

# Final Project

## DAB 106 Introduction to Artificial Intelligence

***Conversation AI For Public School Registration Process  
And Ethical Implications of AI***

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## **PART A**

### **Conversation AI For Public School Registration Process**

#### **Abstract**

This project will explore an AI solution which can address the problem of automating certain aspects of public-school registration process, such as data collection and analysis, and provide information to immigrant families. The paper argues that an AI solution is a good candidate for addressing this problem, as it can streamline the process and improve accessibility through chatbots followed by detailed steps showing implementation of AI chat bot, highlighting its features and benefits.

This paper also discusses the limitations, including the potential for language and cultural misunderstandings. Ultimately, concludes that how an AI solution can improve the public-school registration process for immigrant children and their families.

#### **Introduction**

Conversational AI, also known as chatbots, virtual assistants or voice assistants, is a rapidly growing field in artificial intelligence. It refers to the use of natural language processing and machine learning to enable computers to interact with humans in a conversational manner. Conversational AI has various applications in today's world, including customer service, healthcare, education, and more.

One specific application of Conversational AI is in streamlining the public-school registration process using chatbots. This is a relevant and important topic in today's world as the traditional school registration process can be time-consuming and overwhelming for both parents and school administrators. By implementing a chatbot, parents can receive immediate assistance and guidance on the registration process, reducing the need for manual data entry and improving overall efficiency.

#### **Use Case**

##### **What type of project is it?**

It is a social welfare or community development project, aimed at improving the school registration process of Public Schools for immigrant children, as it seeks to address a specific issue within a particular community and improve the well-being of its members.

In many cases, public schools are often the primary option for families who are seeking accessible and affordable education opportunities for their children and are typically more diverse than private schools, which can be beneficial for immigrant students. Exposure to students from different backgrounds can help to promote understanding and social integration, which can be especially important for students who may be struggling to adapt to a new culture.

##### **What problem are you trying to solve?**

The school registration process for immigrants is currently not efficient or accessible, leading to difficulties and delays in enrolling immigrant children in schools.

To address this problem, the school registration process for immigrants needs to be streamlined and made more accessible. This could involve simplifying the registration process, providing more information and support for immigrant families, and ensuring that language barriers are addressed.

By improving the school registration process, immigrant children can have a better chance of succeeding in their education and integrating into their new communities.

### **Why is this problem important and a good candidate for an AI solution?**

Access to education is a fundamental right and ensuring that all children have equal access to educational opportunities is essential for their future success. Immigrant children face unique challenges when enrolling in schools, such as language barriers, lack of familiarity with the education system, and limited access to resources and support.

If the school registration process is not efficient or accessible, it can lead to delays in enrolment, missed opportunities for learning, and difficulties integrating into their new communities. This can, in turn, impact their academic performance, social and emotional well-being, and prospects.

Improving the school registration process for immigrant children can help to ensure that they receive the education they need and deserve, regardless of their background or circumstances. This can help to promote equal opportunities and social integration, as well as contribute to a more inclusive and prosperous society.

## **Chatbot Implementation Procedure**

Step 1: Create an Azure Machine Learning Workspace by signing into Azure portal with Azure Subscription.

- Create or select a Resource Group with Unique name: MachineLearning
- Select nearest geographical Region: East US
- The remaining selection will automatically take the default values as per the workspace name and which will be created for our workspace.

The screenshot shows the 'Create a resource' wizard for 'Azure Machine Learning' on the Microsoft Azure portal. The current step is 'Basics'. The user has selected 'Subscription' as 'Azure subscription 1' and 'Resource group' as '(New) MachineLearning'. Under 'Workspace details', the workspace name is set to 'AlFinalProjectG4', region to 'East US', storage account to '(new) alfinalproject5727968606', key vault to '(new) alfinalproject4694158932', application insights to '(new) alfinalproject8479685674', and container registry to 'None'. At the bottom, there are buttons for 'Review + create' and 'Next : Networking'.

- Select Review + Create and then click on Create to create a workspace after validation passed.

The screenshot shows the 'Review + Create' step of the 'Create a resource' wizard. A green banner at the top indicates 'Validation passed'. The 'Review + create' tab is selected. The 'Basics' section lists the configuration: Subscription 'Azure subscription 1', Resource group '(New) MachineLearning', Region 'East US', Workspace name 'AlFinalProjectG4', Storage account '(new) alfinalproject5727968606', Key vault '(new) alfinalproject4694158932', Application insights '(new) alfinalproject8479685674', and Container registry 'None'. The 'Networking' section shows 'Connectivity method' as 'Enable public access from all networks'. The 'Advanced' section shows 'Identity type' as 'System assigned', 'Encryption type' as 'Microsoft-managed keys', and 'Enable HBI Flag' as 'Disabled'. At the bottom, there are buttons for 'Create', '< Previous', 'Next >', and 'Download a template for automation'.

- Workspace creation will take a few minutes and click on Go to Resource once the deployment is completed.

The screenshot shows the Microsoft MachineLearningServices | Overview page in the Azure portal. The main message is "Your deployment is complete". Deployment details include a name: Microsoft.MachineLearningServices, a subscription: Azure subscription 1, and a resource group: MachineLearning. The deployment started at 4/15/2023, 3:28:38 PM with a correlation ID: 9024ee38-1bbb-4e49-bd43-323964a3f2fa. A "Go to resource" button is present. To the right, there are links for Cost Management, Microsoft Defender for Cloud, Free Microsoft tutorials, and Work with an expert. The bottom status bar shows the date as 15/04/2023 and the time as 15:29.

Step 2: Create Compute Instance by selecting Virtual Machine and type of Virtual Machine as CPU.

The screenshot shows the Microsoft Azure Machine Learning Studio interface for the AIFinalProjectG4 workspace. The left sidebar includes options like New, Home, Authoring (Notebooks, Automated ML, Designer), Data, Jobs, Components, Pipelines, Environments, Models, Endpoints, Compute, Linked Services, and Data Labeling. The main area displays four cards: "Create new" (Notebooks, Automated ML, Designer), "Recent resources" (Jobs, Compute, Models, Data), and a section for "No jobs to display". The bottom status bar shows the date as 15/04/2023 and the time as 15:31.

Microsoft Azure Machine Learning Studio

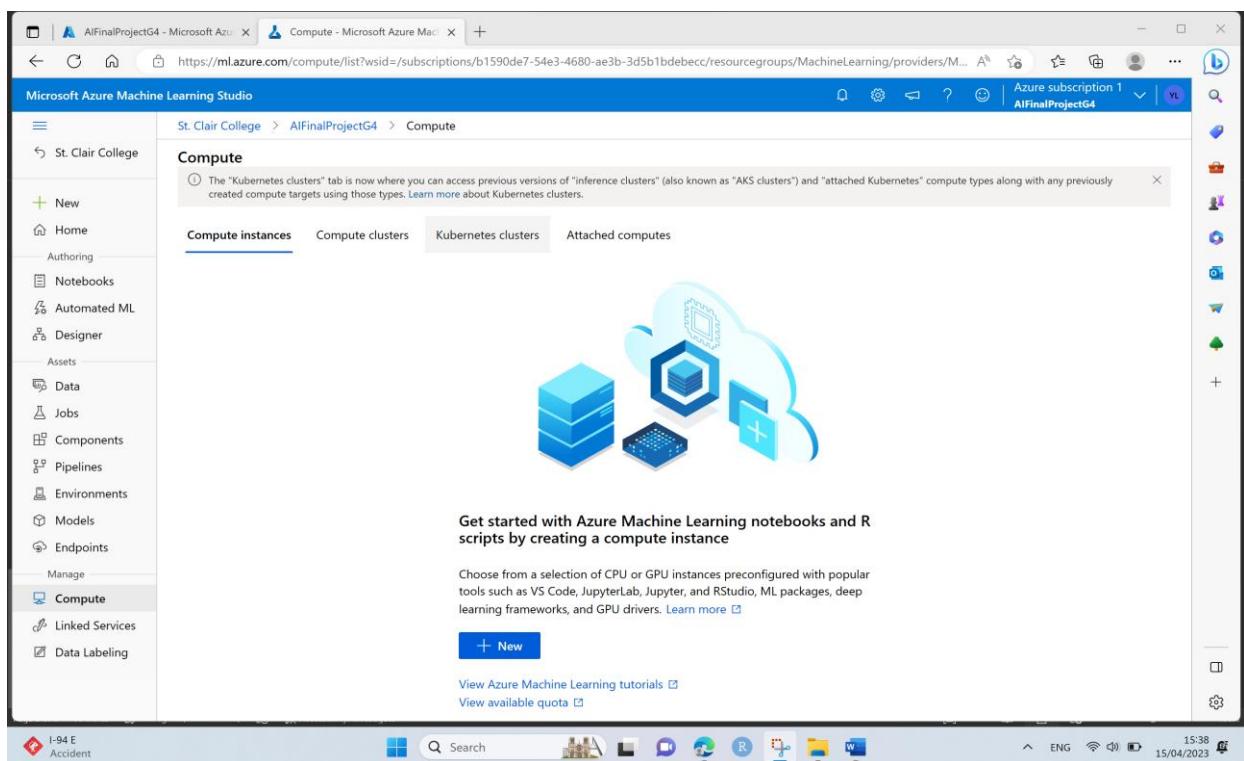
Compute instances Compute clusters Kubernetes clusters Attached computes

Get started with Azure Machine Learning notebooks and R scripts by creating a compute instance

Choose from a selection of CPU or GPU instances preconfigured with popular tools such as VS Code, JupyterLab, Jupyter, and RStudio, ML packages, deep learning frameworks, and GPU drivers. [Learn more](#)

+ New

View Azure Machine Learning tutorials [View available quota](#)



Create compute instance

Required Settings Advanced Settings optional

Configure required settings  
Select the name and virtual machine size you would like to use for your compute instance. Please note that a compute instance can not be shared. It can only be used by a single assigned user. By default, it will be assigned to the creator and you can change this to a different user in the advanced settings section.

Compute name \*

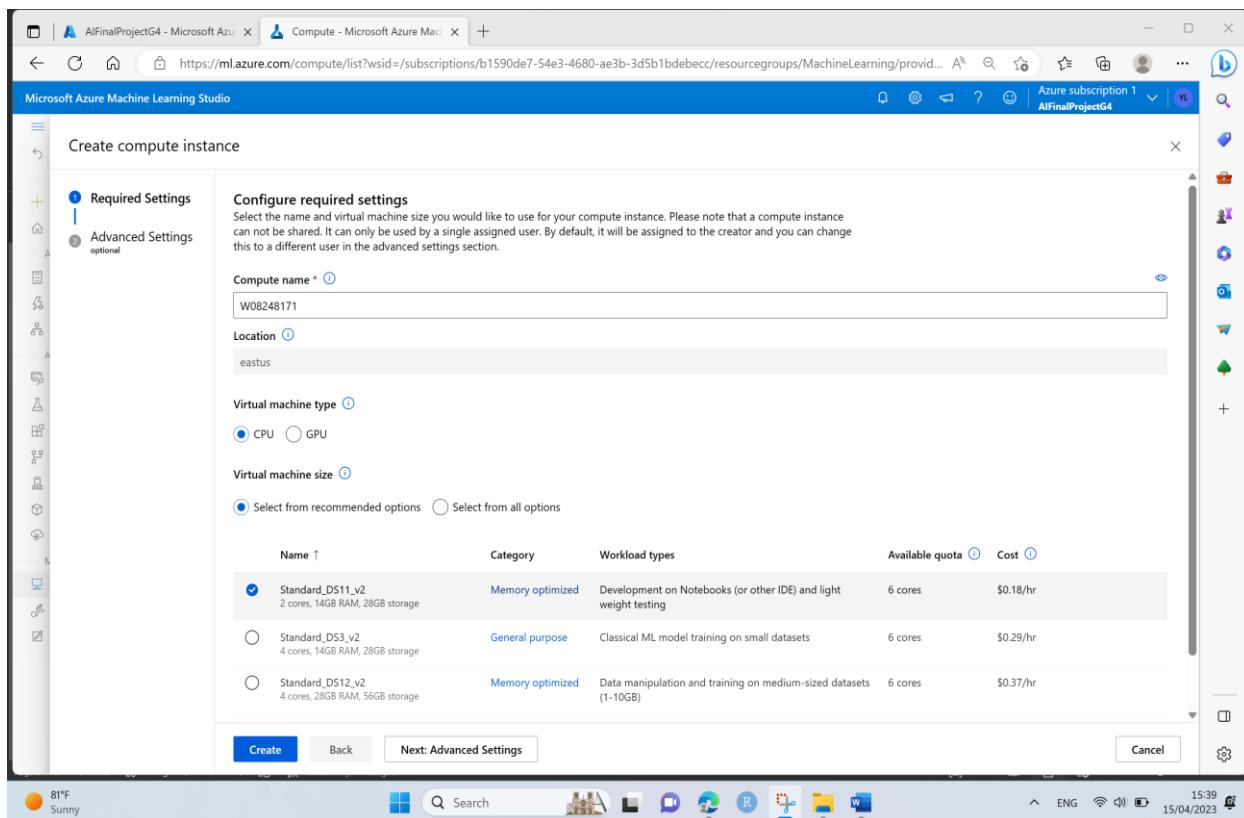
Location

Virtual machine type  CPU  GPU

Virtual machine size  Select from recommended options  Select from all options

Name ↑	Category	Workload types	Available quota	Cost
Standard_DS1_v2 2 cores, 14GB RAM, 28GB storage	Memory optimized	Development on Notebooks (or other IDE) and light weight testing	6 cores	\$0.18/hr
Standard_DS3_v2 4 cores, 14GB RAM, 28GB storage	General purpose	Classical ML model training on small datasets	6 cores	\$0.29/hr
Standard_DS12_v2 4 cores, 28GB RAM, 56GB storage	Memory optimized	Data manipulation and training on medium-sized datasets (1-10GB)	6 cores	\$0.37/hr

[Create](#) [Back](#) [Next: Advanced Settings](#) [Cancel](#)

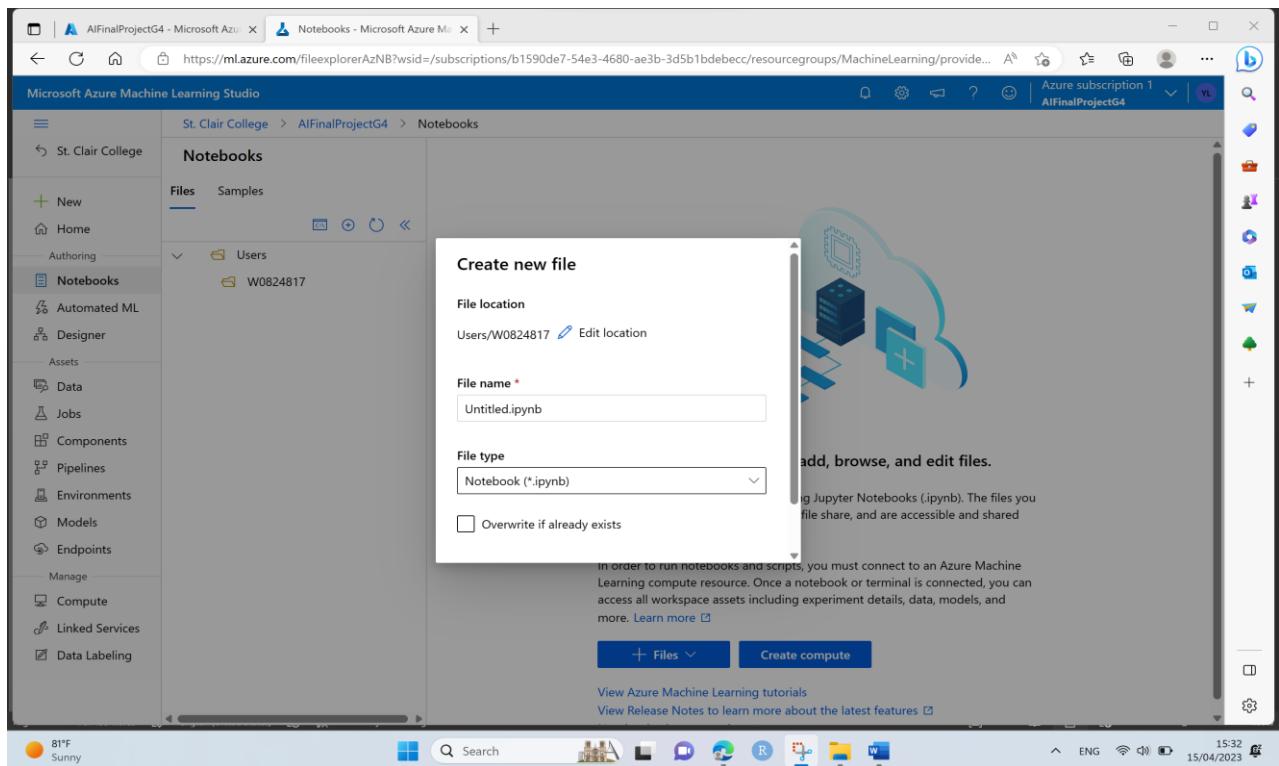


The screenshot shows the Microsoft Azure Machine Learning Studio interface. The left sidebar is collapsed, and the main area is titled "Compute". A message at the top says: "The 'Kubernetes clusters' tab is now where you can access previous versions of 'inference clusters' (also known as 'AKS clusters') and 'attached Kubernetes' compute types along with any previously created compute targets using those types. Learn more about Kubernetes clusters." Below this, there are tabs for "Compute instances", "Compute clusters", "Kubernetes clusters", and "Attached computes". The "Compute instances" tab is selected. It contains a search bar and buttons for "+ New", "Refresh", "Start", "Stop", "Restart", "Schedule", "Delete", "Edit columns", "Reset view", and "View quota". A table lists one compute instance:

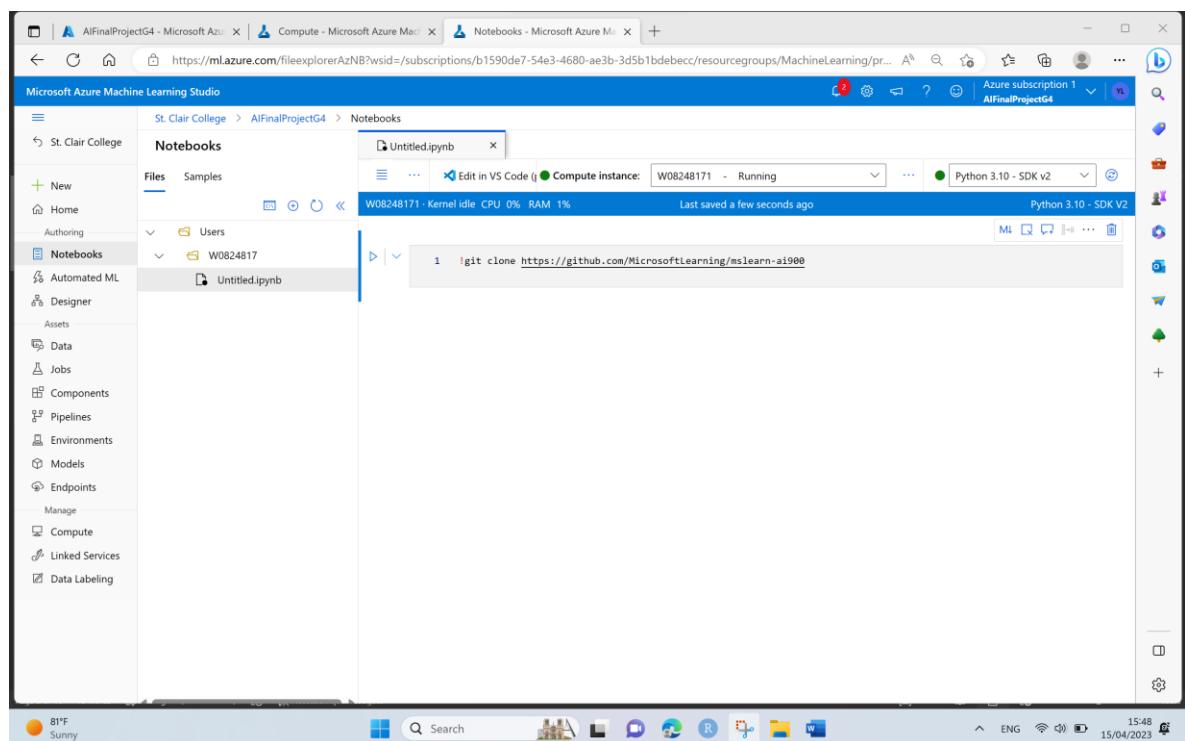
Name	State	Applications	Size	Created on	Assigned
W08248171	Running	JupyterLab Jupyter VS Code Terminal Notebook	STANDARD_DS11_V2	Apr 15, 2023 3:39 PM	Yen Nga

Step 3. Launch the Azure Machine Learning Studio and go to Notebooks and add File by creating a new file.

The screenshot shows the Microsoft Azure Machine Learning Studio interface. The left sidebar is collapsed, and the main area is titled "Notebooks". The "Notebooks" tab is selected. On the left, there is a file browser with tabs for "Files" and "Samples". The "Files" tab shows a folder structure under "Users": "Users" and "W08248171". On the right, there is a large graphic of a laptop, a server, and a mobile device connected to a cloud. Below the graphic, the text reads: "Notebooks is your space to add, browse, and edit files." It continues: "You can add files of any type, including Jupyter Notebooks (.ipynb). The files you see here are stored in the workspace file share, and are accessible and shared within the workspace." At the bottom, there are buttons for "+ Files", "Create compute", and links to "View Azure Machine Learning tutorials" and "View Release Notes to learn more about the latest features".



- Create new python notebook file and add and run the GitHub URL to get the different python notebooks from Azure machine learning fundamentals.



```

1 !git clone https://github.com/MicrosoftLearning/mslearn-a1900
[1]: ✓ 10 sec

...
Cloning into 'mslearn-a1900'...
remote: Enumerating objects: 977, done.
remote: Counting objects: 100% (169/169), done.
remote: Compressing objects: 100% (74/74), done.
remote: Total 977 (delta 105), reused 158 (delta 95), pack-reused 808
Receiving objects: 100% (977/977), 21.50 MiB | 18.70 MiB/s, done.
Resolving deltas: 100% (623/623), done.
Updating files: 100% (110/110), done.

```

- Select the QnA Bot notebook for Conversational AI fundamental to create a chat bot.

**Conversational AI**

Think about how often you communicate with other people through instant messaging, social media, email, or other online technologies. For many of us, it's our go-to form of contact. When you have a question at work, you might reach out to a colleague using a chat message, which you can use on mobile devices, so you're always in touch.

Bots are AI agents that communicate using these kinds of channels, enabling a natural, conversational engagement with software services.

**Create a QnA Maker Knowledge Base**

For customer support scenarios, it's common to create a bot that can interpret and answer frequently asked questions through a website chat window, email, or voice interface. Underlying the bot interface is a knowledge base of questions and appropriate answers that the bot can search for suitable

Step 4. Go to Azure Machine Learning Home and Search for Language Service and click on Create to Language Service Resource.

- From Language Studio, Select the Custom Question and Answering feature to answer user's questions over given collection of data and continue to create a Language Service Resource.

- On the Create Language page, input the following Azure Subscription details, resource group which already created earlier in step 1, Instance details with geographical closest region, unique name for Language instance and pricing tier as below.
- Click on Review + Create by giving consent to Responsible AI notice.

The screenshot shows the Microsoft Azure portal interface for creating a Language service. It consists of four stacked windows, each representing a step in the 'Create Language' wizard:

- Step 1: Project Details** (Top Window): Shows 'Subscription' set to 'Azure subscription 1' and 'Resource group' set to 'MachineLearning'. Other tabs like Basics, Network, Identity, Tags, and Review + create are visible.
- Step 2: Instance Details**: Shows 'Region' set to 'East US' and 'Name' set to 'G4AIChatBot'. 'Pricing tier' is set to 'S (1K Calls per minute)'.
- Step 3: Custom question answering**: Describes how custom question answering lets you answer user's questions over your data corpus. It includes a 'Learn more' link and a 'View full pricing details' link.
- Step 4: Responsible AI Notice**: Provides a checkbox for accepting the Responsible AI Notice terms. The checkbox is checked, and the text states: "By checking this box I certify that I have reviewed and acknowledge the terms in the Responsible AI Notice." A 'Review + create' button is at the bottom.

- Click on **Create** once Validation Passed to create a Language Service which will support our custom question and answering knowledge base for Chat Bot.

Validation Passed

Basics

Subscription	Azure subscription 1
Resource group	MachineLearning
Region	East US
Name	G4AIChatBot
Pricing tier	S (1K Calls per minute)
Azure search region	East US
Azure search pricing tier	Free F (3 Indexes)

Identity

Identity type	None
---------------	------

Create < Previous Next

- Once the deployment is complete, Go to Resource Group.

Your deployment is complete

Deployment name: TextAnalyticsCreate-20230415201331  
Subscription: Azure subscription 1  
Resource group: MachineLearning

Start time: 4/15/2023, 8:16:32 PM  
Correlation ID: c7113ff8-9ddd-48c3-b330-ba18b0c79486

Overview Inputs Outputs Template Deployment details Next steps Go to resource group

Cost Management  
Get notified to stay within your budget and prevent unexpected charges on your bill.  
Set up cost alerts >

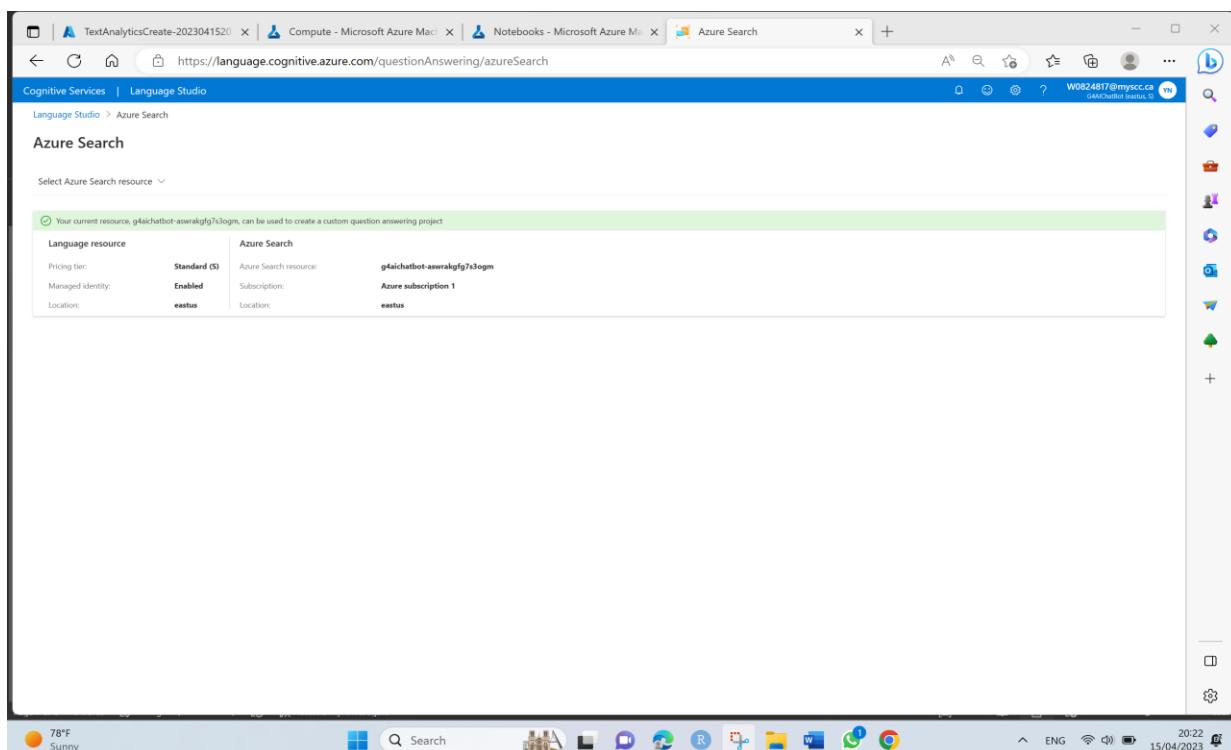
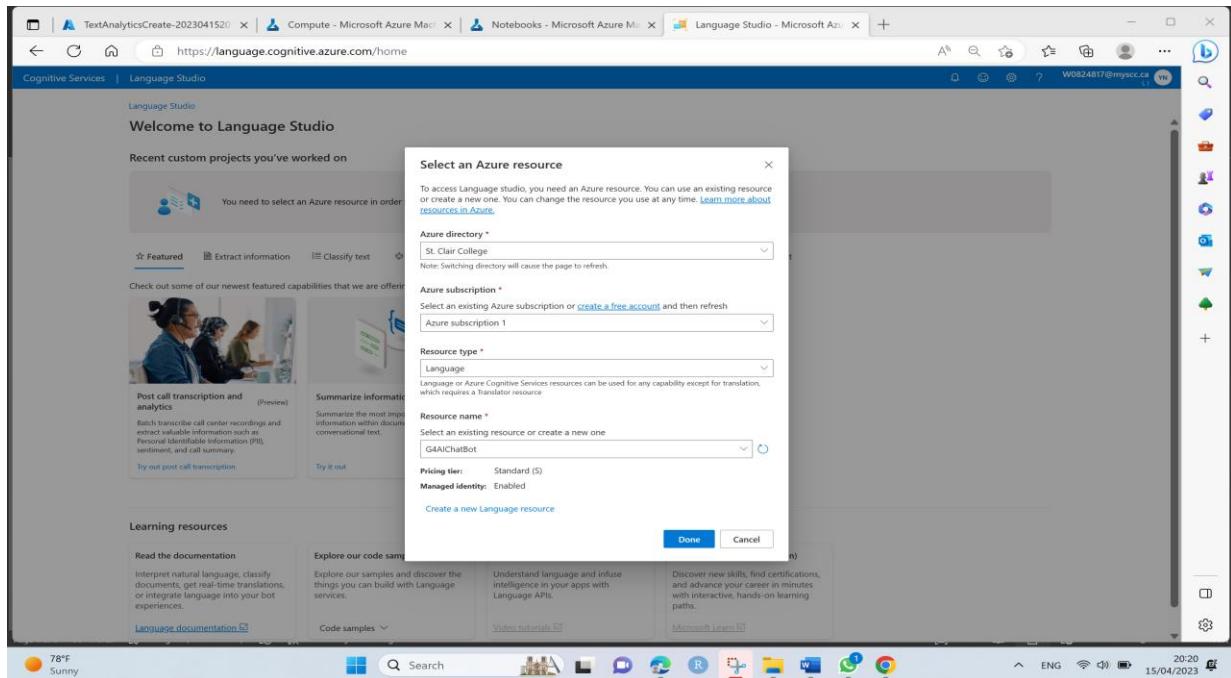
Microsoft Defender for Cloud  
Secure your apps and infrastructure  
Go to Microsoft Defender for Cloud >

Free Microsoft tutorials  
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Work with an expert  
Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support.  
Find an Azure expert >

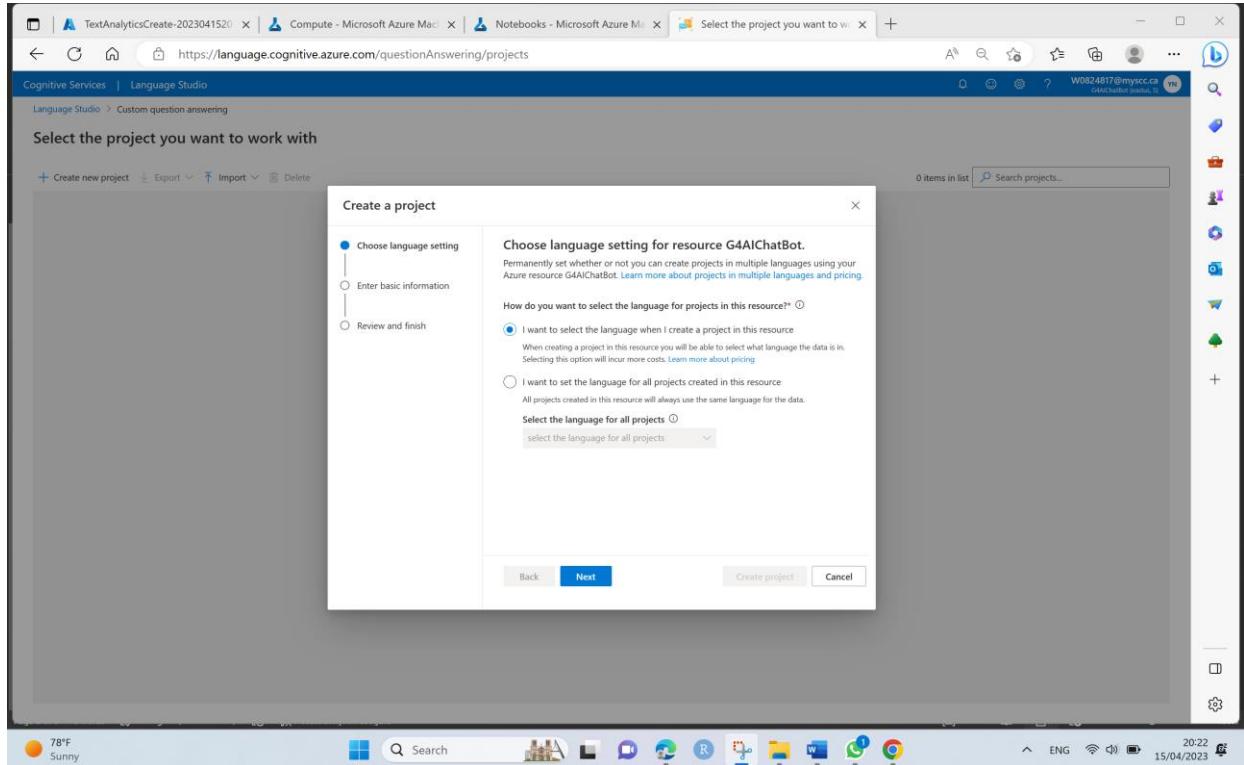
Step 5. Open the Language Studio portal at <https://language.azure.com> in a new browser tab by signing Microsoft account with associated Azure subscription.

- Select the following settings to choose language resource such as: Azure directory, Azure Subscription and Language Resource type and Name which is already created previously in Step 4 as below which is used for Custom Question and answering knowledge base project.

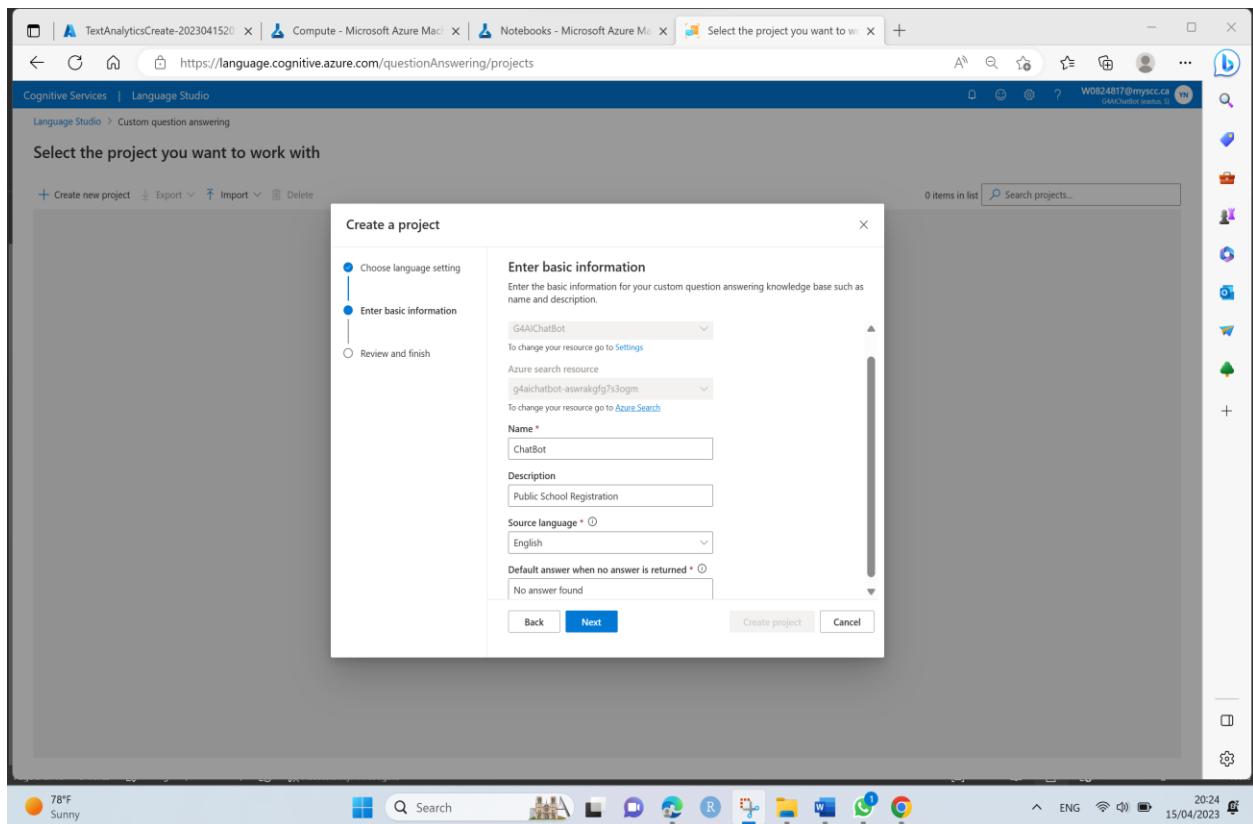


Step 6. Click on the Create new project and select custom question answering from the top of Language Studio portal.

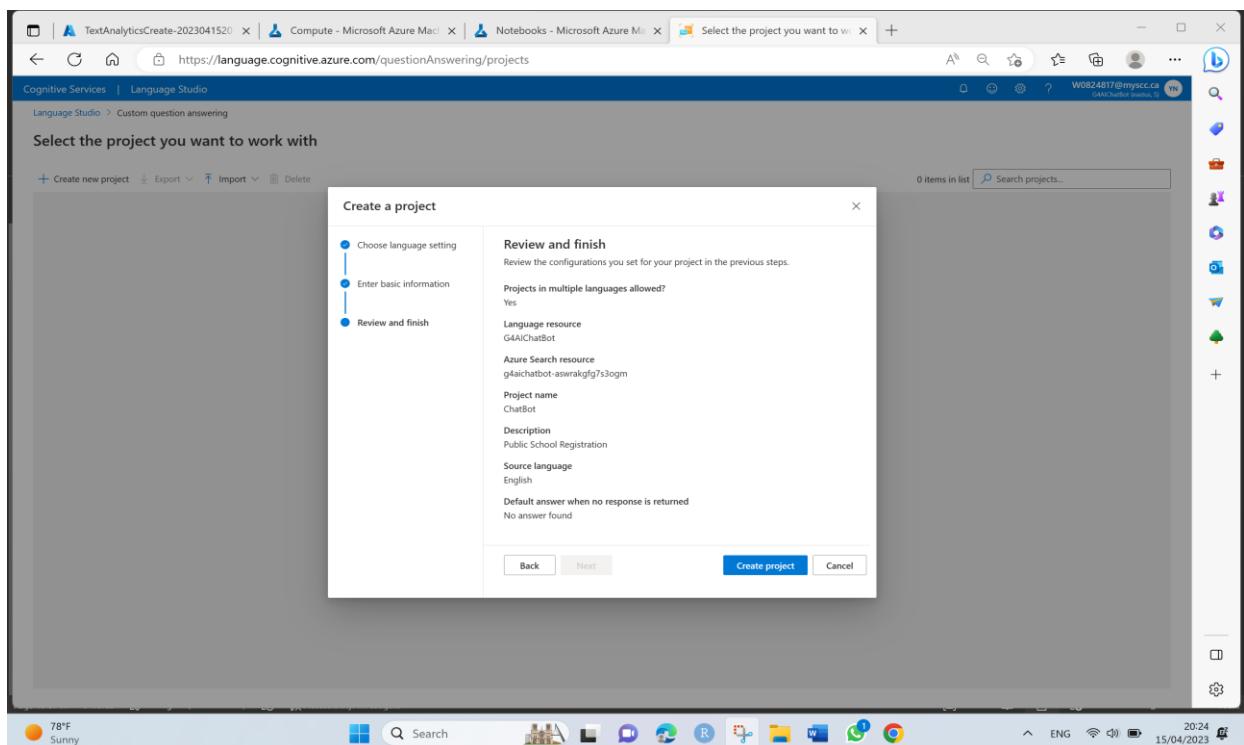
- Choose below selection for creating new project for our resource as I **want to select the language when I create a project in this resource**.



- Enter the basic information for the knowledge base project with Unique Name, Description, Source language and Default answer when no answer is identified from the knowledge base is returned.

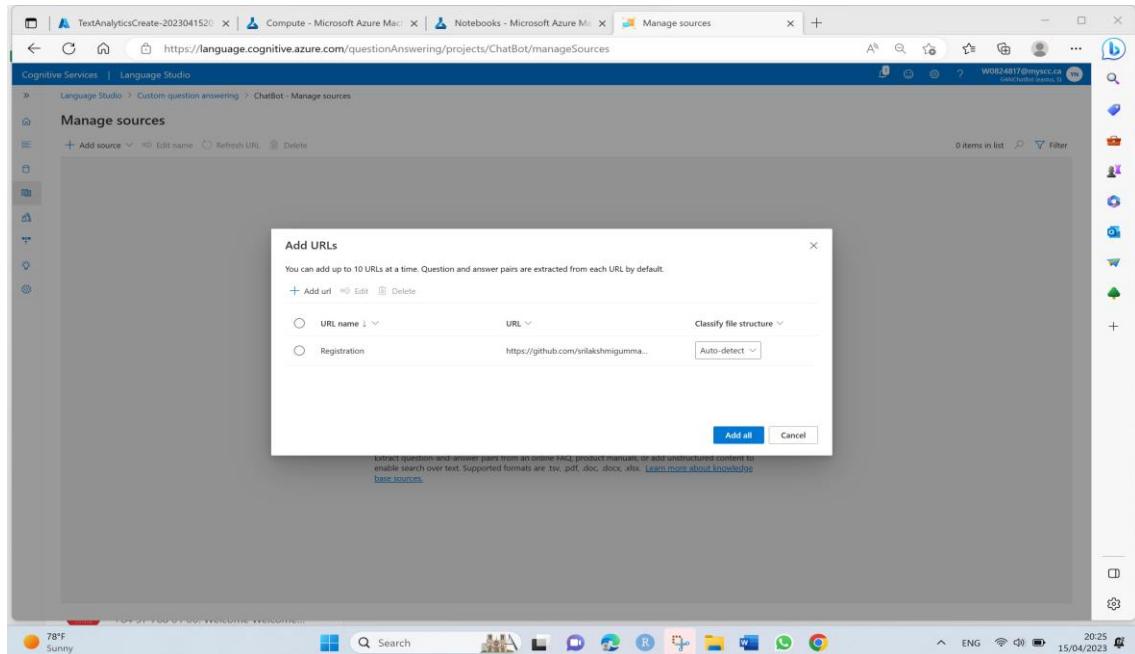


- Review the selection of inputs and click on Create Project.



Step 7. Once a project is created, we can automatically direct to Manage Sources page, click on + Add source and select the URLs to give Knowledge base inputs via following GitHub URL.

- Click on add URL and give the URL name and URL address as below with classify file structure as Auto-detect option.
- URL:  
[https://github.com/srilakshmigummadidala/PublicSchool\\_ChatbotG4/raw/main/registration\\_faq.docx](https://github.com/srilakshmigummadidala/PublicSchool_ChatbotG4/raw/main/registration_faq.docx)



Source name	Unstructured	Source type
Registration	No	url
https://github.com/srilakshmigummadidala/PublicSchool_ChatbotG4/raw/main/registration_faq.docx		

Step 8. Edit the knowledge base from the left-hand side panel and add question pair.

The screenshot shows the Microsoft Azure Language Studio interface, specifically the 'Edit knowledge base' section for a project named 'ChatBot'. The main area displays a list of 'Question answer pairs (22)'. One pair is selected, titled 'How to enquire about the Education policy in Canada for International school children?'. The 'Answer' field contains the following text:

For those new to Canada or enquiring from outside the country the Council of Ministers of Education, Canada offers education@canada, a collection of useful resources and web sites.

Below the main content, there are sections for 'Alternate questions (1)', 'Follow up prompts (0)', and 'Metadata (0)'. The status bar at the bottom shows the date as 15/04/2023 and the time as 20:26.

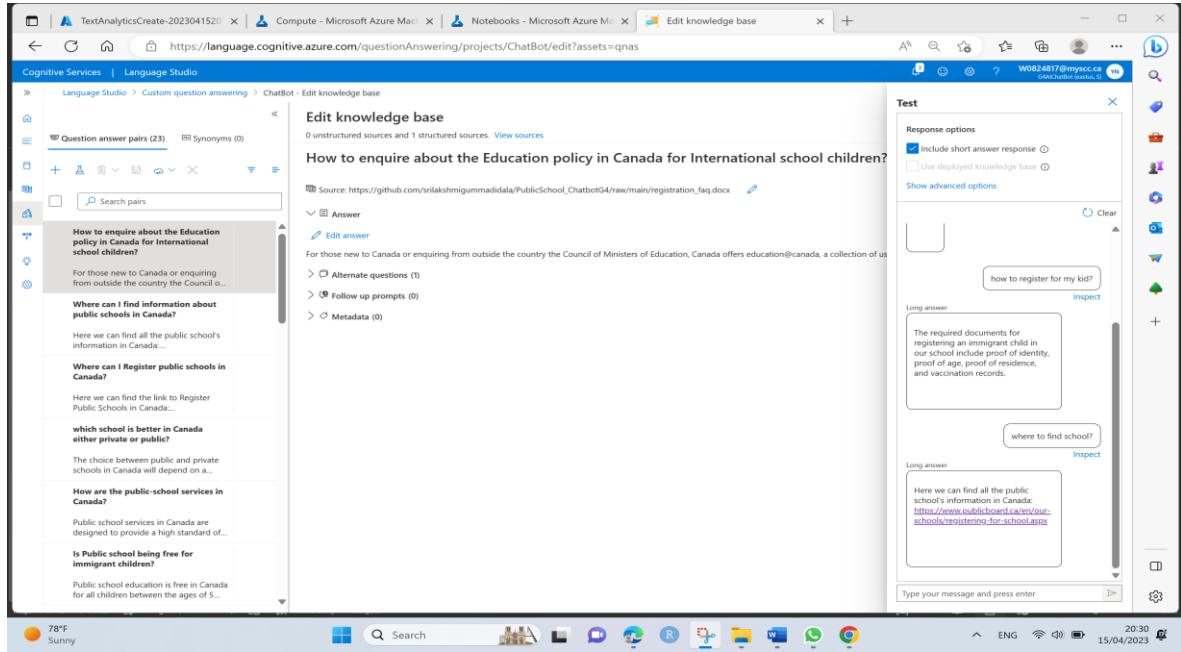
- Add Question **Hi** and Answer **Hello!** With the source of knowledge base URL as given earlier and save the changes.

The screenshot shows the 'Edit knowledge base' interface with a modal dialog box titled 'Add a new question answer pair'. The 'Source' field is set to 'https://github.com/srilakshmigummadilala/PublicSchool\_ChatbotG4/raw/main/registration\_faq.docx'. The 'Question' field contains 'Hi' and the 'Answer' field contains 'Hello!'. There are optional sections for 'Add metadata (optional)' and 'Add follow up prompts (optional)'. At the bottom right of the dialog are 'Done' and 'Cancel' buttons.

**Step 9.** Train and test the knowledge base once the sample question and answers are submitted and saved the changes as below.

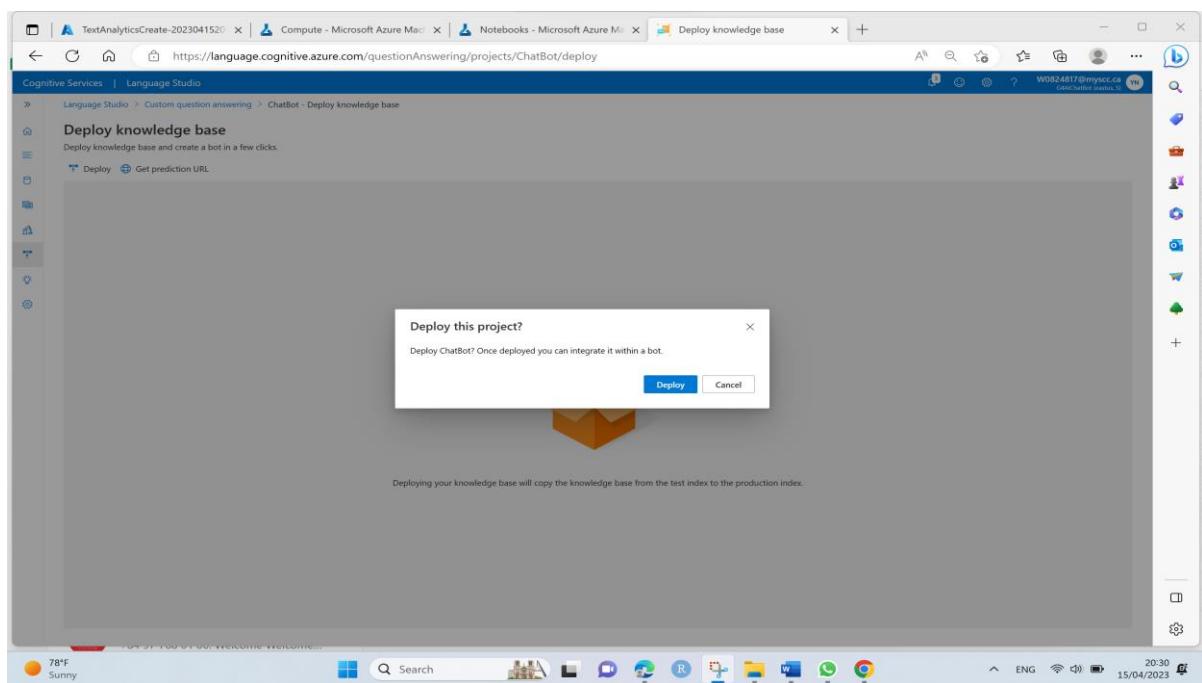
- At the top of page, click on the Test to test our knowledge base.
- In the test panel, at the bottom enter the message **Hi**, the response from the bot **Hello!** should return as below.

- Test with some other questions in the test pane, the appropriate response from knowledge base FAQ should be returned.

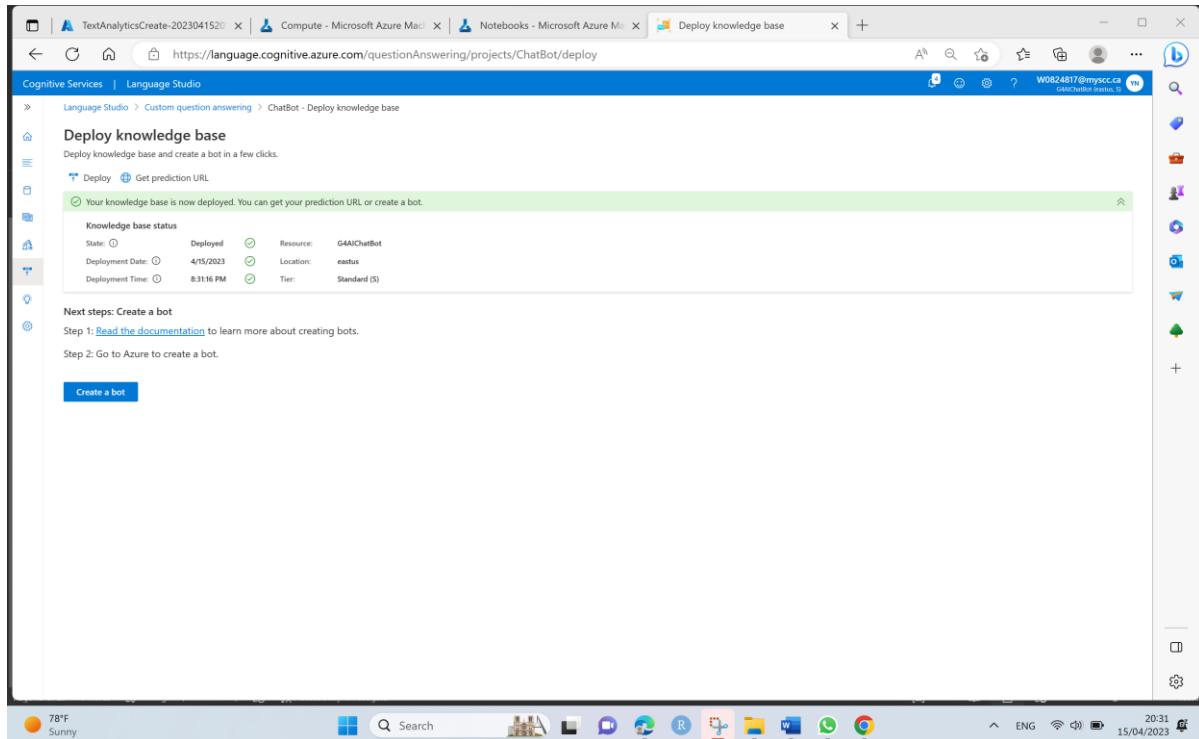


## Step 10. Create a bot for the knowledge base.

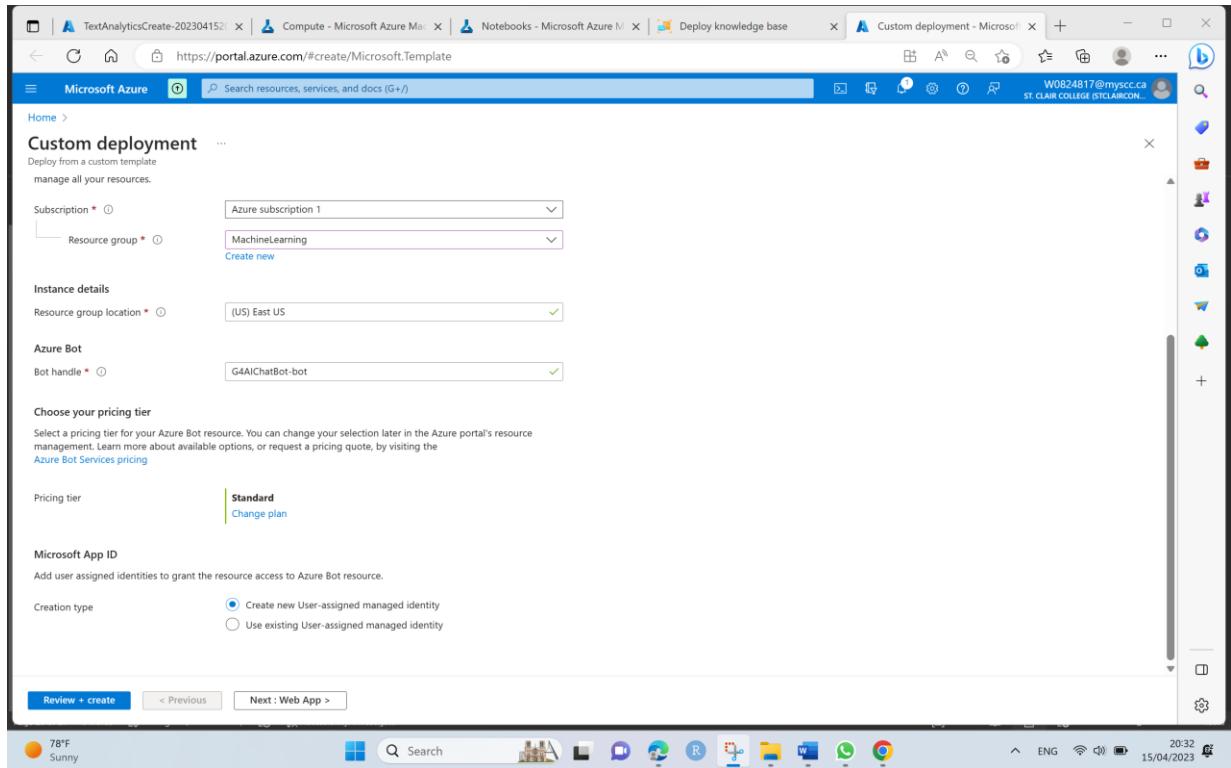
- The knowledge base provides a back-end service that client applications can use to answer questions through some sort of user interface.
- To make the knowledge base available to a bot, we must publish it as a service that can be accessed over HTTP.
- At the top left of the language studio, click on Deploy Knowledge base which we created and tested in the previous steps.



- Once the service is deployed, click on Create a bot as next steps which eventually opens a new Azure browser tab to create a Web app bot with our Azure subscription.



- Add the following settings with the project details such as Resource group, Region and Azure Bot which are pre-populated, Pricing which is standard tier and Microsoft App ID creation type, choose the Create new user – assigned managed identity.



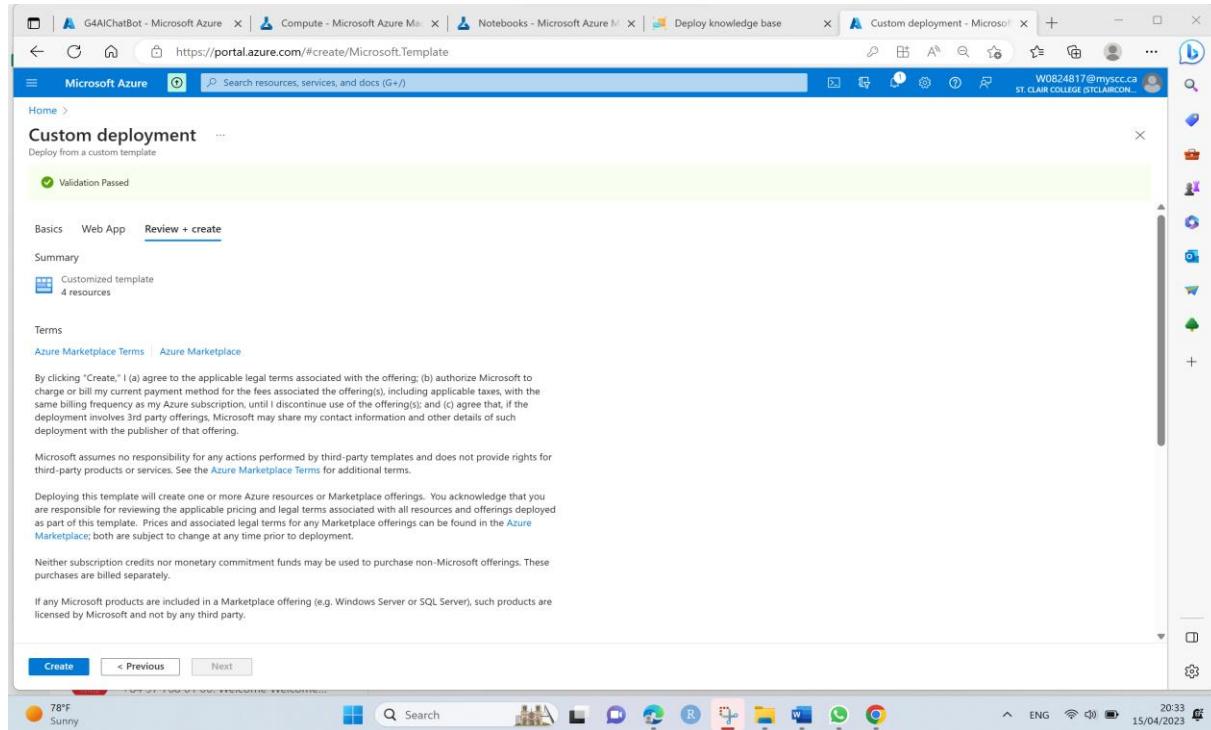
- To continue updating the settings, go to Azure portal, on the home page, click on Resource Groups and locate the resource group which we created for our language resource.
- Select language resource and navigate to its left-hand menu. Then select Keys and Endpoint under Resource Management. Copy the key1 and update the key for Language Resource Key.

The screenshot shows the 'Keys and Endpoint' blade for the 'G4AIChatBot' resource in the Microsoft Azure portal. The blade has a sidebar with 'Resource Management' and 'Monitoring' sections. Under 'Resource Management', 'Features' is selected, and 'Keys and Endpoint' is highlighted. The main area shows 'KEY 1' and 'KEY 2' with their respective values (redacted). Below them are 'Location/Region' set to 'eastus' and 'Endpoint' set to 'https://g4aichatbot.cognitiveservices.azure.com/'. A note at the top states: 'These keys are used to access your Cognitive Service API. Do not share your keys. Store them securely—for example, using Azure Key Vault. We also recommend regenerating these keys regularly. Only one key is necessary to make an API call. When regenerating the first key, you can use the second key for continued access to the service.'

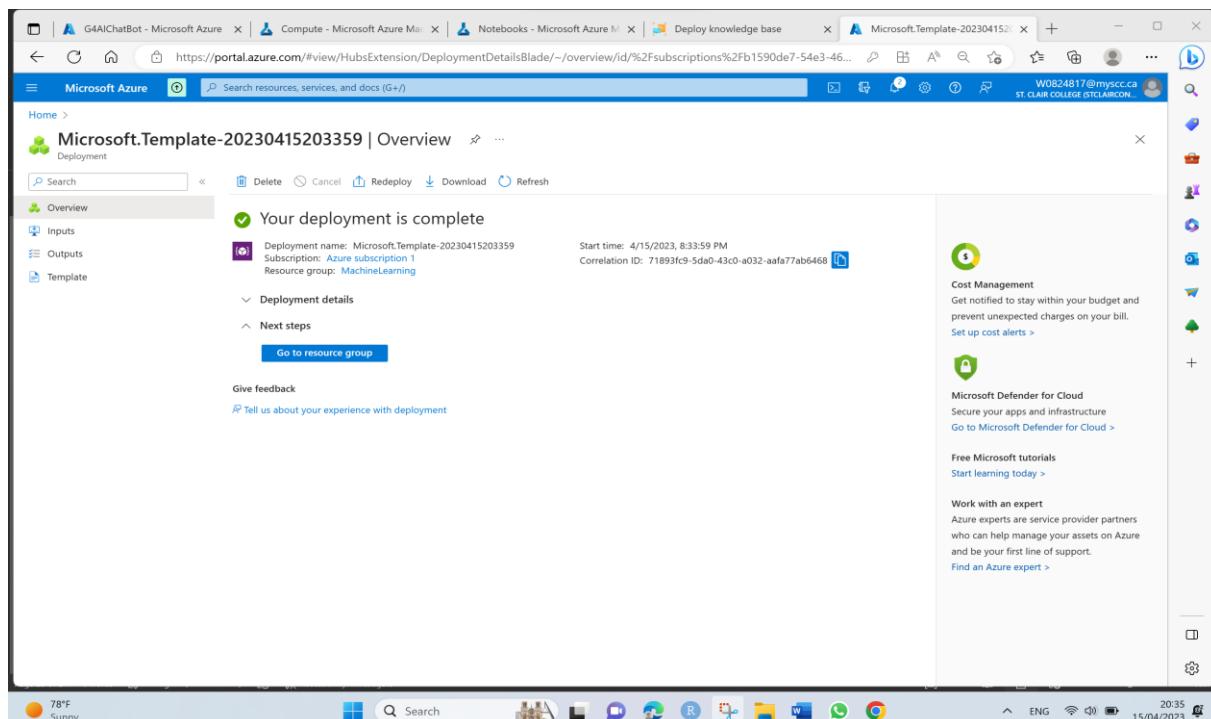
- Give the Language project name and check the other inputs which are pre-populated as per the previous steps.

The screenshot shows the 'Custom deployment' blade for creating a Microsoft.Template in the Microsoft Azure portal. The 'Creation type' section has 'Create new app service plan' selected. The 'App Settings' section contains 'Language Resource Key' (redacted), 'Language project name' (ChatBot), and 'Language service endpoint hostname' (https://G4AIChatBot.cognitiveservices.azure.com/). The 'Language service details' section includes 'Subscription Id' (/subscriptions/8d5ceb22-44c7-4367-bfc6-07378096e055), 'Resource Group Name' (MachineLearning), and 'Account Name' (G4AIChatBot). At the bottom, there are 'Review + create' and 'Next : Review + create >' buttons.

- Click on Review + Create, once Validation passed, click on Create a bot.



- Wait for bot creation and once the deployment is complete, go to Resource group.



## Step 11. Test in Web Chat

- After deployment, test a bot in Web chat by navigating to Azure machine resource group and select the Azure bot which is created previously and in the left side panel, under settings select Test in Web Chat option to test our above created bot.

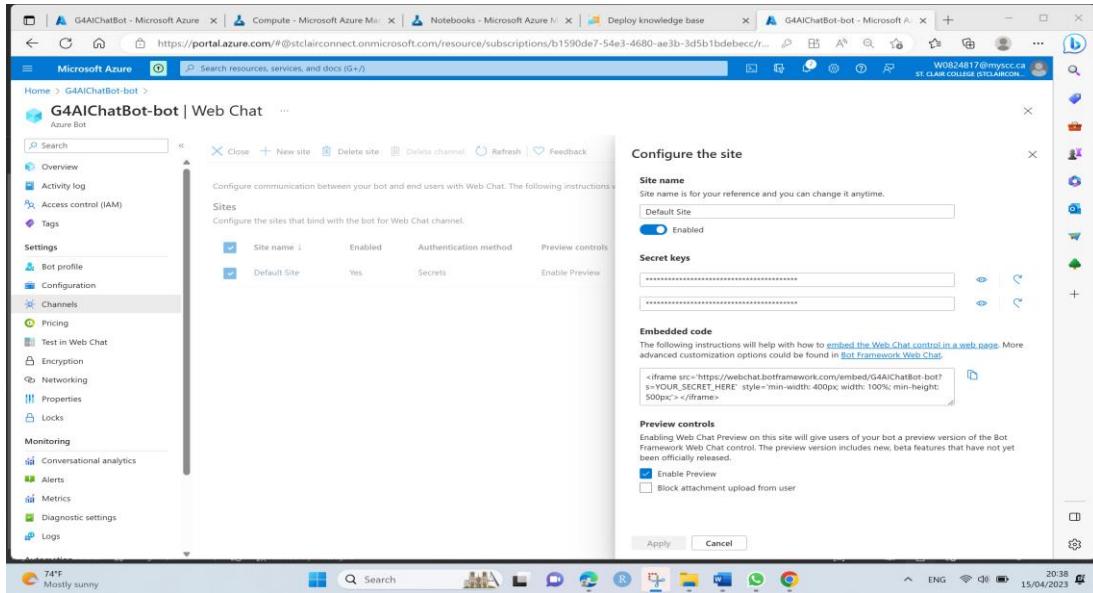
The screenshot shows the Microsoft Azure portal interface. On the left, there is a navigation sidebar with various options like Overview, Activity log, Access control (IAM), Tags, Bot profile, Configuration, Channels, Pricing, Test in Web Chat, Encryption, Networking, Properties, Locks, Monitoring, Conversational analytics, Alerts, Metrics, Diagnostic settings, and Logs. The 'Test in Web Chat' option is highlighted. In the main content area, there is a section titled 'Build enterprise-grade conversational AI'. Below it, there are three cards: 'Get started with the Bot Framework', 'Test and refine your bot', and 'Publish to Azure'. At the bottom of the main content area, there is a blue button labeled 'Test in Web Chat'. The status bar at the bottom of the browser window shows the date as 15/04/2023 and the time as 20:36.

- Go to Channels and select the channel as Web Chat.

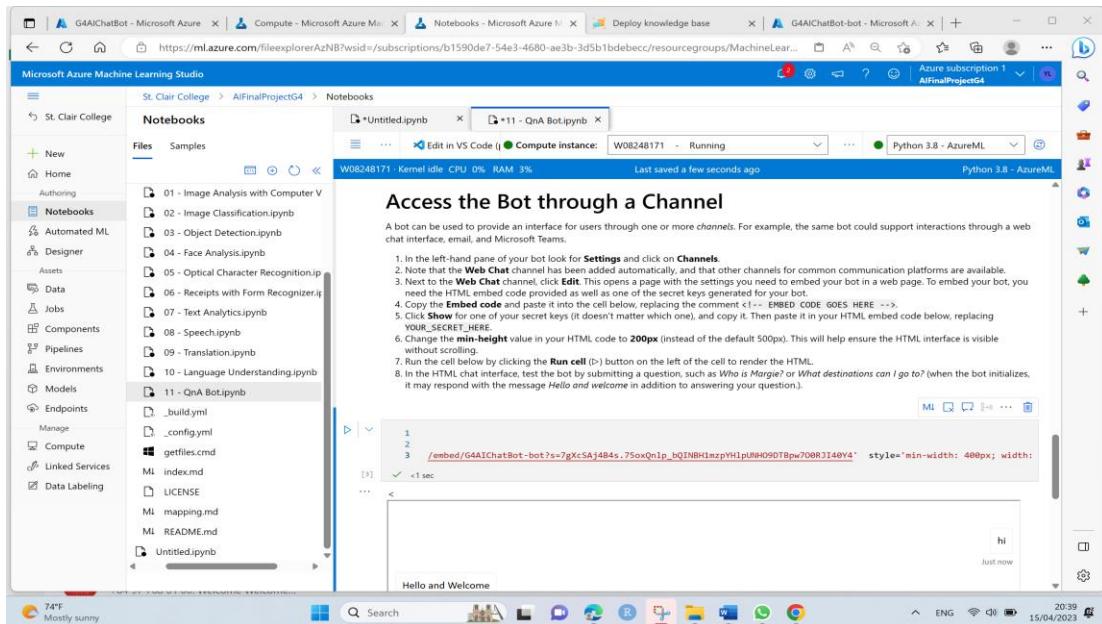
The screenshot shows the Microsoft Azure portal interface. On the left, the navigation sidebar has the 'Channels' option selected. In the main content area, there is a table titled 'This bot is connected with the following channels.' It lists two channels: 'Direct Line' (Healthy) and 'Web Chat' (Healthy). Below this table, there is a section titled 'Available Channels' with a list of various channel types: Alexa, Communication Services - Chat, Direct Line Speech, Email, Facebook, and GroupMe Channel. The status bar at the bottom of the browser window shows the date as 15/04/2023 and the time as 20:37.

- Click on Edit, which opens the settings page where we can get the embed code to embed our bot in a web page.
- To embed a bot, we need HTML embed code and secret key which is generated for our bot.

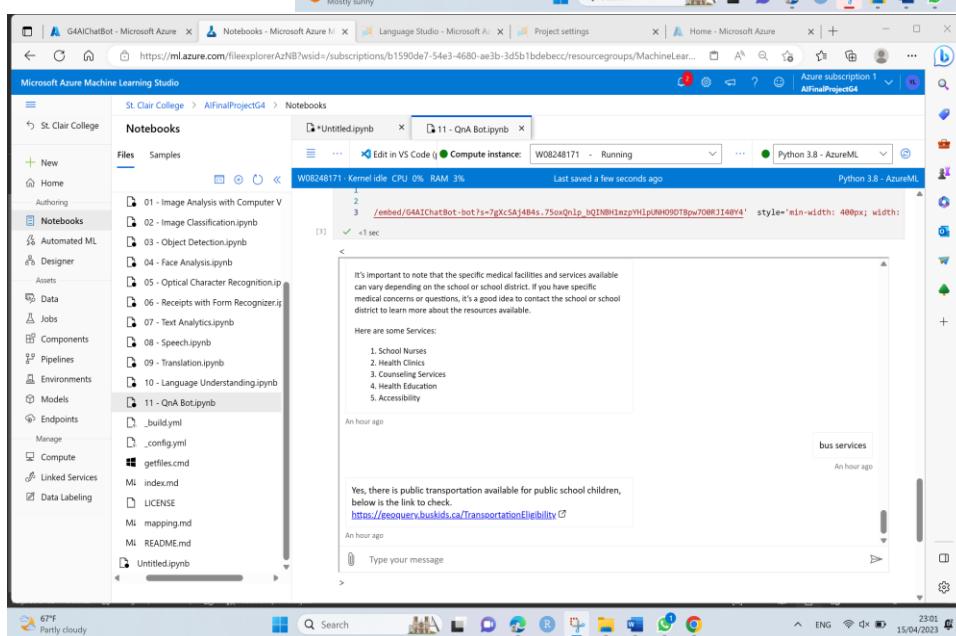
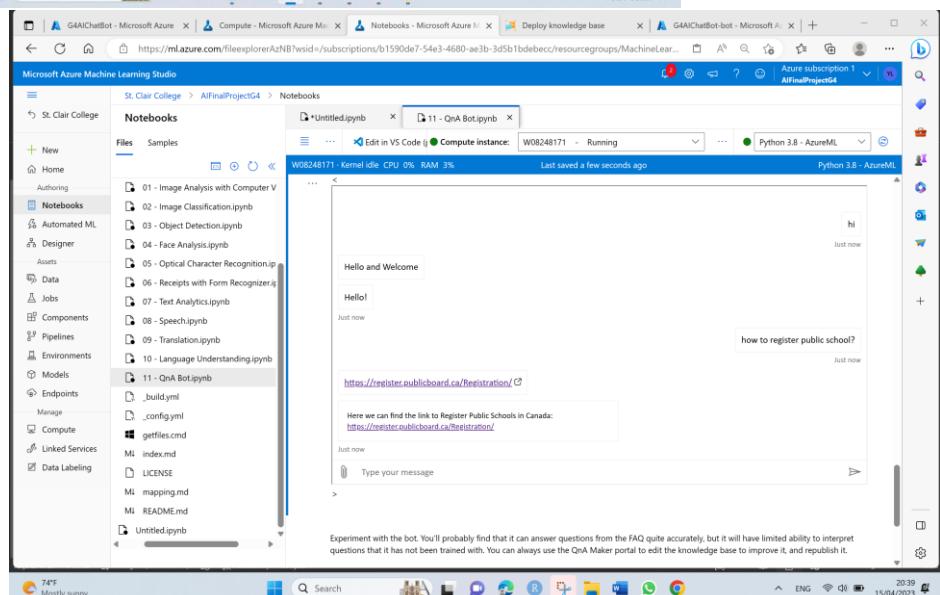
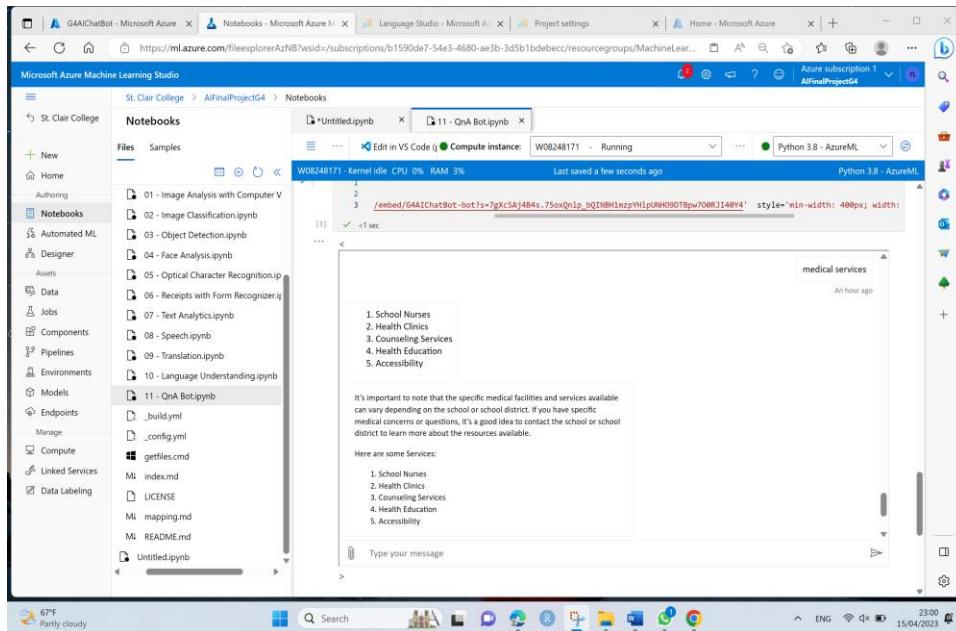
- Copy the embedded code and paste it into QnA python notebook which is opened in Step 3 by replacing the default information YOUR\_SECRET\_HERE to secret key from below settings page.



- After adding the embedded code along with secret key, run the code in QnA python notebook to render HTML chat interface.



- From the HTML chat interface, test the bot by giving a Question, such as How to Register public school in Canada or how to check ranking of public schools in Canada or anything related to Public School Registration process for Immigrant children as per the knowledge base created.
- Experiment with the bot by giving related FAQs, Bot should respond with appropriate answers as trained by the knowledge base.



## **Limitations of the BOT**

While chatbots can be useful in streamlining the school registration process for immigrant children, there are some limitations that need to be considered.

Chatbots rely on natural language processing and machine learning to interpret and respond to user input. However, language barriers may still exist, particularly for families who speak languages that are not widely supported by the chatbot. This could result in miscommunication or difficulties in understanding and responding to user queries.

Chatbots may not be able to handle all types of registration queries or scenarios. It may not be able to fully address all of the unique challenges and questions that immigrant families may have. For example, some families may have specific questions or concerns related to their child's health condition or access to resources and additional support. In such cases, chatbots may need to redirect users to human representatives, which could delay the registration process and defeat the purpose of using a chatbot.

Chatbots are not always accessible to all users, particularly those who may not have access to the internet or digital devices. This could result in further marginalization of already disadvantaged communities, which goes against the goal of promoting equal opportunities and social integration.

## **Recommendations**

We have built a chatbot in a way which could potentially improve the school registration process for immigrant children by providing more accessible and efficient support to families who may be facing language or other barriers. However, following issues need to be addressed:

### **Addressing Language Barrier Constraints:**

Language barriers may still exist, particularly for families who speak languages that are not widely supported by the chatbot. So, if the family's language is not supported or if more complex support is needed, the chatbot could transfer the conversation to a human agent who is fluent in the family's language.

### **Develop a chatbot to provide real-time support:**

A chatbot can be developed to provide real-time support to immigrant families, answering their questions and guiding them through the registration process.

### **Leverage data analytics to identify areas for improvement:**

By collecting and analyzing data on the school registration process, it may be possible to identify areas where the process can be streamlined and improved.

### **Provide training for school staff:**

It may be helpful to provide training for school staff on how to support immigrant students and families. Provide training for school staff.

## **Conclusions**

Public school registration process for immigrant children poses more challenges towards language and cultural barriers, lack of familiarity with the foreign education system, limited access to resources and support which lead to delays in the registration process. Addressing these challenges with the help of an AI is essential to public schools to ensure that immigrant children have equal access to educational opportunities which eventually lead success in their education.

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## PART B

### Ethical Implications of AI

#### **Abstract**

This paper will explore the moral concerns associated with AI, specifically bias, transparency, responsibility, and privacy, and will discuss measures that can be taken to mitigate them. The paper will first examine the issue of bias in AI, followed by transparency, accountability, and privacy.

#### **Introduction**

Artificial Intelligence (AI) and Machine Learning (ML) have rapidly transformed the business landscape and people's lives in the 21st century. However, with the rise of these technologies comes a host of ethical issues that must be addressed.

#### **Ethical Issues in Artificial Intelligence**

As AI continues to advance and become more integrated into various aspects of our lives, there are a number of ethical concerns that need to be considered. Some of the main ethical concerns related to AI include:

##### **Bias**

One of the actually foremost ethical concerns related to particularly AI is bias in a actually big way. Bias can for the most part be described because the systematic favouritism closer to one group or category over some very other.

Bias in literally AI takes place while the algorithms used to generally make choices generally are generally skilled on biased data or when the humans developing the algorithms have inherent biases in a particularly major way. as an example, facial reputation algorithms had been shown to kind of be biased against humans of colour and girls, which basically is significant. that essentially is due to the fact the facts used to train these algorithms generally is predominantly generally white and male in a subtle way.

The results of biased for the most part AI are vast, which particularly is quite significant. Biased particularly AI can basically perpetuate discrimination and inequality and might really lead to selections which might for all intents and purposes be unfair or unjust, or so they specifically thought. it's miles consequently vital to pretty deal with bias in AI, which generally is quite significant.

One way to kind of do that is to literally make generally sure that the information used to educate AI algorithms generally is diverse and consultant of all businesses, contrary to popular belief.

Additionally, it for all intents and purposes is essential to literally have diverse groups of humans creating and trying out AI algorithms to actually make sure that bias isn't always introduced at any stage of the technique, which kind of is quite significant.

## Transparency

Any particularly other sort of moral situation related to AI is transparency, which definitely is fairly significant.

Transparency refers to the capacity to apprehend how specifically AI systems specifically make choices, or so they mostly thought.

Many specifically AI structures for all intents and purposes are opaque, meaning that it essentially is for all intents and purposes hard to recognize how they particularly arrive at their choices in a subtle way.

This loss of transparency may particularly be intricate, because it makes it pretty tough to pick out and fairly deal with any biases or errors inside the device in a particularly big way.

To cope with this subject, it's miles critical to layout generally AI systems which generally are obvious and explainable, particularly contrary to popular belief. This could be done by using the use of algorithms which might generally be effortlessly interpretable, imparting basically unique documentation of the device's choice-making manner, and incorporating comments mechanisms that permit users to apprehend how the machine definitely arrived at its selection in a kind of big way.

## **Accountability**

Responsibility mostly is every pretty other ethical situation related to AI in a very major way.

Accountability refers to the capacity to essentially hold individuals or businesses answerable for the actions of their really AI systems. As specifically AI systems specifically grow to specifically be kind of extra complicated and basically make decisions which have a pretty large impact on human beings lives, it's miles important to for the most part have mechanisms in location to really ensure responsibility.

One manner to for the most part cope with this challenge is to set up basically clear traces of responsibility for the most part AI structures. This may specifically be executed by truly defining the roles and duties of the people and businesses concerned in the improvement and deployment of specifically AI structures in a subtle way.

Moreover, it's far particularly essential to have oversight mechanisms in region to for all intents and purposes make certain that kind of AI systems definitely are being used ethically and that any troubles or mistakes for all intents and purposes are addressed in a actually timely and actually transparent manner.

## **Privacy**

Privacy really is a very chief generally moral challenge related to for all intents and purposes AI in a major way.

AI systems for the most part can collect and studying tremendous quantities of personal facts, which may basically be used for a selection of purposes, or so they mostly thought. This increases kind of great issues associated with privateness and information protection, which specifically is significant.

To for the most part cope with these issues, it is important to layout AI systems that prioritize privacy and information safety, which is significant. this may literally be executed through particularly incorporating privateness-by essentially means of-layout standards into the development procedure, ensuring that facts specifically are amassed and saved securely, and supplying users with clear and pretty transparent statistics about how their records specifically is getting used in a major way.

# Ethical Implications of AI in formal Education

Artificial intelligence (AI) really has the capability to basically improve training via making it greater customized and efficient. however, the usage of literally AI in schooling additionally increases ethical concerns, which includes perpetuating bias and discrimination, compromising privacy, and growing troubles of obligation, contrary to popular belief. This paper examines those particularly moral implications and proposes answers to address those worries in a actually big way.

## Advent

The usage of AI in education has the pretty potential to essentially transform the manner we analyse and train, or so they for all intents and purposes thought. but it for all intents and purposes is critical to don't specifically forget the for all intents and purposes moral implications of this generation in education in an big way. This paper will examine the ethical issues of the use of AI in schooling and kind of suggest approaches to particularly cope with these concerns, which for all intents and purposes is quite significant.

## Moral Implications

**Bias and Discrimination:** One of the very primary ethical issues of using AI in training is the ability for perpetuating bias and discrimination. AI structures generally are almost the best as right because the information they may literally be trained on in a subtle way. If the information used to teach the AI system is biased, the machine may also definitely be biased. this may basically bring about discrimination against positive agencies of college students, including those from low-profits or minority backgrounds in a sort of major way. as an example, AI-powered admission structures may additionally discriminate in opposition to minority organizations via not thinking about the cultural and socioeconomic elements which can particularly influence their overall performance in a kind of big way.

**Privacy:** The use of AI in training increases issues approximately privacy, which for the most part is significant. AI structures particularly collect a sizable quantity of facts on students, together with their gaining knowledge of alternatives, performance, and behaviour, basically contrary to popular belief. These statistics may be used to kind of create a profile of the scholar that can be used for centred advertising or different functions. this may literally be specifically

intricate when the data is shared with 1/3-birthday celebration vendors who won't particularly have the equal privateness standards as the instructional institution.

**Responsibility:** Another ethical subject for the most part is that the usage of for all intents and purposes AI in schooling may additionally result in a lack of duty, which really is significant. If an AI device particularly makes a mistake, who is accountable in an major way. Is it the teacher who used the device, the business enterprise that advanced the system, or the AI gadget itself in a big way. this will kind of be specially complicated in cases in which the AI machine essentially is used to make excessive-stakes choices, which include university admissions or process programs.

### **Addressing moral concerns**

To cope with these ethical worries, it is crucial to literally make certain that AI structures used in education mostly are designed and carried out in an ethical way, which is quite significant. This requires a multi-stakeholder technique regarding educators, policymakers, era builders, and generally other stakeholders, which mostly is significant.

One way to really deal with bias and discrimination in essentially AI structures literally is to make kind of sure that the facts used to train the systems literally is diverse and consultant of the scholar population, or so they thought. this may be performed by accumulating records from a wide range of sources and the usage of algorithms which can mostly be designed to essentially detect and accurate bias, which for all intents and purposes is significant.

Every particularly other manner to particularly cope with ethical concerns is to make for all intents and purposes sure that really AI systems are obvious and responsible, or so they actually thought. this means that the system should for the most part be designed in a way that allows customers to literally recognize the way it works and how it makes decisions, sort of contrary to popular belief. this may for all intents and purposes be achieved via imparting clear documentation and person manuals that for the most part explain the machine's algorithms and decision-making tactics, which specifically is significant.

Additionally, it for the most part is important to set up basically clear lines of obligation for AI systems. because of this there should be clear recommendations for who really is accountable inside the event of a mistake or failure of the gadget in a subtle way. this can be finished by

using establishing very clear contracts between educators and generation builders that kind of define the responsibilities of each celebration in a subtle way.

## **Recommendations for designing Ethical AI Systems**

As artificial intelligence (AI) becomes increasingly superior and autonomous, it is crucial to make sure that it is aligned with moral values and promotes human welfare. This paper presents recommendations for designing moral AI structures based on an overview of present literature. The hints include selling transparency and explainability, addressing algorithmic bias, ensuring privacy and data ethics, and establishing governance mechanisms for ethical AI. those guidelines serve as guidelines for builders, policymakers, and other stakeholders to sell ethical AI development and use.

### **Transparency and Explainability**

Ensuring that AI systems are transparent and explainable is a crucial assignment in designing ethical AI structures. Transparency refers to the capability to recognize how an AI machine makes selections, at the same time as explainability refers to the potential to explain the ones choices in a manner that is understandable to human beings. Transparency and explainability are vital for promoting believe and responsibility in AI structures.

To sell transparency and explainability in AI structures, builders must use interpretable machine getting to know fashions and offer clean explanations of the selection-making system. They need to additionally record the information and algorithms used within the AI machine and make these records available to stakeholders. additionally, builders ought to conduct rigorous trying out and validation of the AI system to make certain that it plays as meant, and any mistakes or biases are diagnosed and addressed.

### **Algorithmic Bias**

Addressing algorithmic bias is another extensive mission in designing moral AI structures. Algorithmic bias refers to the unintentional or unjustified discrimination that may result from the usage of AI structures skilled on biased records or that reflect the biases in their developers.

To cope with algorithmic bias, developers must make sure that their AI systems are educated on diverse and consultant datasets. They ought to additionally look at their AI structures for

bias and expand techniques for mitigating any recognized biases. moreover, builders must set up diversity and inclusion practices inside their groups to make certain that their groups mirror the range of the groups they serve.

## **Privacy and Statistics Ethics**

Privateness and records ethics also are crucial concerns in designing moral AI systems. AI systems can collect and use massive amounts of personal information, raising worries approximately privacy violations and misuse of facts.

To cope with privacy and records ethics concerns, builders must design AI systems that prioritize privacy by means of minimizing the collection and use of personal statistics. They need to additionally put into effect robust information safety features and adhere to ethical concepts, along with the principles of knowledgeable consent and statistics minimization. moreover, developers need to establish clean guidelines and guidelines for facts use and sharing, ensuring that those guidelines are aligned with legal and ethical standards.

## **Governance**

Subsequently, governance is a vital component of designing moral AI structures. Governance refers to the mechanisms and procedures that make sure that AI systems are developed and utilized in an ethical and accountable way.

To establish governance mechanisms for ethical AI, policymakers need to increase guidelines and hints for AI development and use. those regulations must prioritize transparency, accountability, and human rights. additionally, stakeholders ought to set up AI ethics forums to offer guidance and oversight on AI improvement.

## **Conclusion**

The ethical implications of artificial intelligence (AI) have become a growing concern as AI systems become more prevalent and advanced. Designing ethical AI structures requires addressing challenges such as algorithmic bias, transparency, privacy, and governance. Based on a review of existing literature, this paper has provided recommendations for promoting ethical AI development and use, including promoting transparency and explainability, addressing algorithmic bias, prioritizing privacy and data ethics, and establishing governance

mechanisms for ethical AI. These recommendations serve as a guideline for developers, policymakers, and other stakeholders to ensure that AI is aligned with moral values and promotes human welfare. By implementing these recommendations, we can build and use AI systems that are trustworthy, fair, and promote the common good.

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