CAPSTONE PROJECT

PREDICTING NSAP SCHEME ELIGIBILITY USING MACHINE LEARNING

Presented By:
Shreya Nair – SRMIST, KTR – CSE w/ AI & ML

edunet foundation

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) supports elderly, widows, and disabled individuals from BPL households. Manually mapping applicants to the right scheme is slow and error-prone. This project builds an AI-based model to accurately predict the most suitable NSAP scheme using demographic and socio-economic data, ensuring faster and fairer benefit distribution.

PROPOSED SOLUTION

The project aims to automate scheme eligibility prediction under NSAP using a machine learning pipeline. A Decision Tree Classifier model is trained on the AI-KOSH dataset to map socio-economic features to the most suitable scheme.

- **Data Collection:**
  Used AI-KOSH's pre-cleaned dataset on NSAP beneficiaries, including demographic and socio-economic details.
- **Data Preprocessing:**
  No additional preprocessing or feature engineering was required as the dataset was already clean and structured.
- **Machine Learning Algorithm:**
  Implemented Decision Tree Classifier using IBM AutoAI for multi-class classification to predict the appropriate NSAP scheme.
- **Deployment:**
  AutoAI pipelines (P1–P8) were generated and evaluated on IBM Cloud. The best model was selected for deployment.
- **Evaluation:**
  Model performance was assessed using accuracy and other evaluation metrics. The highest-performing pipeline was finalized.
- **Result:**
  A reliable ML model that can assist authorities in quickly categorizing applicants under the right NSAP scheme with high accuracy.

SYSTEM APPROACH

The "System Approach" section outlines the overall strategy and methodology for developing and implementing the NSAP Scheme Eligibility Prediction system. Here's a suggested structure for this section:

System Requirements:

- **IBM Cloud** – for complete project execution
- **IBM Watson Studio** – for automated ML model development and deployment using AutoAI
- **IBM Cloud Object Storage** – for storing and accessing the AI-KOSH dataset securely

ALGORITHM & DEPLOYMENT

- **Algorithm Selection:**

  Decision Tree Classifier (DTC), chosen over Snap Decision Tree Classifier (SDTC) due to higher accuracy on the NSAP dataset.

- **Data Input:**

  Fields from AI-KOSH data: finyear, lgdstatecode, statename, lgddistrictcode, districtname, schemecode, total beneficiaries (gender, caste), Aadhaar and mobile linkage counts.

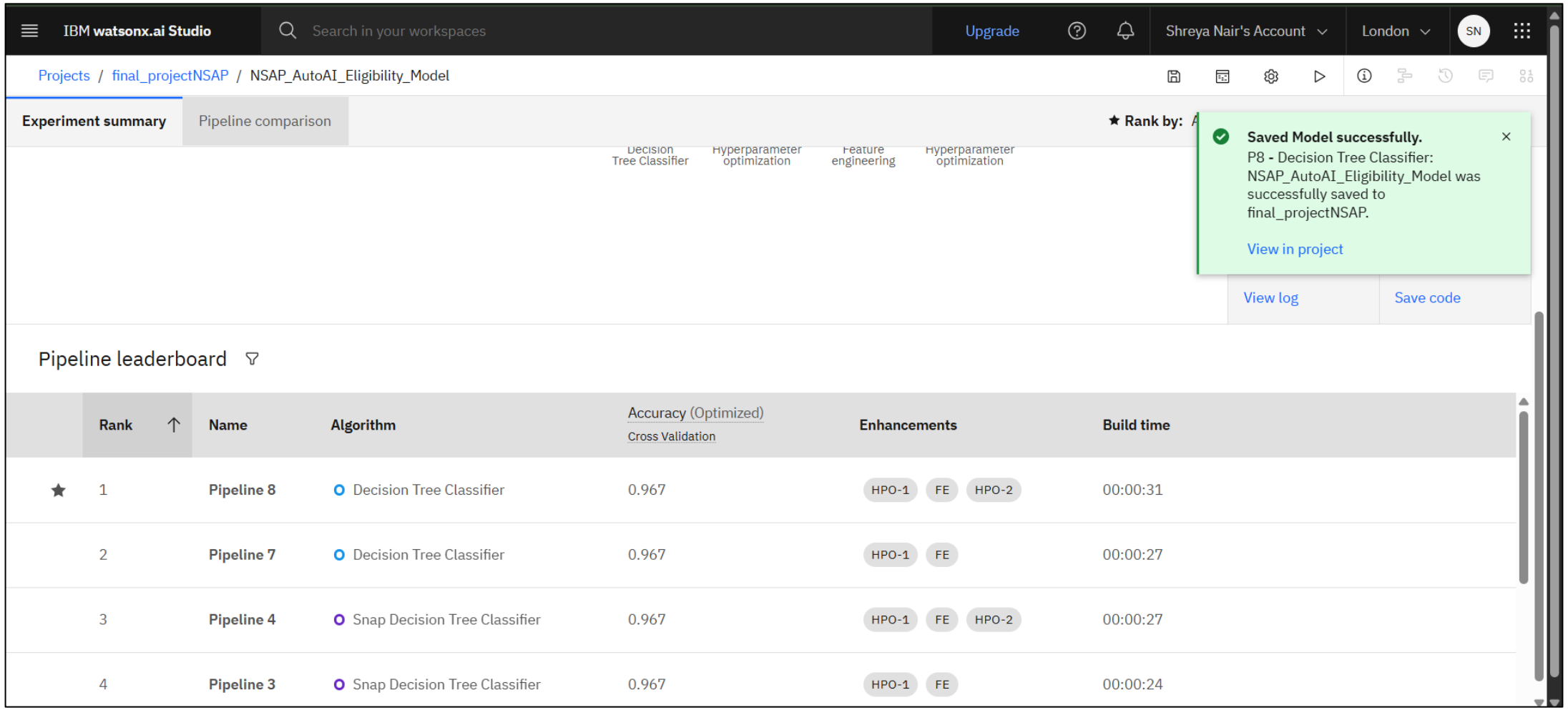
- **Training Process:**

  Supervised learning using labeled scheme codes to classify eligibility under various NSAP welfare categories.

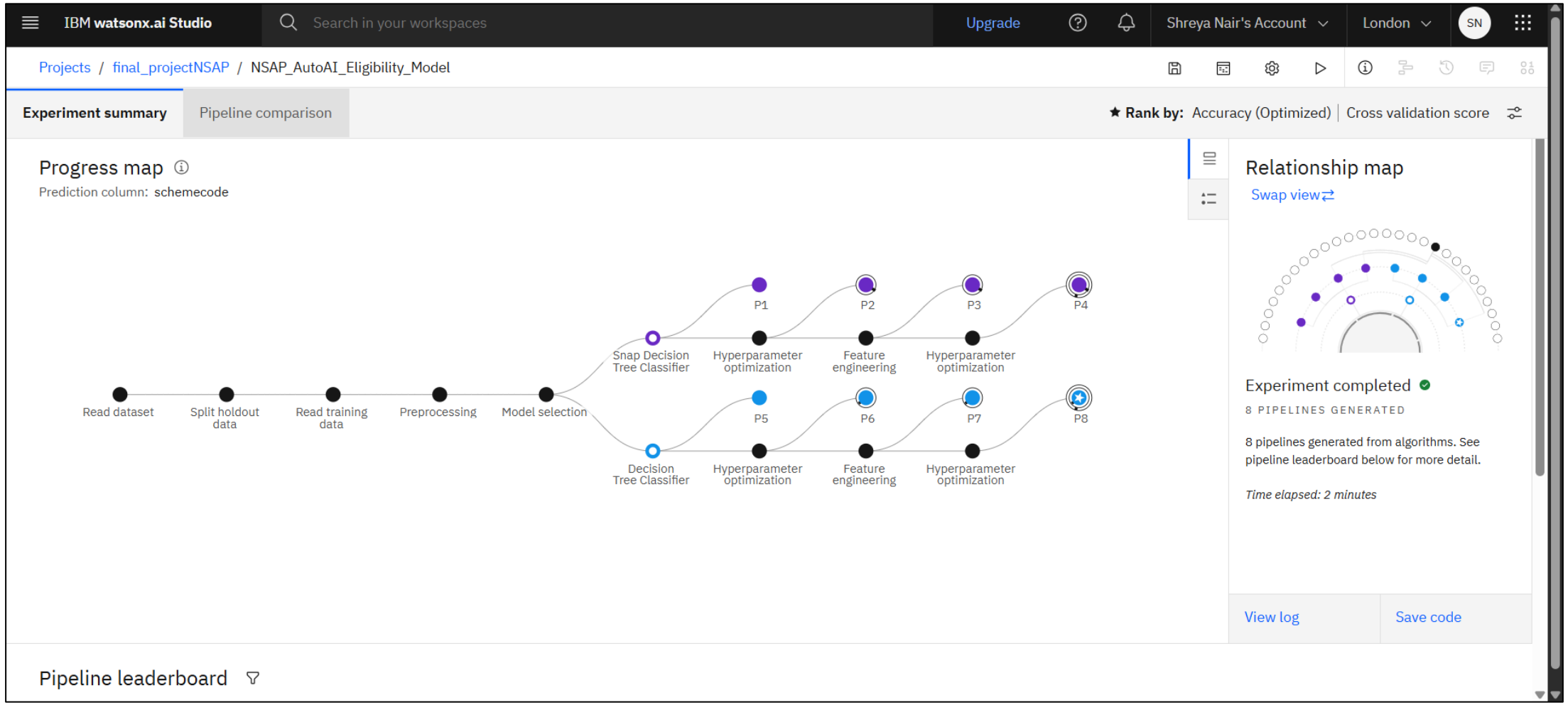
- **Prediction Process:**

  Model deployed on IBM Watson Studio, integrated with an API endpoint for real-time NSAP scheme classification and decision support.

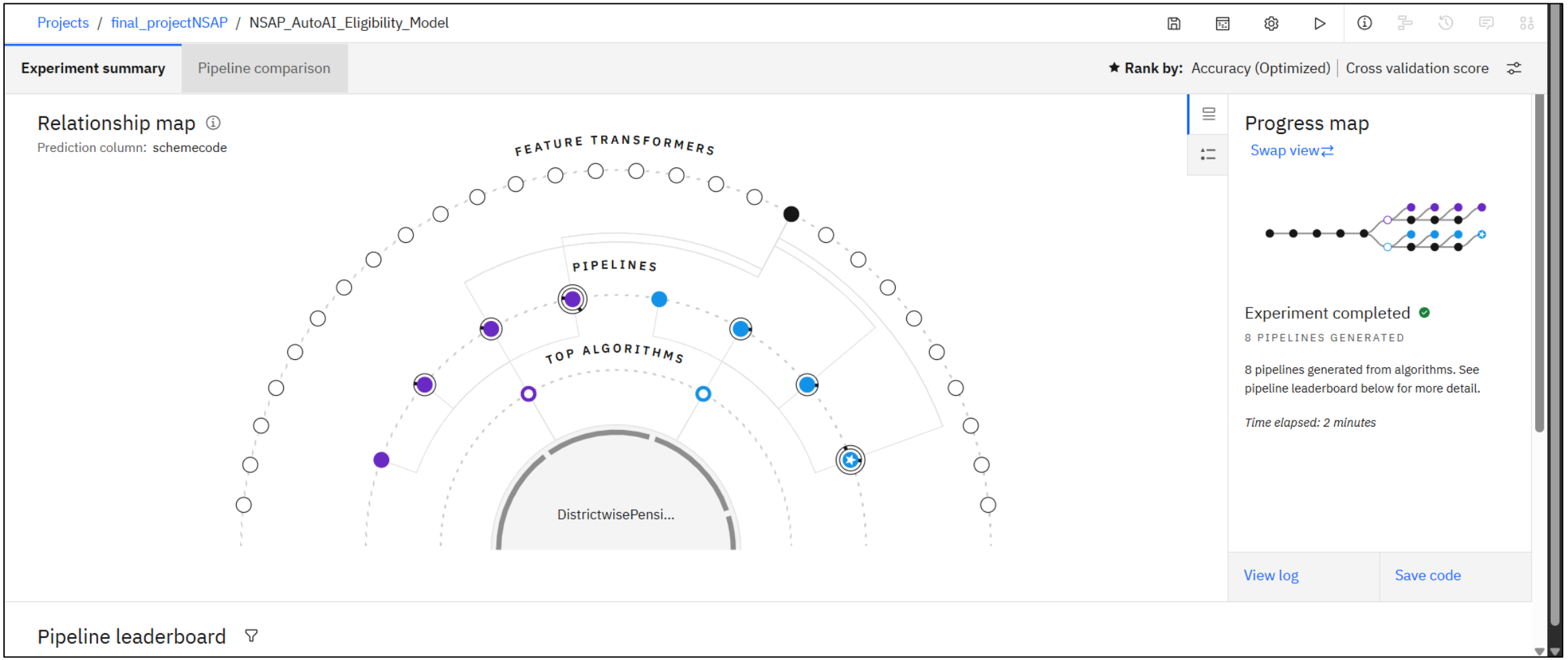
RESULT



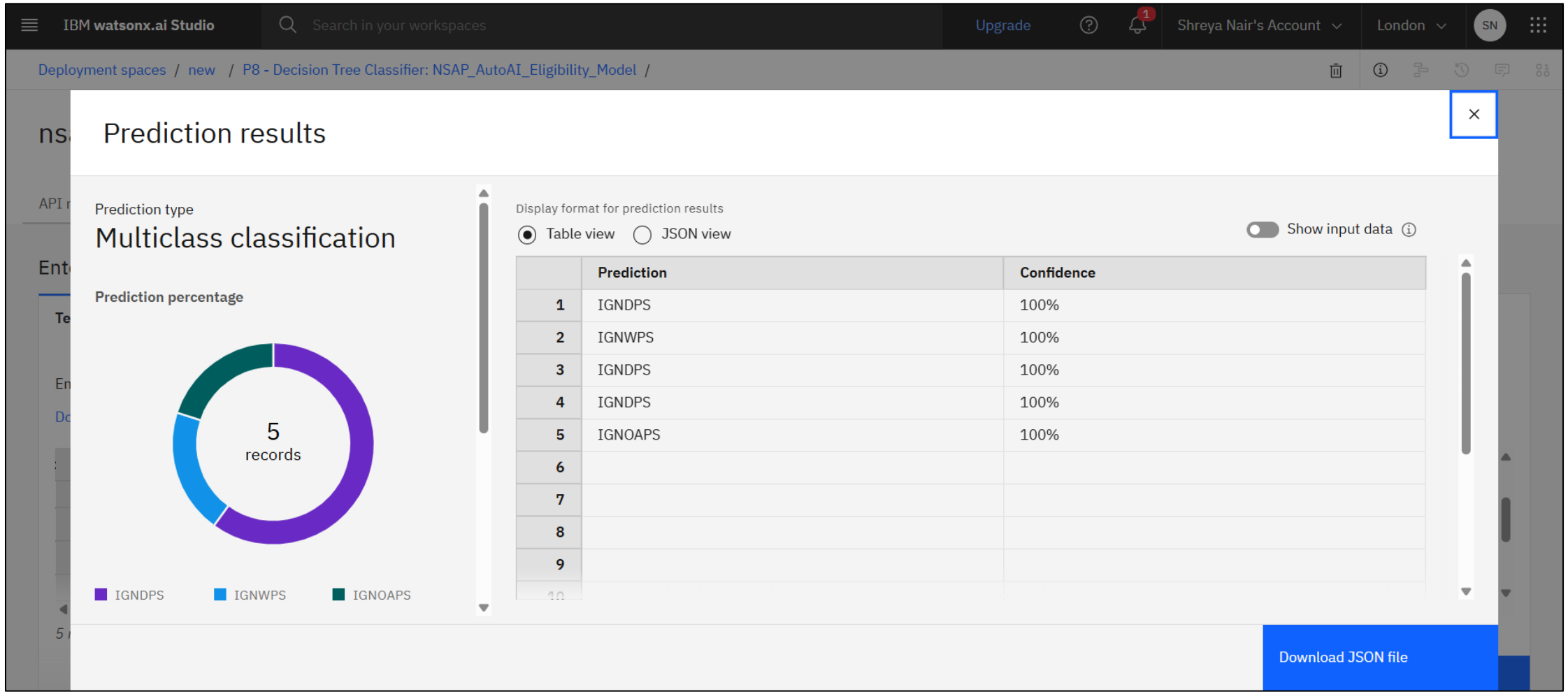
RESULT



RESULT



RESULT



CONCLUSION

- This project successfully demonstrates the use of machine learning to predict NSAP scheme eligibility based on real government data. By deploying the Decision Tree Classifier on IBM Watson Studio, the model enables faster and more accurate decision-making, ensuring timely welfare delivery to deserving citizens.

FUTURE SCOPE

- Future enhancements may include integrating more granular socio-economic indicators, expanding the dataset to include real-time beneficiary updates, and optimizing the Decision Tree Classifier with ensemble or hybrid models. The system can also be scaled to evaluate eligibility across various other government schemes and leverage advanced AI techniques or edge deployment to support decision-making even in low-connectivity regions.

REFERENCES

- AI-KOSH Dataset on District-wise NSAP Pension Data, https://aikosh.indiaai.gov.in/web/datasets/details/district_wise_pension_data_under_the_national_social_assistance_programme_nsap_1.html
- IBM Watson Studio Documentation, https://www.ibm.com/cloud/watson-studio
- National Social Assistance Programme (NSAP), Ministry of Rural Development, https://nsap.nic.in
- IBM Cloud Object Storage, https://www.ibm.com/cloud/object-storage

IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence

Getting Started with Artificial Intelligence
IBM SkillsBuild

SHREYA NAIR

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence

Issued on: Jul 15, 2025
Issued by: IBM SkillsBuild

Verify: https://www.credly.com/badges/8db94f7d-bc4a-4aa8-82fc-46c034b2be61

IBM

IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence

Journey to Cloud: Envisioning Your Solution
IBM SkillsBuild

SHREYA NAIR

Has successfully satisfied the requirements for:

Journey to Cloud: Envisioning Your Solution

Issued on: Jul 16, 2025
Issued by: IBM SkillsBuild

Verify: https://www.credly.com/badges/ae051930-240e-45c1-be80-415c7ace0083

IBM

IBM CERTIFICATIONS

IBM **SkillsBuild** Completion Certificate

This certificate is presented to

SHREYA NAIR

for the completion of

Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

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

edunet foundation

THANK YOU

edunet foundation