
CAPSTONE PROJECT

COLLEGE ADMISSION AGENT (RAG-BASED)

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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 college admission process often overwhelms students with complex information about eligibility, deadlines, and courses. Institutions handle countless inquiries manually, leading to inefficiencies and delays. There's a strong need for an intelligent system that can simplify and streamline the process using real-time and trusted information sources.

PROPOSED SOLUTION

- The proposed system aims to address the challenge of simplifying and streamlining the college admission process using a Retrieval-Augmented Generation (RAG) based AI agent. The solution will consist of the following components:
- **Data Collection:**
- Gather institutional data including:
- Course offerings, eligibility criteria, and fee structures
- **Data Preprocessing:**
- Clean and organize unstructured admission-related documents (PDFs, DOCs, etc.).
- Perform text normalization, keyword tagging, and metadata extraction.
- **RAG-Based AI Agent:**
- Implement a Retrieval-Augmented Generation pipeline combining:
- **Retriever:** to fetch relevant data chunks from institutional content
- **Deployment:**
- Develop a user-friendly chatbot/web-based interface for real-time student interaction
- Use **IBM Cloud Lite** for deployment with a scalable backend
- Enable multilingual support and responsive design for mobile/desktop platforms
- **Evaluation:**
- Measure system performance using: **Accuracy** of responses and **Response latency** and user satisfaction feedback.
- Result:
- A functional AI-based admission assistant that answers queries with high accuracy

SYSTEM APPROACH

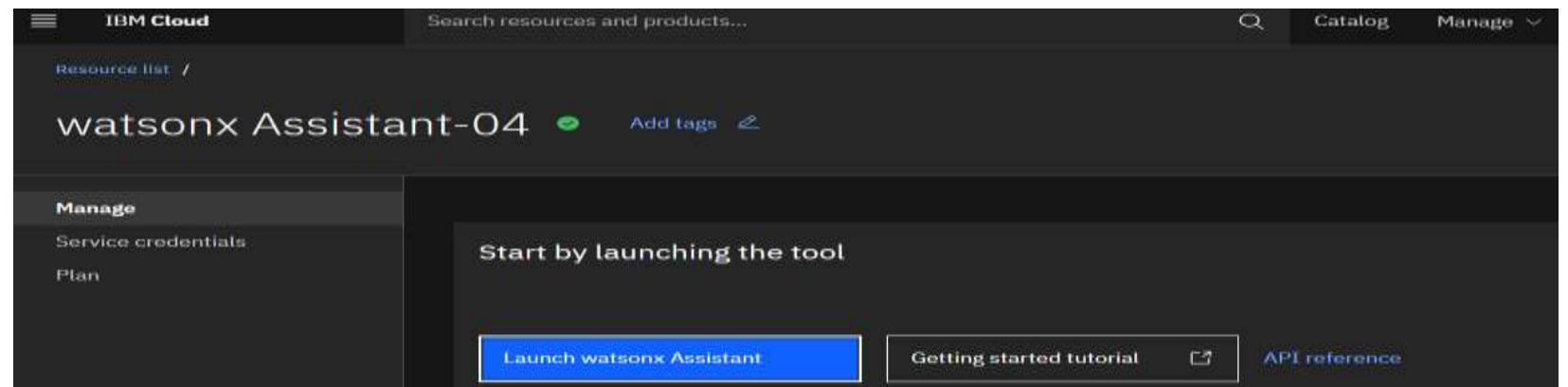
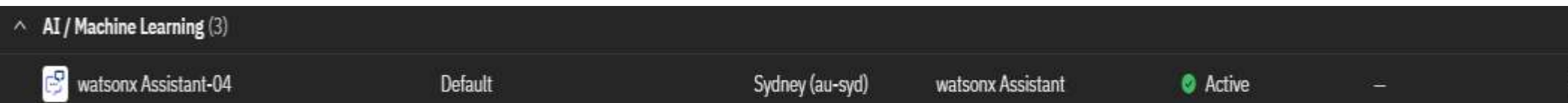
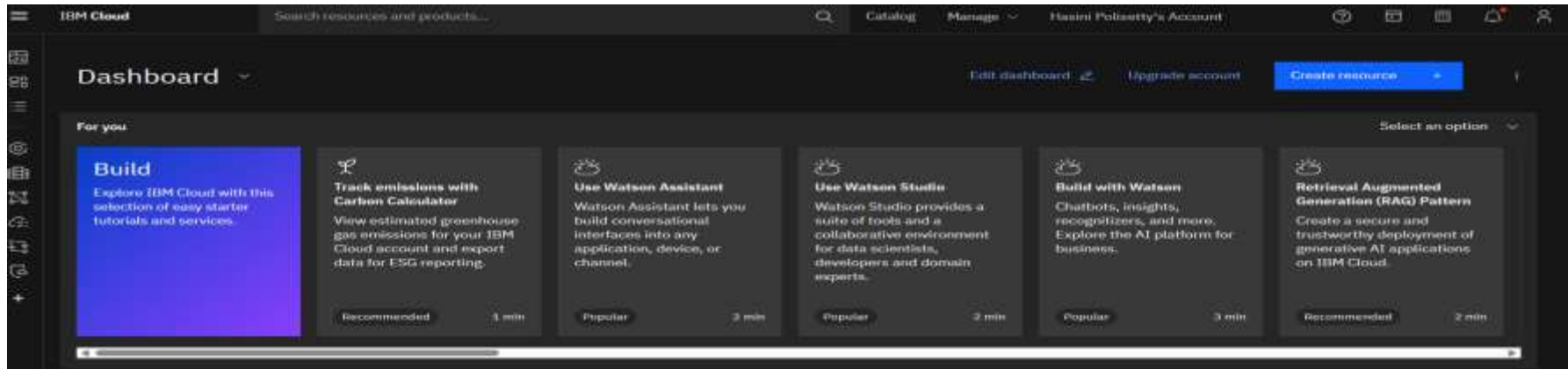
The "System Approach" section outlines the overall strategy and methodology for developing and implementing the rental bike prediction system. Here's a suggested structure for this section:

- IBM Cloud Lite Services
- IBM Granite (LLM)
- Python (Flask) for UI
- MongoDB/Cloudant for data
- APIs for data retrieval and live updates

ALGORITHM & DEPLOYMENT

- In the Algorithm section, describe the machine learning algorithm chosen for predicting bike counts. Here's an example structure for this section:
- **Algorithm Selection:**
 - Implement a **RAG architecture** combining: Dense retriever for querying institutional FAQs/documents.
- **Training Process:**
 - A curated dataset of institutional FAQs, admission documents, past queries, and official notifications.
- **Prediction Process:**
 - The **retriever** searches the knowledge base for the top-k most relevant chunks.

ALGORITHM & DEPLOYMENT



ALGORITHM & DEPLOYMENT

The screenshot shows the IBM Assistant Builder interface for an assistant named "College Admission Assistant". The interface includes a sidebar with navigation icons, a top navigation bar with "View all assistants" and "What's new" links, and a main content area. A notification banner at the top states: "Your assistant now has new watsonx generative AI features! [Learn more](#) about intelligent information gathering." The main content area is divided into two sections. The top section, "Enhance your assistant", lists seven recommendations: "Build actions", "Customize your greeting", "Create a fallback plan", "Set up search", "Preview & debug", "Customize web chat", and "Set up a channel". The bottom section, "Assistant architecture", shows a flowchart of the assistant's structure. The flowchart starts with "College Admission As..." (truncated) on the left, which branches into "Default behavior", "Actions", and "Fallback". "Default behavior" leads to "Conversational search", which leads to "Search". "Actions" leads to "Custom-built" (10 actions). "Fallback" leads to "Live agent".

View all assistants

What's new Documentation

Assistant Builder Home

College Admission Assistant

Last updated on July 28, 2025 6:52:48 PM GMT+8:30

Your assistant now has new watsonx generative AI features! [Learn more](#) about intelligent information gathering.

Enhance your assistant
Further improve and customize your assistant with these recommendations.

- Build actions**
Enhance and improve your assistant's actions.
- Customize your greeting**
Welcome your users in a unique way that aligns with your brand.
- Create a fallback plan**
Train your assistant to adapt to specific situations.
- Set up search**
Determine how your assistant extracts answers for your users' questions.
- Preview & debug**
Enable debug mode when you preview your assistant.
- Customize web chat**
Design how your assistant shows up in your live environment.
- Set up a channel**
Select the channels you want to deploy your assistant to.

Assistant architecture
Here's an overview that depicts the structure of your assistant.

College Admission As...

Default behavior

Conversational search
No content [Add](#)

Search

Actions
[View](#)

Custom-built
10 actions [Add](#)

Fallback

Live agent

ALGORITHM & DEPLOYMENT

Actions

All items

Created by you

Set by assistant

Variables

Created by you

Set by assistant

Set by integration

Saved responses

Created by you /

Filter by Title or Display name

New action +

<input type="checkbox"/>	Title	Display name	Last edited	Examples	Steps	Status	
<input type="checkbox"/>	Course Info	-	4 hours ago	3	7	✓	⋮
<input type="checkbox"/>	Eligibility	Eligibility	4 days ago	4	6	✓	⋮
<input type="checkbox"/>	Fee Structure	-	4 days ago	5	6	✓	⋮
<input type="checkbox"/>	Admission Deadlines	-	4 days ago	5	1	✓	⋮
<input type="checkbox"/>	FAQs	user_question	4 days ago	6	1	✓	⋮
<input type="checkbox"/>	Hostel Info	user_question	4 days ago	5	1	✓	⋮
<input type="checkbox"/>	Scholarship Info	-	4 days ago	4	1	✓	⋮
<input type="checkbox"/>	Entrance Exam Info	-	4 days ago	4	1	✓	⋮
<input type="checkbox"/>	Admission Help	-	4 days ago	4	1	✓	⋮
<input type="checkbox"/>	Contact Info	-	4 days ago	4	1	✓	⋮

Items per page: 50 Showing 1–10 of 10 items

1 1 of 1 pages

Preview ▶

RESULT

- 1) A functional AI-based admission assistant that answers queries with high accuracy
- 2) Real-time information access for students, reducing manual workload for staff
- 3) Enhanced admission transparency, applicant engagement, and accessibility

RESULT

Assistant

Hi! I'm a virtual assistant.
How can I help you today?

Course Info

Eligibility

Fee Structure

Type something...

Built with IBM watsonx ⓘ

Assistant

You 4:03 PM

Course Info

4:03 PM

We offer the following courses:
B. Tech
BBA
BCA
MBA (Marketing, Finance, HR)
M. Tech (AI & Data Science)
PLEASE TYPE "OK" TO GO TO NEXT STEP

You 4:03 PM

OK

Assistant

You 4:03 PM

OK

4:03 PM

Which course are you interested in?

Select an option

BBA

B. Tech

MBA

BCA

M. Tech

Type something...

Built with IBM watsonx ⓘ

Assistant

OK

4:03 PM

Which course are you interested in?

B. Tech

You 4:08 PM

B. Tech

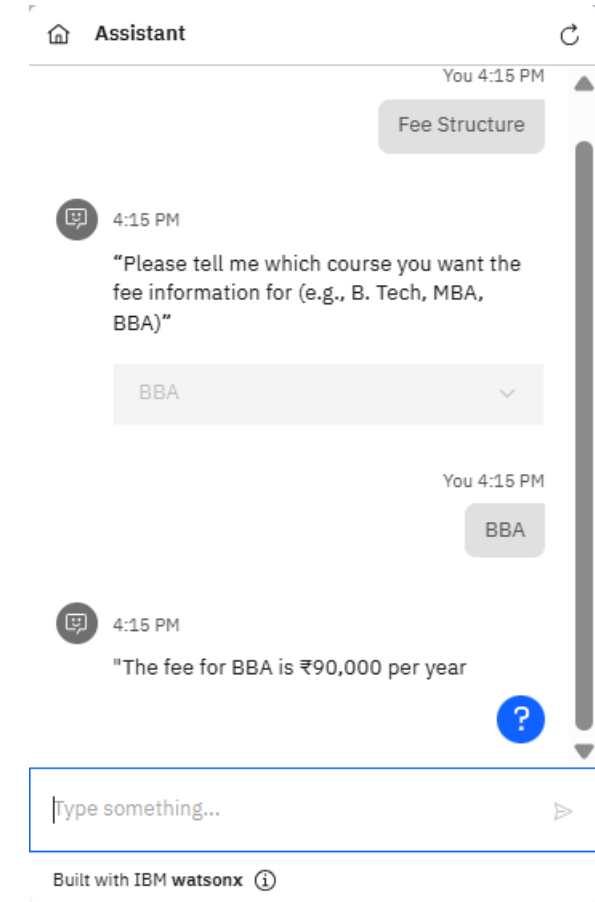
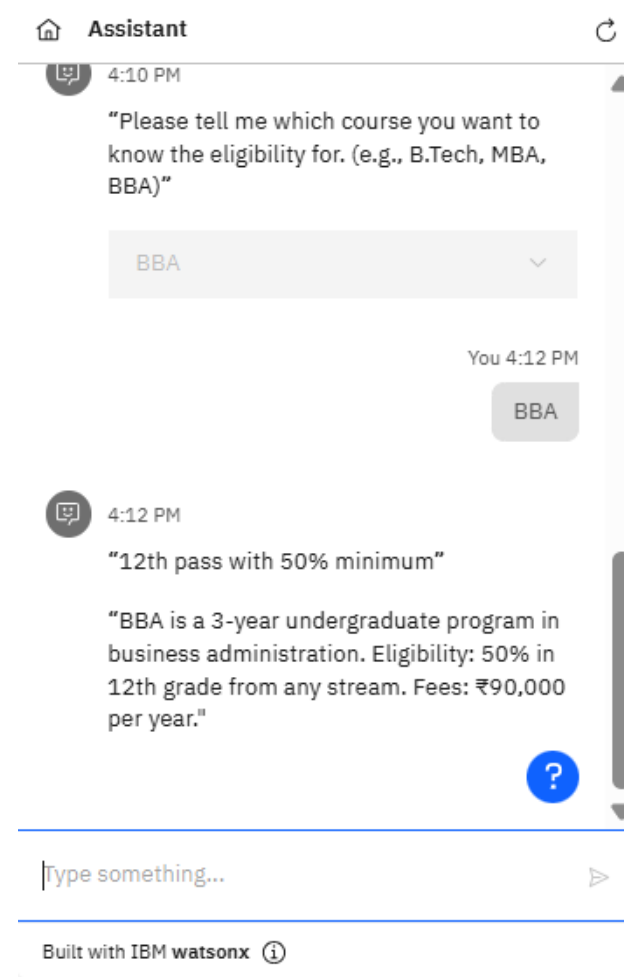
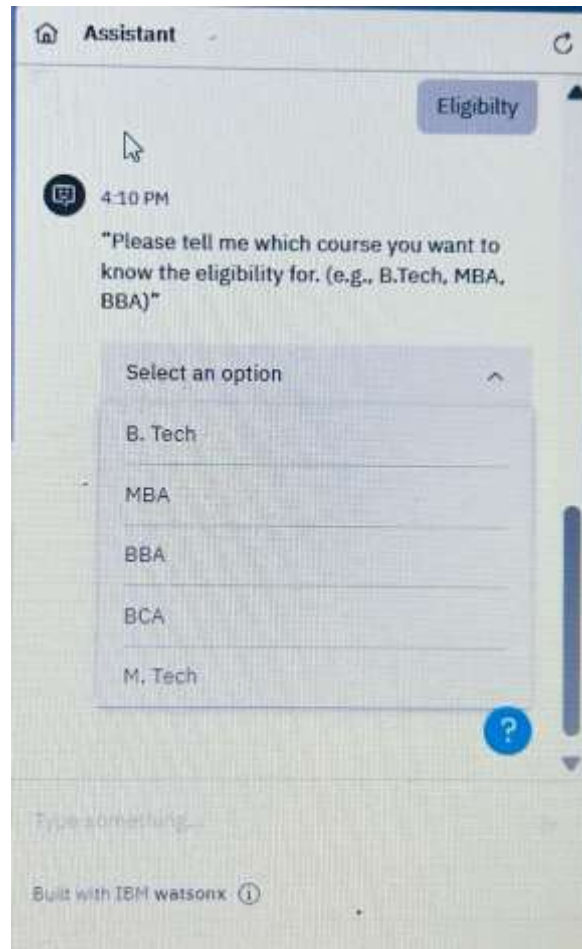
4:08 PM

"B. Tech is a 4-year engineering program.
Eligibility: 12th with PCM (Physics,
Chemistry, Maths), 60% minimum. Fees:
₹1,25,000 per year."



Type something...

Built with IBM watsonx ⓘ

RESULT



RESULT

 Assistant 

Admission Deadlines

4:17 PM

The last date to apply for all courses is 31st August 2025. Let me know if you'd like to know about courses, fees, or eligibility!

You 4:17 PM

Hostel Info



4:17 PM

Yes, hostel facilities are available for both boys and girls. Rooms are allotted on a first-come, first-served basis. You can contact the admissions office for availability.

?

Type something...

Built with IBM watsonx ⓘ

 Assistant 

Admission Deadlines

4:18 PM

Scholarships are available based on academic performance, financial background, and entrance exam scores. Please check our website or contact the admissions office for detailed criteria.

You 4:18 PM

Entrance Exam Info



4:18 PM

Yes, an entrance exam is usually required for admission. The exact date and pattern depend on your course. Visit the admissions page or contact support for more details.

?

Type something...

Built with IBM watsonx ⓘ

 Assistant 

You 4:19 PM

Admission Help

4:19 PM

Sure! You can apply online via our admissions portal. Make sure to upload the required documents. If you need help, our admission team can assist you step by step.

You 4:19 PM

Contact Info

4:19 PM

You can contact us at **+91-1234567890** or email admissions@university.edu. Our office is open from 9 AM to 5 PM on weekdays.

?

You 4:20 PM

Type something...

Built with IBM watsonx ⓘ

CONCLUSION

- The College Admission Agent streamlines the admission process by providing accurate, instant, and context-aware responses using RAG and IBM Granite. It reduces manual workload, improves applicant experience, and enhances transparency in admissions.

FUTURE SCOPE

- Discuss potential enhancements and expansions for the system. This could include incorporating additional data sources, optimizing the algorithm for better performance, and expanding the system to cover multiple cities or regions. Consider the integration of emerging technologies such as edge computing or advanced machine learning

REFERENCES

- IBM Granite & Cloud Lite Documentation
- LangChain & HuggingFace (RAG Framework)
- Official College Admission Circulars
- Research on RAG (Lewis et al., 2020)

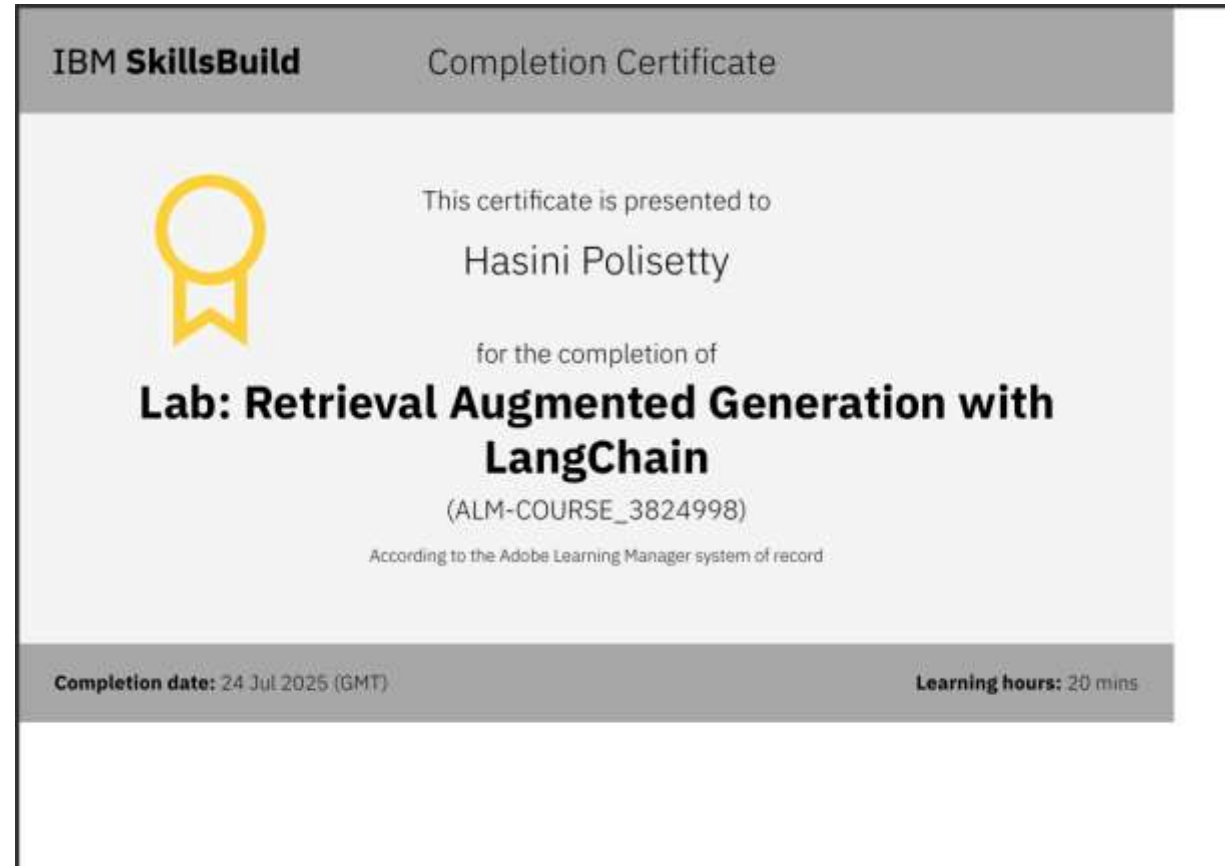
IBM CERTIFICATIONS



IBM CERTIFICATIONS



IBM CERTIFICATIONS





THANK YOU