Prediction percentage

IGNOAPS IGNDPS IGNWPS

Confidence level distribution



IGNOAPS IGNDPS IGNWPS

Display format for prediction results

(•) Table view ( ) JSON view

Show input data

	Prediction	Confidence
1	IGNOAPS	70%
2	IGNOAPS	100%
3	IGNDPS	100%
4	IGNDPS	100%
5	IGNDPS	100%
6	IGNWPS	100%
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

Download JSON file

CONCLUSION

- The proposed system offers a **reliable and automated** way to classify NSAP applicants.
- Reduces human error and improves **processing speed**
- Enhances transparency and helps ensure **timely assistance** to eligible citizens
- Built and deployed using IBM's suite of cloud-based AI tools

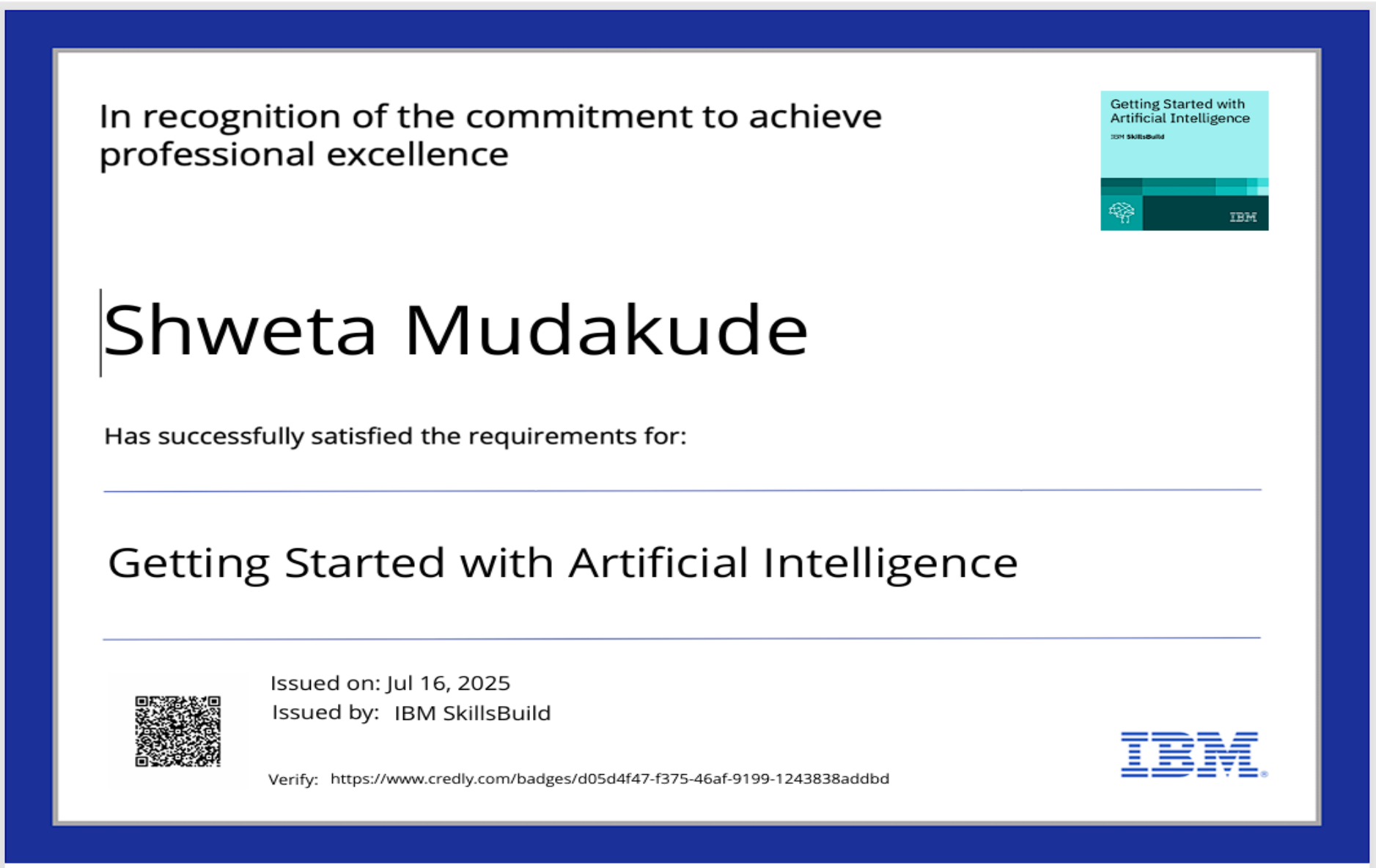
FUTURE SCOPE

- Integrate biometric or Aadhaar-based verification for added accuracy
- Expand model to include **fraud detection**
- Enable **regional language interfaces** for broader accessibility
- Collaborate with government agencies for **pilot deployment**
- Incorporate **feedback loop** for model retraining and adaptation

REFERENCES

- National Social Assistance Programme (NSAP) – https://aikosh.indiaai.gov.in/web/datasets/details/district_wise_pension_data_under_the_national_social_assistance_programme_nsap_1.html
- AI Kosh Dataset –https://aikosh.indiaai.gov.in/account/login
- IBM Cloud – https://cloud.ibm.com/
- IBM Watson Studio – https://cloud.ibm.com/catalog/services/watsonxai-studio
- GitHub Repository Link -https://github.com/Shweta50102/Predicting-Eligibility-for-NSAP-using-Machine-Learning

IBM CERTIFICATIONS



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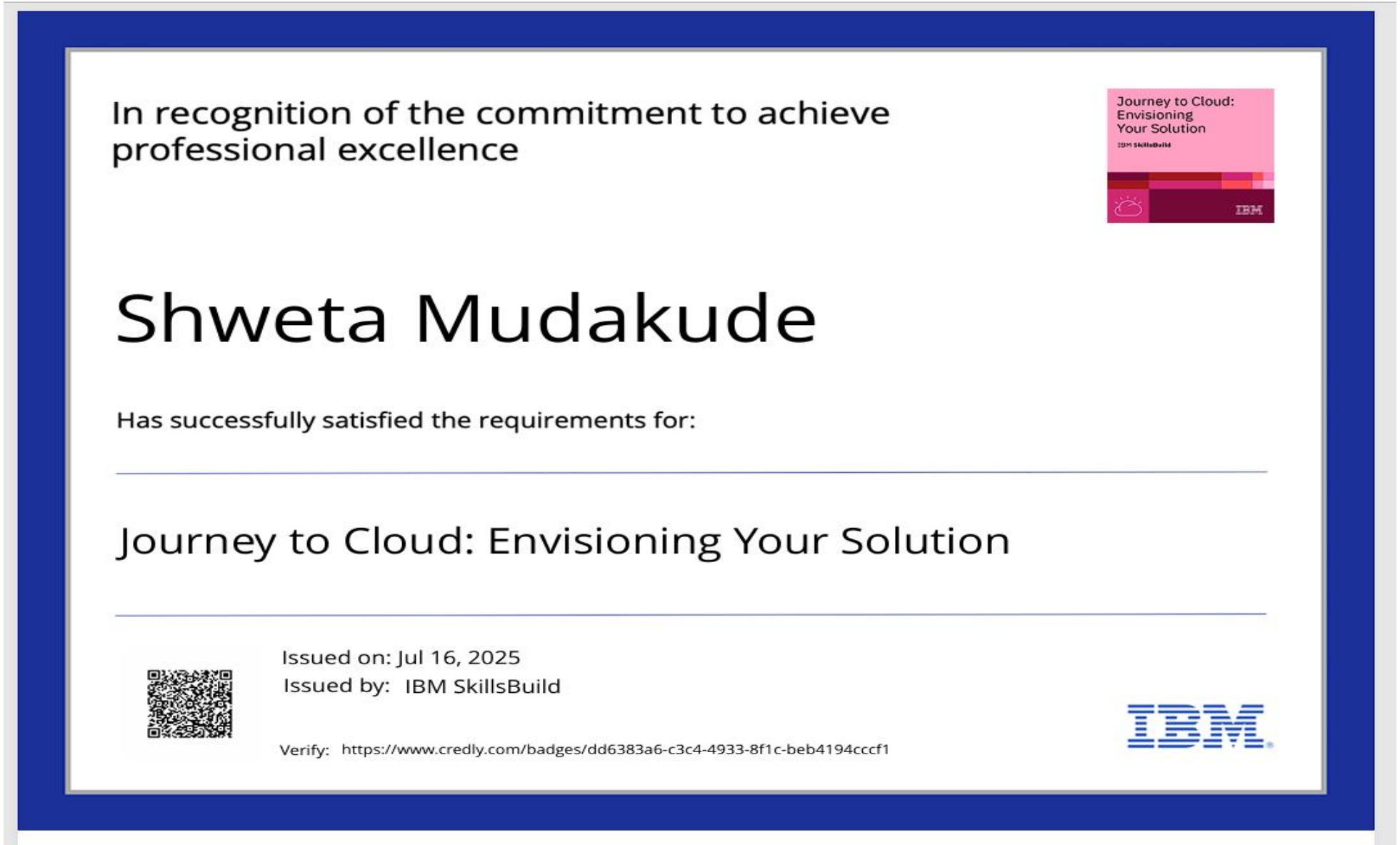

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IBM CERTIFICATIONS

IBM **SkillsBuild** Completion Certificate

This certificate is presented to

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(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 24 Jul 2025 (GMT) **Learning hours:** 20 mins

THANK YOU

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