
CAPSTONE PROJECT

COLLEGE ADMISSION AGENT

- RAG-BASED AI ASSISTANT

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OUTLINE

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PROBLEM STATEMENT

Many students face confusion while applying to college due to unclear eligibility criteria, fee structures, and deadlines. Manual query resolution delays the process and leads to inconsistencies. There is a need for an intelligent, real-time agent that can answer admission-related queries using reliable institutional documents.

PROPOSED SOLUTION

- The proposed system aims to solve the challenge of guiding students through the college admission process by leveraging Retrieval-Augmented Generation (RAG) powered by IBM Watsonx.ai. The chatbot uses natural language processing and document grounding to provide real-time, accurate responses based on institutional admission data. The solution consists of the following components:
- **Data Collection:**
 - Gather official documents such as brochures, eligibility criteria, FAQs, fee structures, and deadline notices.
 - Upload the collected information as a text file (e.g., college_admission_info.txt) into Watsonx.ai Prompt.
- **Prompt Engineering :**
 - Design a prompt that positions the bot as an admission assistant trained on the uploaded document.
 - Customize response tone to ensure answers are friendly, clear, and institutionally accurate.
- **Model Configuration:**
 - Select the Granite foundation model (e.g., granite-3-3-8b-instruct) from IBM's available LLMs.
 - Use Watsonx.ai Prompt Lab to test the model's ability to answer various admission-related questions in real time.
- **Deployment:**
 - Save the prompt as a Deployment Notebook or Template.
 - Create a deployment space and expose the model via public/private endpoint. The API can be invoked via curl, JavaScript, Python, or from IBM Cloud platform
- **Evaluation:**
 - Test using sample questions like.
 - "What are the eligibility criteria for MBA?"
 - Refine prompts or re-upload documents to improve grounding relevance and answer accuracy.
 - Result: The deployed chatbot responds to student queries instantly using trusted, grounded data.

SYSTEM APPROACH

■ Tools Used :

- IBM Watsonx.ai Prompt Lab
- IBM Granite LLM (granite-13b-chat-v2 or equivalent)
- Watson Studio Project (Cloud Pak for Data)
- Grounded generation (RAG)

■ Dataset :

- College admission brochure (eligibility, fees, deadlines)
- Uploaded as text file: college_admission_info.txt

PROMPT CONFIGURATION & DEPLOYMENT

- In this section, we describe how the RAG-based LLM assistant was built and deployed to answer college admission queries using IBM Watsonx.ai:
- Model Selection:
 - Selected IBM Granite foundation model (granite-3-3-8b-instruct) for its instruction-following capabilities and compatibility with Watsonx Prompt Lab.
 - The model is grounded using institution-specific documents to enable contextual, fact-based answering.
- Document Input:
 - Used a plain text (.txt) file containing official college admission data, including eligibility criteria, course structure, fees, and deadlines. Uploaded this file to Prompt Lab to ground the model responses to this specific information.
- Prompt Engineering:
 - Designed a system prompt that defines the chatbot's role as a helpful college admission agent.
 - Ensured the prompt included instructions for natural, precise, and document-grounded answers.
- Deployment :
 - Saved the prompt as a Deployment Notebook within IBM Watsonx.ai.
 - Deployed the chatbot to a dedicated Deployment Space ("CollegeAdmission_RAG_Bot")

RESULT

mission_RAG_Bot [-]

AI guardrails off Autosaved 1:06 AM New prompt + Deploy

Chat Structured Freeform AI Model: granite-3-3-8b-instruct

UA You: 11:14 PM

What are the eligibility criteria for B.Tech?

watsonx 11:14 PM

To be eligible for the B.Tech program at ABC Institute of Technology (ABCIT), applicants must have completed their 10+2 education with Physics, Chemistry, and Mathematics as subjects. They need to secure a minimum of 60% aggregate marks in these PCM subjects. Preference is given to candidates who have valid JEE Main scores. Additionally, lateral entry to the second year is available for diploma holders.

UA You: 11:15 PM

Does the college provide hostel facilities?

watsonx 11:15 PM

Yes, the ABC Institute of Technology (ABCIT) provides separate hostel facilities for boys and girls, with round-the-clock security. The hostel fee for a year is ₹60,000, which includes meals, utilities, and WiFi. A refundable security deposit of ₹5,000 is also required at the time of admission.

UA You: 11:15 PM

What documents are required at the time of admission?

watsonx 12:09 AM

At the time of admission to ABC Institute of Technology (ABCIT), the following documents are required:

1. Class 10th and 12th Marksheets and Certificates

2. Graduation Marksheets (for PG courses)

college_admission_info

Type something...

geAdmission_RAG_Bot [...]



AI guardrails off



Autosaved 1:06 AM



New prompt +

Deploy



Chat

Structured

Freeform

AI

Model: granite-3-3-8b-instruct



TXT



4. Government-issued Photo ID (National ID, Passport, etc.)

5. Transfer Certificate (TC)

6. Migration Certificate (if applicable)

7. Entrance Exam Scorecard (if applicable)

8. Domicile Certificate (for state quota)

9. Caste/Income Certificate (for reserved categories)

10. Medical Fitness Certificate

Please note that the list might vary slightly depending on the specific program and the applicant's eligibility category. It's always a good idea to check the official admission brochure or contact the institute directly for the most accurate and up-to-date information.



You: 01:06 AM

What are the eligibility criteria for B.Tech?



watsonx 01:06 AM

To be eligible for the B.Tech program at ABC Institute of Technology (ABCIT), applicants must meet the following criteria:

1. Have completed 10+2 education with Physics, Chemistry, and Mathematics as subjects.
2. Secure a minimum of 60% aggregate marks in the PCM subjects.
3. Preference is given to candidates who have valid JEE Main scores.
4. Lateral entry to the second year is available for diploma holders.

Please refer to the college admission brochure for the most accurate and up-to-date information.



college_admission_info



Type something...



College Admission RAG Bot



Deployed

Online

API reference

Test

Evaluations

Enter input data

Text

JSON

Text input and .csv files are not supported for this deployment because it does not have an input schema defined.

Manually enter or upload a file containing input data in JSON format. Max file size is 50 MB.

[Browse local files](#) ↗[Search in space](#) ↗

```
{
  "messages": [
    {
      "content": "What are the eligibility criteria for B.Tech?",
      "role": "user"
    }
  ]
}
```

Predict

IBM watsonx

Upgrade ? 🔔 Utkarsh Apoorv's Account Dallas UA

Deployment spaces / CollegeAdmission_RAG_Bot / College Admission RAG Bot /

Co

Prediction results

×

Display format for prediction results

☐ Table view ☒ JSON view

Show input data ⓘ

JSON view

```
{
  "choices": [
    {
      "finish_reason": "stop",
      "index": 0,
      "message": {
        "content": "To be eligible for the B.Tech program at ABC Institute of Technology (ABCIT), applicants must have completed their 10+2 education with Physics, Chemistry, and Mathematics as subjects. They need to secure a minimum of 60% aggregate marks in these PCM subjects. Preference is given to candidates who have valid scores in the JEE Main examination. Additionally, lateral entry to the second year is available for diploma holders.",
        "role": "assistant"
      }
    }
  ],
  "created": 1754164148,
  "created_at": "2025-08-02T19:49:09.956Z",
  "id": "chatcmpl-581c5f8f-174d-4f61-9d9f-2431d60a5898---32cc3c2062d1fd43b4ac914300361954---ea00e571-3987-416e-bbdc-8842bf9e038d",
  "model": "ibm/granite-3-3-8b-instruct",
  "model_id": "ibm/granite-3-3-8b-instruct",
  "model_version": "3.3.0",
  "object": "chat.completion",
  "usage": {
    "completion_tokens": 98,
    "prompt_tokens": 1975,
    "total_tokens": 2073
  }
}
```

Download JSON file

CONCLUSION

- We successfully built a chatbot using IBM Watsonx.ai that provides real-time responses to student queries based on institutional data.
- The no-code interface made it accessible for non-programmers.
- This solution enhances student experience and reduces manual workload in admissions.

FUTURE SCOPE

- Convert this into a full chatbot with Watson Assistant UI.
- Add multilingual support using Watsonx LLMs.
- Ground on multiple files (e.g., placement brochures, hostel policy).
- Turn into API-powered website.

REFERENCES

- IBM Watsonx.ai Documentation.
- IBM Prompt Lab Tutorials.
- College Brochure

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Utkarsh Apoorv

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

Completion Certificate



This certificate is presented to

Utkarsh Apoorv

for the completion of

**Lab: Retrieval Augmented Generation with
LangChain**

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 20 Jul 2025 (GMT)

Learning hours: 20 mins

- GitHub Link : <https://github.com/MrApoorv/college-agent>



THANK YOU