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# **CAPSTONE PROJECT**

## **COLLEGE ADMISSION AGENT**

**Presented By:**

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# OUTLINE

- Problem Statement
- Proposed System/Solution
- System Development Approach
- Algorithm & Deployment
- Result
- Conclusion
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# PROBLEM STATEMENT

PS [4] - A College Admission Agent, powered by RAG (Retrieval-Augmented Generation), streamlines the student admission process. It retrieves and summarizes admission policies, eligibility criteria, and FAQs from institutional databases and official sources. Prospective students can ask natural language questions and receive accurate, up-to-date responses instantly. The agent helps with course selection, application guidance, fee structure, and important deadlines. Using trusted, real-time data, it reduces manual inquiries and enhances applicant experience. This AI-driven assistant boosts transparency, accessibility, and efficiency in college admissions.

# PROPOSED SOLUTION

This project aims to build an AI-powered agent that improves the college admissions experience by providing instant, accurate answers to student queries. Leveraging IBM Cloud services and IBM Granite Foundation Models via watsonx.ai, the system uses Retrieval-Augmented Generation (RAG) to find, summarize, and deliver official policy details, deadlines, eligibility criteria, and FAQs in plain language.

## Components:

**1. User Query Input:** Prospective students, parents, or counselors can enter questions or topics through a web chat interface.

- “What is the eligibility for BTech this year?”
- “Show me MBA deadlines”
- “How much is the application fee?”

**2. AI-Powered Retrieval and Summarization:** The agent uses IBM watsonx Discovery and Granite language models to:

- Retrieve the most relevant information from college admission documents, official notices, fee tables, and FAQs stored in IBM Cloud Object Storage.
- Summarize or directly quote policy details based on the user’s query.
- Adjust responses for clarity, directness, and context (e.g., “Explain in simple terms”).

**3. Guided Assistance and Personalization:** The tool supports various response modes, such as:

- “Summarize the steps to apply for BBA”
  - “Explain eligibility for reserved categories”
  - “List only the key deadlines”
- Responses are tailored to the query—concise or detailed, as needed.

# SYSTEM APPROACH

## **Cloud Platform**

IBM Cloud Lite (Free Tier) – Used for lightweight deployment, prototyping, and AI integration via watsonx.ai.

## **AI Model**

Granite series large language model accessed through watsonx.ai, utilizing Retrieval-Augmented Generation (RAG) to provide accurate, context-based responses.

## **Backend**

Python-based API developed using the watsonx.ai SDK. It processes user queries, performs vector-based document retrieval, and returns grounded responses from the LLM.

## **Data Sources**

MITAOE admission-related files (admission\_criteria.txt, fees\_deadlines.txt, faqs.txt) are embedded and indexed using the RAG tool within Agent Lab.

## **Vector Database**

Watsonx.ai's built-in vector index (or an integrated vector database) is used to store and retrieve relevant chunks of documents for accurate grounding.

## **Optional Integrations**

- IBM Cloud Object Storage:** For storing uploaded documents, logs, and outputs

## **Deployment Options**

Deployment can be done using IBM Cloud Functions, Code Engine, or Cloud Foundry. Updates to the agent and models can be managed through Watson Studio notebooks or watsonx.ai's model management tools.

# ALGORITHM & DEPLOYMENT

The screenshot displays the IBM watsonx console interface. At the top, a dark navigation bar includes the 'IBM watsonx' logo, an 'Upgrade' button, and user account information for 'Ananya Binoj's Account' in the 'Dallas' region. Below this, a breadcrumb trail shows 'Deployment spaces /'. The main content area is titled 'Admission\_Guru' and features a tabbed interface with 'Overview', 'Assets', 'Deployments', 'Jobs', and 'Manage' (the active tab). A left-hand sidebar lists navigation options: 'Space', 'General' (selected), 'Access control', 'Environments', and 'Resource usage'. The 'General' section is divided into 'Details' and 'Storage' panels. The 'Details' panel shows the space name 'Admission\_Guru', a description 'No description provided.', the Space GUID 'fcf40b01-9cbf-4ce7-9cdc-8fb8eab821ab', creation details 'Aug 3, 2025, 5:00 PM by Ananya Binoj (You)', and the stage 'Testing'. The 'Storage' panel shows 'Storage used' as '0 Bytes', the storage name 'CloudObjectStorage', and the bucket 'c434940c-e6e0-4cb9-9368-8312f22c6883'. It also includes a link to 'Manage in IBM Cloud' and a section for 'watsonx.ai Runtime service' with an 'Associate instance' button.

IBM watsonx Upgrade ? Ananya Binoj's Account Dallas AB

Deployment spaces /

## Admission\_Guru

Overview Assets Deployments Jobs **Manage**

Space

- General**
- Access control
- Environments
- Resource usage

### General

#### Details

Name  
Admission\_Guru

Description  
No description provided.

Space GUID  
fcf40b01-9cbf-4ce7-9cdc-8fb8eab821ab

Date created  
Aug 3, 2025, 5:00 PM  
by Ananya Binoj (You)

Last updated  
Aug 3, 2025, 5:01 PM

Stage ⓘ  
Testing

Stage type ⓘ  
Pre-production

#### Storage ⓘ

Storage used  
**0 Bytes**

Name  
CloudObjectStorage

Bucket  
c434940c-e6e0-4cb9-9368-8312f22c6883

[Manage in IBM Cloud](#)

**watsonx.ai Runtime service** ⓘ

[Associate instance](#) +

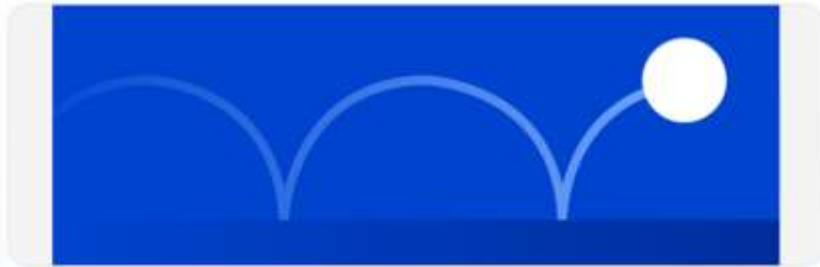
# RESULT

## Agent preview

Admission\_Guru 04:40 PM

### Welcome to Admission\_Guru

The agent helps with course selection, application guidance, fee structure, and important deadlines.



### Sample questions

What documents are required for admission? →

How can I apply for hostel accommodation? →

Type something...

## Agent preview

What documents are required for btech admission in mitaoe?

Admission\_Guru 04:49 PM

To find the specific document requirements for B.Tech admission at MITAOE (assuming this is a hypothetical or less known institution), I would typically use the  function to search through their official admission guidelines or website. However, since I don't have direct access to external databases or specific institutional documents, I recommend you visit the official MITAOE website or contact their admissions office directly for the most accurate information.


As a general guideline, for most B.Tech programs, you would typically need:

1. **JEE Main/Advanced or other entrance exam scores:** For engineering admissions in India, these standardized tests are crucial.
2. **10+2 Certificate and Marksheet:** Your higher secondary education certificate showing your performance in relevant subjects.
3. **Transfer Certificate (TC):** Issued by your previous school or board stating that you have completed your higher secondary education.
4. **Community/Domain Certificate:** Some institutions may require a certificate confirming your belonging to a specific category (OBC, SC, ST, or General) or domain (Physics, Chemistry, Mathematics for certain branches).
5. **Passing Certificate of 10th Standard:** As proof of completing your secondary education.
6. **Two Recent Passport Size Photographs:** As per the current ICAI specifications.

Type something...

## Agent preview

What is the fee structure for B.Tech programs?

 Admission\_Guru 04:56 PM

The fee structure for B.Tech programs at MIT Academy of Engineering, Pune varies based on categories such as General, OBC/EWS Male, OBC/EWS Female, and SC/ST/TFWS/J&K. Here are the approximate annual fees:

- General/All: ₹1,91,737
- OBC/EWS Male: ₹1,08,694
- OBC/EWS Female: ₹25,650
- SC/ST/TFWS/J&K: ₹24,737

For M.Tech programs, the annual fee is approximately ₹1,13,000.

Hostel charges for B.Tech and M.Tech are around ₹1,20,000 per year.

Please note that these fees are subject to change annually, and additional charges like caution deposits, skill lab fees, etc., may apply. Always refer to the official MITAOE admissions brochure or the institute's website for the most accurate and updated fee structure.

► How did I get this answer?



Type something...



## Agent preview

what all courses are offered by mitaoe ??

 Admission\_Guru 04:57 PM

MIT Academy of Engineering (MITAOE), Pune offers a wide range of undergraduate and postgraduate programs across various engineering disciplines. Here are some of the courses they offer:

Undergraduate Programs:

1. B.E. (Bachelor of Engineering) in various specializations such as Computer Engineering, Electronics and Communication Engineering, Mechanical Engineering, Civil Engineering, Information Technology, etc.
2. B.Tech (Bachelor of Technology) in specializations like Biotechnology, Chemical Engineering, and others.

Postgraduate Programs:

1. M.E. (Master of Engineering) in specializations like Manufacturing, Computer Science, Electronics, etc.
2. M.Tech (Master of Technology) in specializations like Artificial Intelligence, Data Science, Computer Science, and others.
3. M.Sc. (Master of Science) in Computer Science.

Please note that the list of courses can change, and new programs may be introduced. For the

Type something...





# CONCLUSION

- The proposed AI-based College Admission Agent successfully streamlines and enhances the admissions process by leveraging IBM Granite Foundation Models via watsonx.ai and IBM Cloud's RAG architecture. It delivers accurate, up-to-date, and contextually relevant answers by retrieving official college policies, eligibility criteria, fee structures, and deadlines from indexed documents. The system's personalized, natural language responses improve transparency and accessibility for prospective students, reducing manual inquiries and administrative load. Key challenges addressed included effective prompt engineering, maintaining data freshness, and ensuring retrieval accuracy from diverse document formats. Future enhancements may focus on multilingual support, integration with dynamic enrollment data, and expanded custom logic tools for advanced guidance. Overall, the solution showcases the power of AI-driven knowledge augmentation to transform complex institutional processes into user-friendly, efficient experiences.

# FUTURE SCOPE

- **Multilingual Support:**  
Integrate IBM Watson Language Translator to enable the agent to understand queries and provide responses in multiple languages, making the admission process accessible to a broader range of prospective students.
- **Audio Accessibility:**  
Incorporate text-to-speech capabilities so users, including visually impaired or differently-abled individuals, can receive spoken responses for enhanced accessibility and convenience.
- **Personalized Guidance and Recommendations:**  
Enhance the agent with custom tools to offer personalized course and program recommendations based on users' academic background, interests, and goals, improving counseling effectiveness.
- **Feedback and Continuous Learning Loop:**  
Implement a mechanism for users to provide feedback on answers (accuracy, clarity, helpfulness), enabling iterative prompt tuning and content refinement based on real user experience.
- **Mobile and Offline Access:**  
Package the application for smartphones and offline environments, ensuring usability in low-connectivity or rural areas.

# REFERENCES

- Swacha, Jakub & Gracel, Michał. (2025). Retrieval-Augmented Generation (RAG) Chatbots for Education: A Survey of Applications. Applied Sciences. 15. 4234. 10.3390/app15084234.
- Modran, Horia & Bogdan, Ioana Corina & Ursutiu, Doru & Samoila, Cornel & Modran, Paul-Livius. (2024). LLM Intelligent Agent Tutoring in Higher Education Courses using a RAG Approach. 10.20944/preprints202407.0519.v1.
- D. B. Acharya, K. Kuppan and B. Divya, "Agentic AI: Autonomous Intelligence for Complex Goals—A Comprehensive Survey," in IEEE Access, vol. 13, pp. 18912-18936, 2025, doi: 10.1109/ACCESS.2025.3532853.
- <https://stackoverflow.blog/2023/12/06/behind-the-scenes-building-ibm-watsonx-an-ai-and-data-platform/>

# IBM CERTIFICATIONS



# IBM CERTIFICATIONS

In recognition of the commitment to achieve  
professional excellence



ANANYA BINOJ

Has successfully satisfied the requirements for:

Journey to Cloud: Envisioning Your Solution




Issued on: Jul 20, 2025  
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/1944ec6f-1ec1-4693-9cf6-6ff7918618c4>



# IBM CERTIFICATIONS

IBM <b>SkillsBuild</b>	Completion Certificate
	<p>This certificate is presented to</p> <p><b>ANANYA BINOJ</b></p> <p>for the completion of</p> <p><b>Lab: Retrieval Augmented Generation with LangChain</b></p> <p>(ALM-COURSE_3824998)</p> <p>According to the Adobe Learning Manager system of record</p>
<b>Completion date:</b> 24 Jul 2025 (GMT)	<b>Learning hours:</b> 20 mins



**THANK YOU**