IBM AGENTIC AI PROJECT

AGENTIC CAREER COUNSELING COMPANION

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OUTLINE

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

PROBLEM STATEMENT

Students often struggle to make informed career decisions due to fragmented access to guidance, limited self-awareness of academic strengths, and rapidly evolving industry landscapes. Traditional counseling methods lack personalization and scalability, leading to missed opportunities and career mismatches. The challenge is to develop an intelligent, autonomous agent that continuously monitors student performance, evolving interests, and real-time labor market trends to deliver tailored career pathway suggestions. This would empower students to make confident, future-ready decisions with minimal dependency on manual intervention.

PROPOSED SOLUTION

- The proposed system aims to guide students in choosing the most suitable career paths by analyzing their academic stream, interests, and year of study. The solution uses IBM Watson Assistant to create a smart, interactive chatbot that offers personalized suggestions.
- Data Collection:
  - Used a predefined dataset mapping branch, interest, and year to career options.
  - Future scope includes using academic performance and resume data.
- Data Preprocessing:
  - Created intents and entities (@branch, @year & @entities) for accurate input handling.
  - Standardized input values for better recognition.
- Chatbot Logic:
  - Designed a structured flow using Watson Assistant (Dialog Skill).
  - Bot asks questions and responds with tailored career guidance.
- Deployment:
  - Deployed on IBM Watsonx.ai Studio
  - Accessible through web-based preview and ready for future integration.
- Evaluation:
  - Tested for smooth flow, Intent accuracy, and response quality.
  - Helps students explore careers, skills, and courses interactively.
  - Result: Delivered a working career counselling assistant. Helps students explore careers, skills, and courses interactively

SYSTEM APPROACH

The "System Approach" section outlines the overall strategy and methodology for developing and implementing the AI-based Career Counsellor Bot using IBM Watson Assistant. It focuses on the platform setup, tools used, and logical design behind the chatbot's functioning.

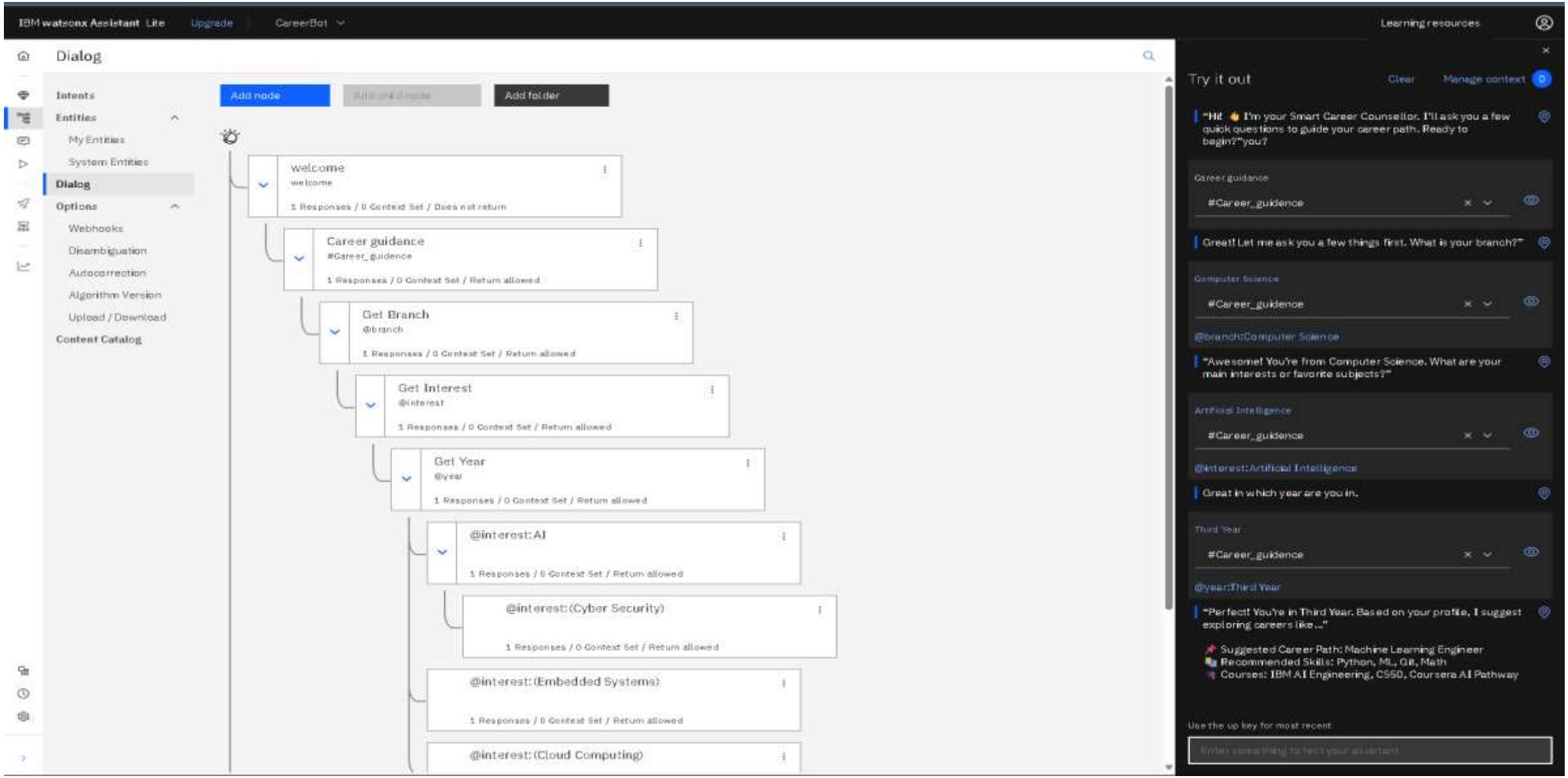
- System requirements: IBM cloud with Watsonx.ai and Watson Assistant access

- Library required to build the model: IBM Watson Assistant (Dialog Skill) for conversation flow.

ALGORITHM & DEPLOYMENT

- This section outlines the logic used to deliver personalized career suggestions through IBM Watson Assistant, based on predefined inputs and rules. :
- **Algorithm Selection:**
  - A rule-based approach was implemented using Dialog Skills.
  - Chosen for its simplicity and real-time response capability.
- **Data Input:**
  - Inputs: @branch, @interest, and @year.
  - Mapped to a predefined dataset containing career paths and skills.
- **Response Generation:**
  - Dialog flow uses conditions to generate personalized suggestions.
  - Responses include career role, skills, and recommended courses.
- **Future Scope**
  - Can be extended with ML models via Jupyter for dynamic prediction.
  - Inputs like CGPA or resume data can enhance accuracy.

RESULT


IBM watsonx Assistant Lite
Upgrade
CareerBot
Learning resources
Dialog
Intents
Entities
My Entities
System Entities
Dialog
Options
Webhooks
Disambiguation
Autocorrection
Algorithm Version
Upload / Download
Content Catalog
Add node
Add folder
welcome
welcome
1 Responses / 0 Context Set / Does not return
Career guidance
#Career_guidence
1 Responses / 0 Context Set / Return allowed
Get Branch
@branch
1 Responses / 0 Context Set / Return allowed
Get Interest
@interest
1 Responses / 0 Context Set / Return allowed
Get Year
@year
1 Responses / 0 Context Set / Return allowed
@interest:AI
1 Responses / 0 Context Set / Return allowed
@interest:(Cyber Security)
1 Responses / 0 Context Set / Return allowed
@interest:(Embedded Systems)
1 Responses / 0 Context Set / Return allowed
@interest:(Cloud Computing)
Try it out
Clear
Manage context
"Hi! I'm your Smart Career Counsellor. I'll ask you a few quick questions to guide your career path. Ready to begin?"you?
Career guidance
#Career_guidence
Great! Let me ask you a few things first. What is your branch?"
Computer Science
#Career_guidence
@branch:Computer Science
"Awesome! You're from Computer Science. What are your main interests or favorite subjects?"
Artificial Intelligence
#Career_guidence
@interest:Artificial Intelligence
Great in which year are you in.
Third Year
#Career_guidence
@year:Third Year
"Perfect! You're in Third Year. Based on your profile, I suggest exploring careers like..."
Suggested Career Path: Machine Learning Engineer
Recommended Skills: Python, ML, Git, Math
Courses: IBM AI Engineering, CS50, Coursera AI Pathway
Use the up key for most recent

CONCLUSION

- **Summary & Effectiveness**
- The Career Counsellor Bot successfully delivers personalized guidance based on user inputs like branch, year, and interest.
- The solution proved effective in offering structured responses with recommended career paths, required skills, and learning resources.

- **Challenges**
- Dialog skill logic required careful entity recognition to avoid fallback responses.
- Limited dynamic adaptability without an integrated ML model.

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FUTURE SCOPE

- The current rule-based chatbot can be enhanced further to increase its intelligence, scalability, and user engagement.

Planned Enhancements

- **ML Integration**: Use Jupyter + AutoAI to predict careers based on CGPA, interests, and academic data.
- **Resume Parsing**: Allow users to upload resumes for personalized career suggestions.

User Experience Expansion

- **Multilingual Support**: Support regional languages to reach a broader student base.
- **WhatsApp/Email Integration**: Deliver career guidance directly via Twilio API.

REFERENCES

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A. Kumar, R. Singh. International Journal of Computer Applications, 2020.

- Building Chatbots with Watson Assistant

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https://developer.ibm.com/tutorials

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- Coursera AI Career Guidance Specialization

https://www.coursera.org/specializations/ai-for-everyone

MY GitHub Link: https://github.com/DEEPAK21072005/CareerBot-AI-Assistant

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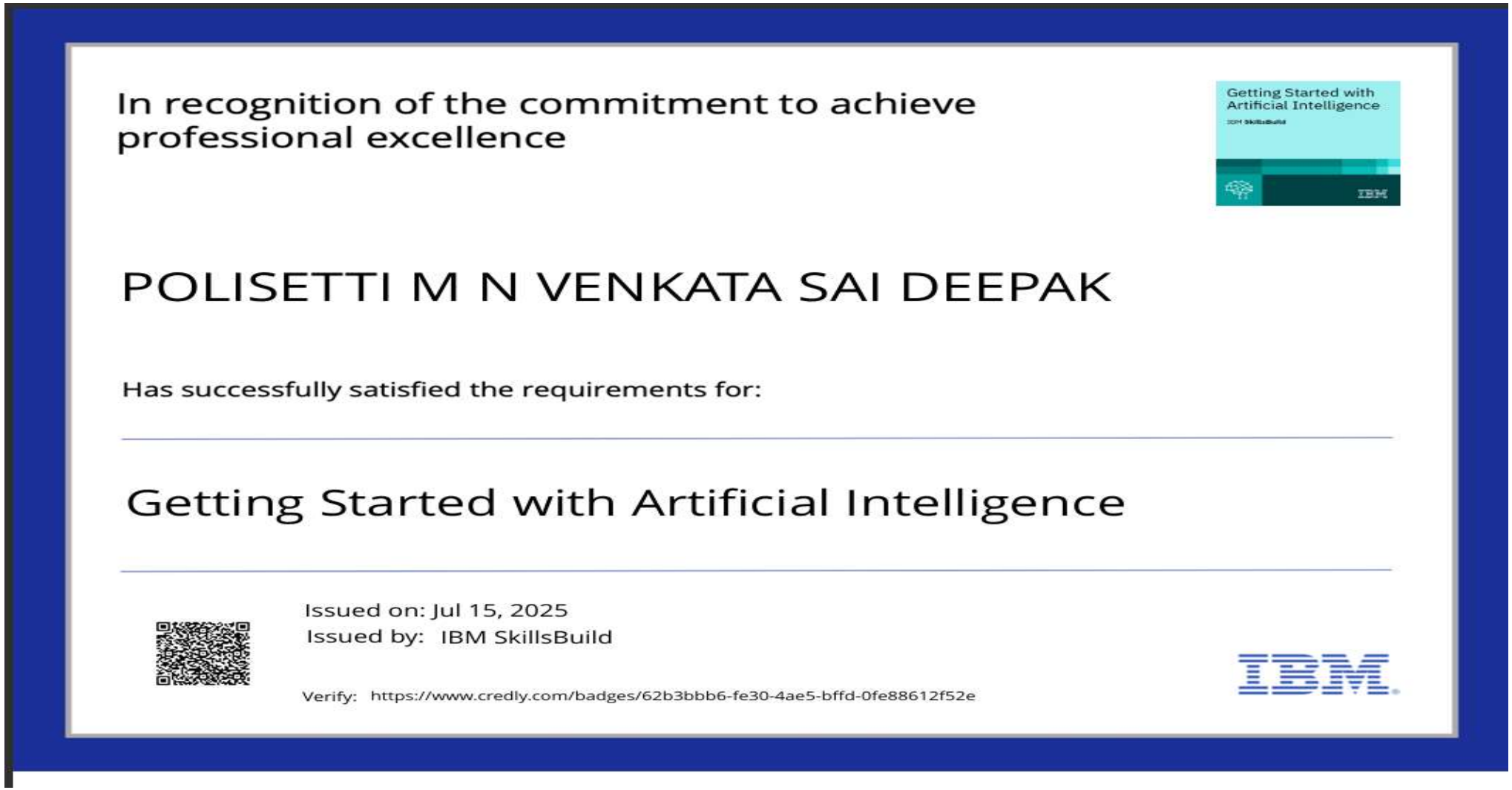
IBM CERTIFICATIONS



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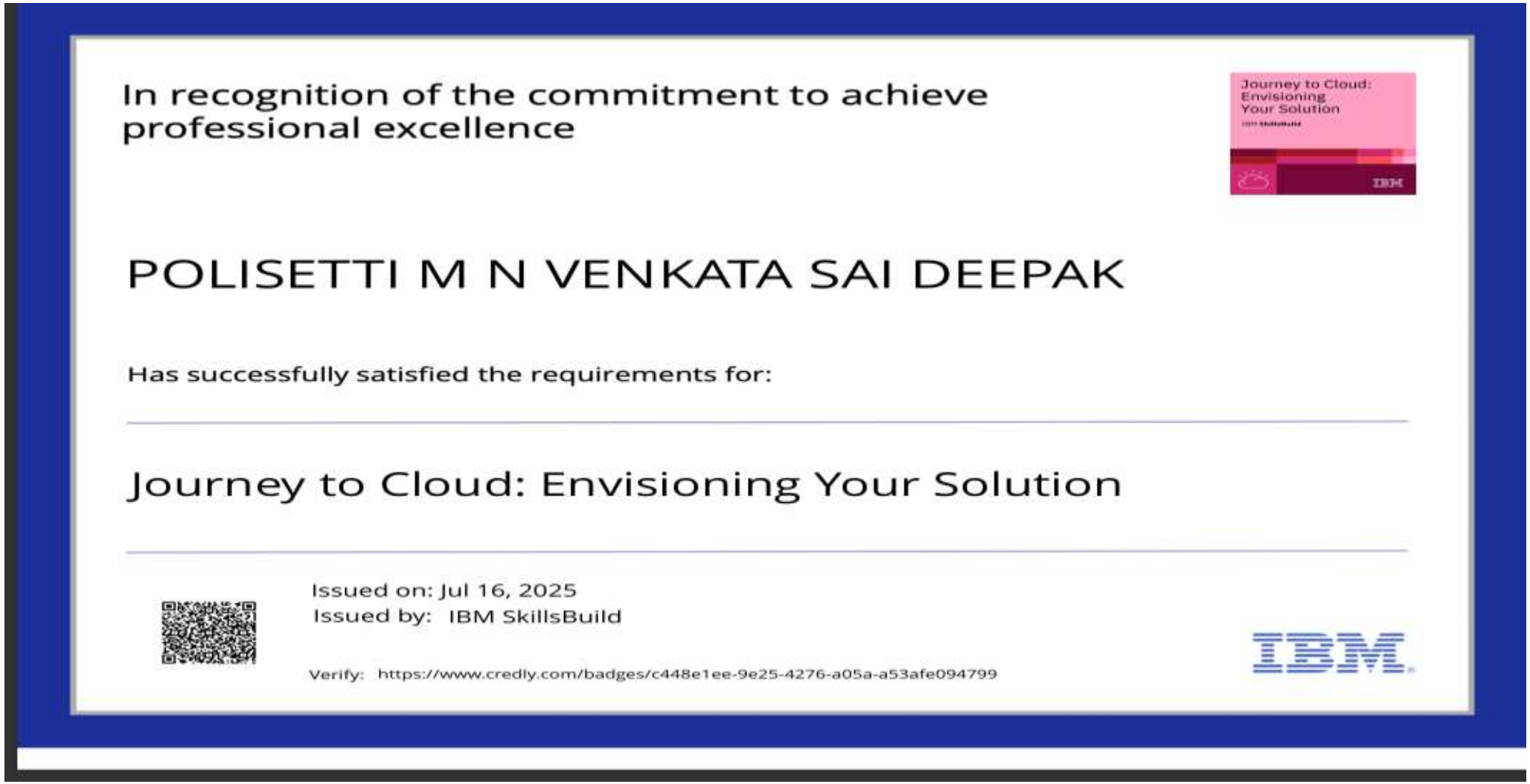

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IBM CERTIFICATIONS

IBM **SkillsBuild** Completion Certificate

This certificate is presented to

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for the completion of

Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 15 Jul 2025 (GMT) **Learning hours:** 20 mins

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THANK YOU

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