

1) Project Assigned : Quantum Tutor using Agentic AI (BeeAI Framework)

2) Objectives :

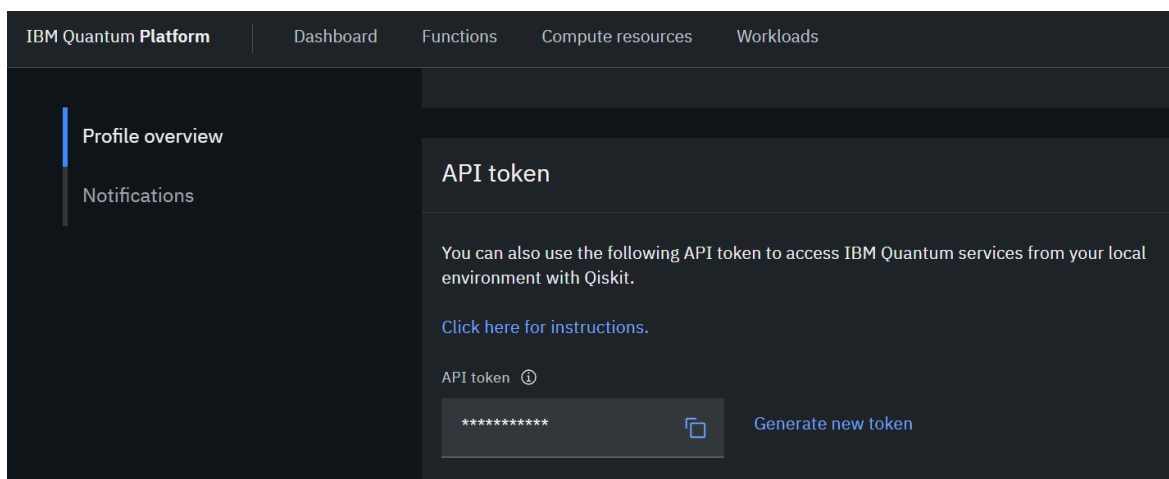
- a) Design and agentic AI chat bot using Bee AI
- b) Integrate an LLM less than 10 Billion parameters
- c) Initial implementation of a vanilla Q and A chatbot (agentic)
- d) Further implementation needs to have more reasoning
- e) Call APIs for specific use cases.

3) I've done a prototype of the project

```
!git clone https://github.com/i-am-bee/beeai-framework.git
%cd beeai-framework

Cloning into 'beeai-framework'...
remote: Enumerating objects: 13643, done.
remote: Counting objects: 100% (1708/1708), done.
remote: Compressing objects: 100% (1114/1114), done.
remote: Total 13643 (delta 1086), reused 737 (delta 586), pack-reused 11935 (from 4)
Receiving objects: 100% (13643/13643), 7.97 MiB | 7.93 MiB/s, done.
Resolving deltas: 100% (8483/8483), done.
```

I've cloned the beeai framework from the github repo, to my local environment (in my case google drive)



Generated an API token from the IBM Quantum Learning portal and used it as the API Key for my project

```

import os
from dotenv import load_dotenv

os.environ["IBM_QUANTUM_API_TOKEN"] = "055baaee60c6de48e5f32103bcc6da835d5235529d7c964b8825a30f3c64461ab09a1ca32e642a7acbb01c7cdbea288f4435daac3676841308953097de48bdf7"

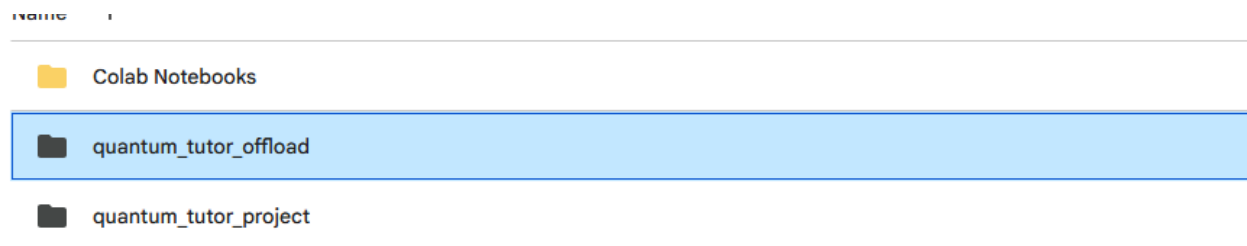
# Save it in a .env file (optional but good practice)
with open(".env", "w") as f:
    f.write(f"IBM_QUANTUM_API_TOKEN={os.environ['IBM_QUANTUM_API_TOKEN']}")

# Load environment variables
load_dotenv()

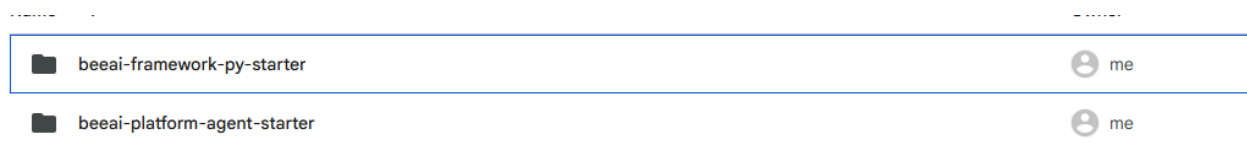
```

I chose Hugging Face's Deepseek R1 model as the LLM for the project, mainly because it's open source and does not have prompt restrictions like openai or claude

I offloaded the transformer model on my google drive



Once the LLM was initialized, I then started integrating BeeAI framework with the LLM, read through the github repo, I followed the py.start setup and agent setup repositories for python



Initialized them locally for my use case loaded them on my google drive

I called the class Agent from the framework and tested if my QuantumTutor was ready to take queries

```
import sys
sys.path.append('/content/drive/MyDrive/quantum_tutor_project/beeai-platform-agent-starter')

from agents.quantum_tutor_agent import QuantumTutorAgent

agent = QuantumTutorAgent()
response = agent.run("Hello Quantum Tutor!")
print(response['response'])

QuantumTutor received: Hello Quantum Tutor!
```

The entire Quantum Tutor is saved on my drive and I don't need to run all the segment cells all over again every time, I made a optimized version of the entire code that called the model saved in the drive

Once this was done I put the prototype to test

*Q1) Explain superposition in quantum computing.*

Ans )

Superposition is a fundamental concept in quantum computing that allows quantum bits (qubits) to represent a state that is both 0 and 1 simultaneously. In classical computing, bits can only represent a single state, either 0 or 1.

In superposition, a qubit can be in a state where it represents both 0 and 1 at the same time. This means that the qubit can perform multiple calculations simultaneously, which is a significant advantage over classical

The real question is how do I know if I model actually learnt and is able to analyze real time data from the api, the whole point of using agentic ai to do this project was to train data on real time updates which doesn't happen with vanilla chatbots

Then I asked ,

*Q) If I had to learn about Quantum Computing from basic to advanced, what are the things that need to be done as a beginner for me to grasp all concepts fast?*

ans)

I would recommend the following steps:

1. **\*\*Understand Basic Concepts of Quantum Computing\*\***: Start with understanding the basic concepts of quantum computing such as superposition, entanglement, quantum bits (qubits), quantum gates, quantum algorithms, etc.

2. **\*\*Learn Quantum Programming\*\***: Start learning a quantum programming language like Q# (Microsoft's quantum programming language) or Qiskit (IBM's quantum programming language). This will help you understand the syntax and structures used in quantum

*Q)If I were to do research in Quantum Computing, which topic would be relevant to today's time? Cryptography or quantum teleportation or some other topic?*

ans)

Quantum cryptography is one of the most promising areas of quantum computing research. With the increasing amount of data being shared and stored online, the need for secure communication has become more important than ever.

Quantum cryptography uses the principles of quantum mechanics to provide a level of security that is impossible to break with classical computers.

Quantum teleportation is another exciting area of research, but it is still in the early stages and not as practical

Thanking you,  
Adithya Reddy  
adithyasnr@gmail.com