

Introduction

Data: <https://github.com/tiger-openai-hackathon/ai-build/tree/main/data>.

Data Description: The data concerns the role of recycling in resource conservation and environmental impact. Three PDF documents discussing this topic are available in the above data link. They contain text in various formats, such as bullet points, images, and tables.

Problem statement: We want to develop an interactive AI-powered chatbot that will educate users on the benefits of Recycling and answer related questions.

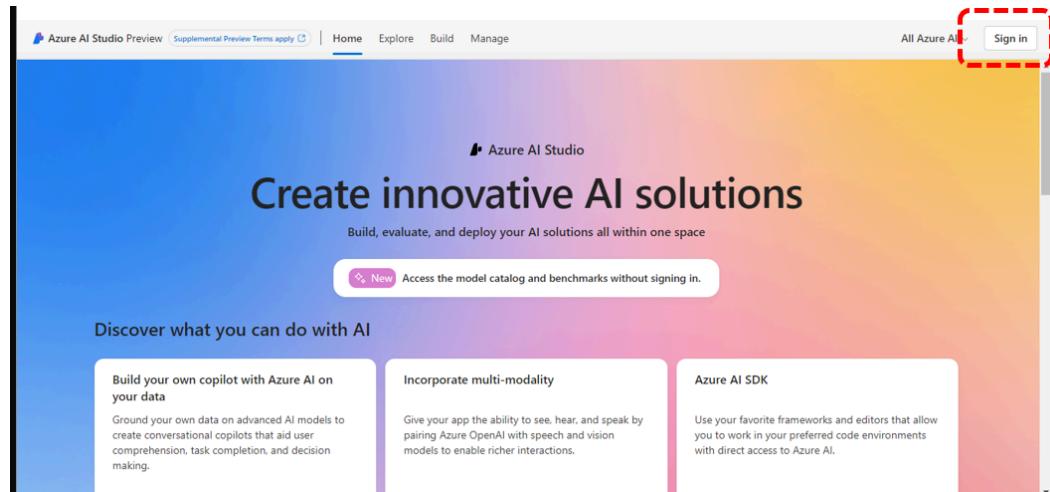
Overview: We'll build a chatbot powered by Azure AI services such as Azure AI Search, Azure Open AI, and Azure AI Studio. This chatbot will be capable of ingesting any document, responding to questions based on only the information available in the documents, and handling multi-turn conversations. Assuming this is our first AI chatbot project, we will detail the steps. We'll use Azure AI Studio to develop this solution and deploy a sample interactive web application.

If time permits, we'll also investigate how to change prompts and parameters like top_k and their impact on responses. We will also try to give you a glimpse at other developer features, such as prompt flow and evaluation flow.

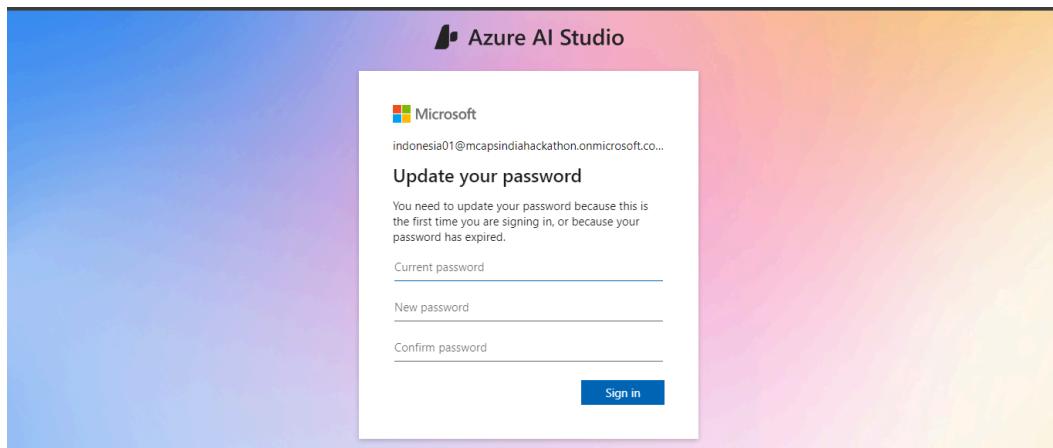
Steps for creating your first AI project

1. Log in to the Azure AI Studio Portal

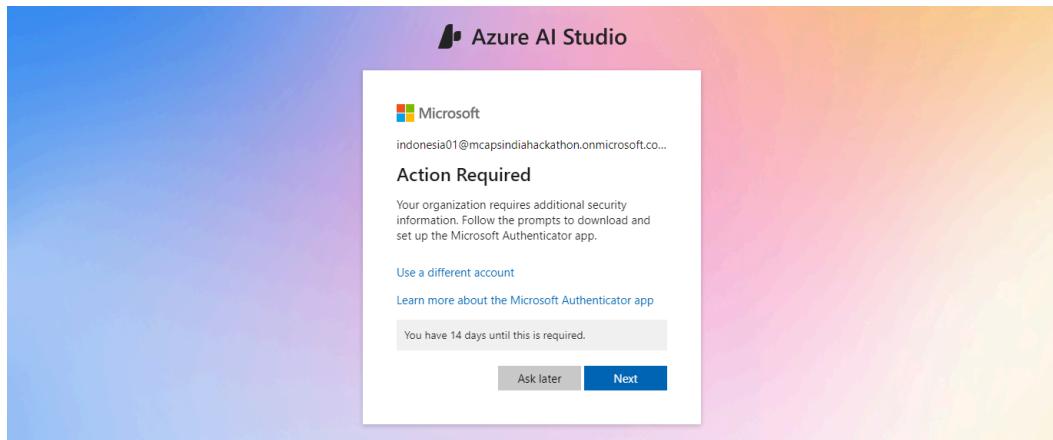
- a. Please go to [Azure AI Studio Portal \(ai.azure.com\)](https://ai.azure.com) from your browser (please use Incognito/ private mode to avoid clashes with your work profile)
- b. Click on the Sign-in Button



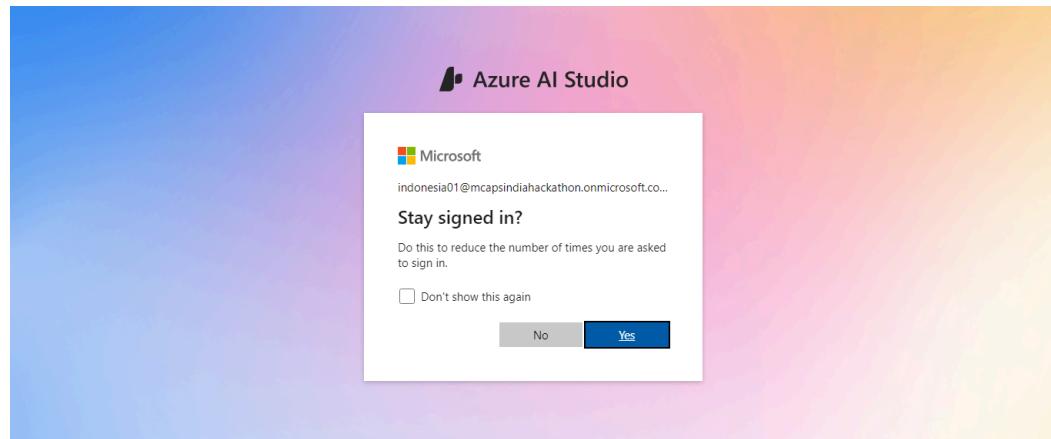
- c. Enter the credentials shared with you at the registration desk. (Please keep your slip with you till the end of the event).
- d. Setup a new password



Setup MFA/authenticator: Skip this step by clicking “Ask Later.”



- e. Click on **Yes** in the next step.



2. Create a new project.

- Go to the **Build** tab on the top and click on the **New AI Project** button

A screenshot of the Azure AI Studio AI projects page. The page has a header with tabs: "Home", "Explore", "Build" (which is underlined), and "Manage". Below the header is a search bar and a table with columns: "AI project", "Resource", "Description", "Region", and "Created on". A single row is shown: "malaysia-user-test" under "AI project", "malaysia-test" under "Resource", "eastus2" under "Region", and "Mar 13, 2024 4:0" under "Created on". At the bottom of the table are navigation buttons for "Prev" and "Next" and a "25/Page" dropdown.

- In the **Project Details** tab

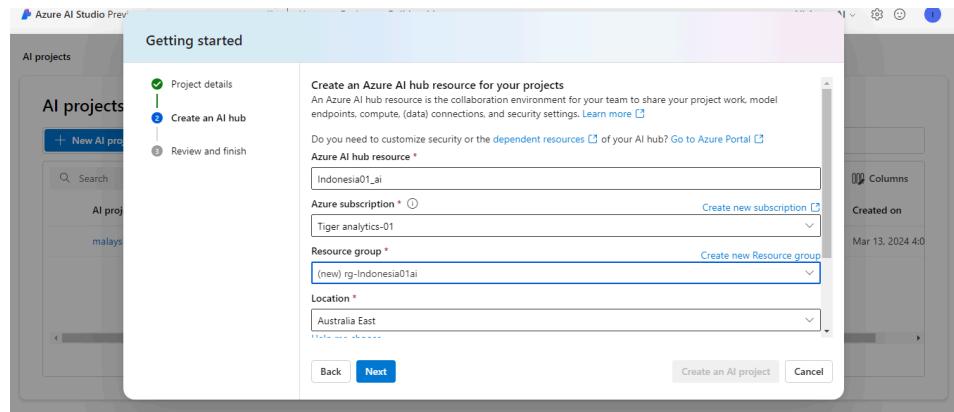
- Add an appropriate project name ("ai-build-" + login ID + version number. Ex: "ai-build-malaysia01-v1")

- Under the **Resource**, click on **Create a new resource**. It should take you to **Create an AI hub** section.

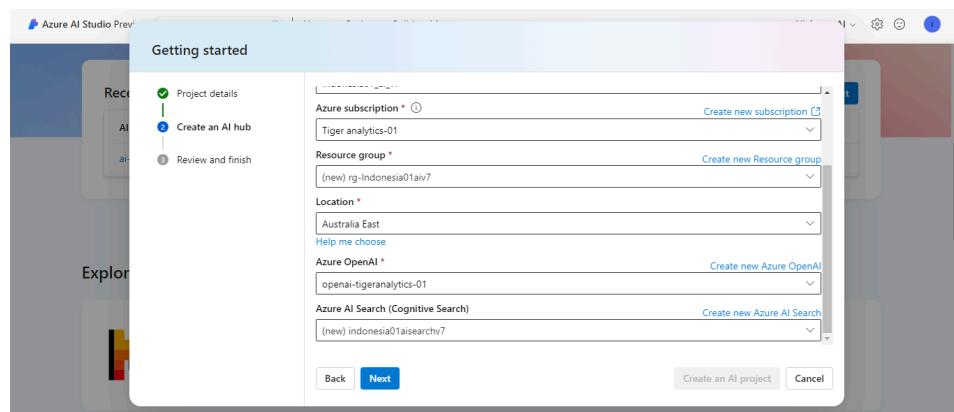
A screenshot of the "Create an AI hub" step in the Project Details wizard. On the left, there's a sidebar with "Project details", "Create an AI hub" (which is checked), and "Review and finish". The main area shows "Project details" with a "Project name" field containing "ai-build-indonesia01-v1" and a "Resource" field with a dropdown menu showing "Create a new resource". A note below the fields says, "Projects using the same resource share security settings, and can share artifacts like data connections. Learn more." At the bottom are "Next" and "Cancel" buttons.

- In the **Create an AI hub** tab

- i. Under the **Azure AI hub resource**, your user ID will be populated by default. If not, please add an appropriate resource name (userid+"_ai". Ex: "Indonesia01_ai")
- ii. Under the **Azure subscription**, select the default entry (It will look like **Tiger analytics-<number>**, Ex: Tiger analytics-01)
- iii. Under the **Resource group**, select "(new) + <the name you added in the Azure AI hub resource>," which will be displayed by default.
- iv. Under the **Location**, select **Australia East**.

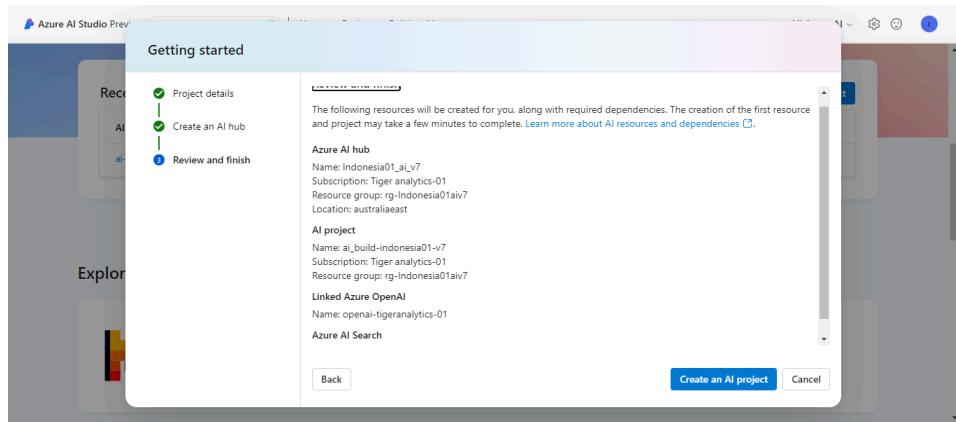


- v. Under **Azure OpenAI**, select the dropdown menu and select **the available Azure Open AI resource**. It will be in the format **openai-tigeranalytics-<number>** Ex: **openai-tigeranalytics-01**
- vi. Under **Azure AI search (Cognitive Search)**, click on "**Create new Azure AI Search**", and add the Azure AI search Name in the following format "**useridaisearch**". Ex: "**Indonesia01aisearch**" and click "**Next**"

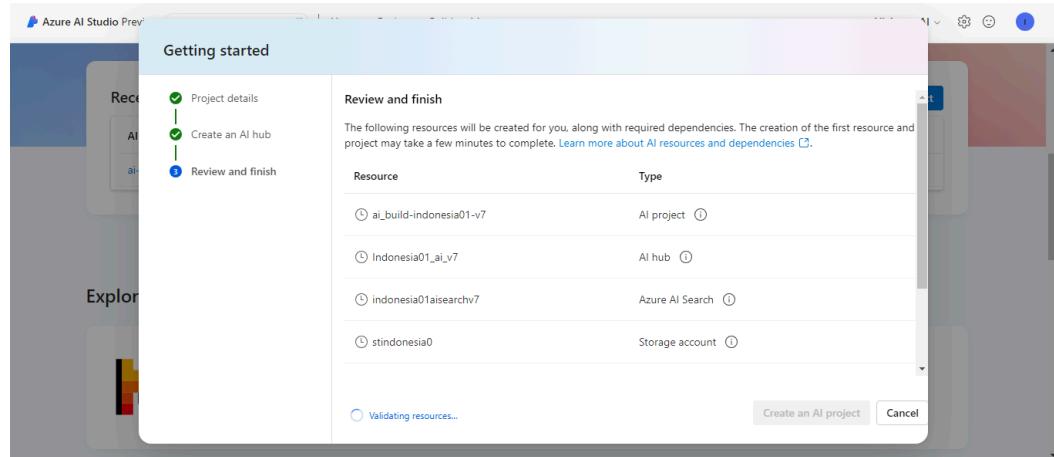


- vii. Review the details and Click on "**Create an AI project**" only if the resources are in the format below. Otherwise, recheck the services, and if the service names do not match those shown below, please contact one of the event

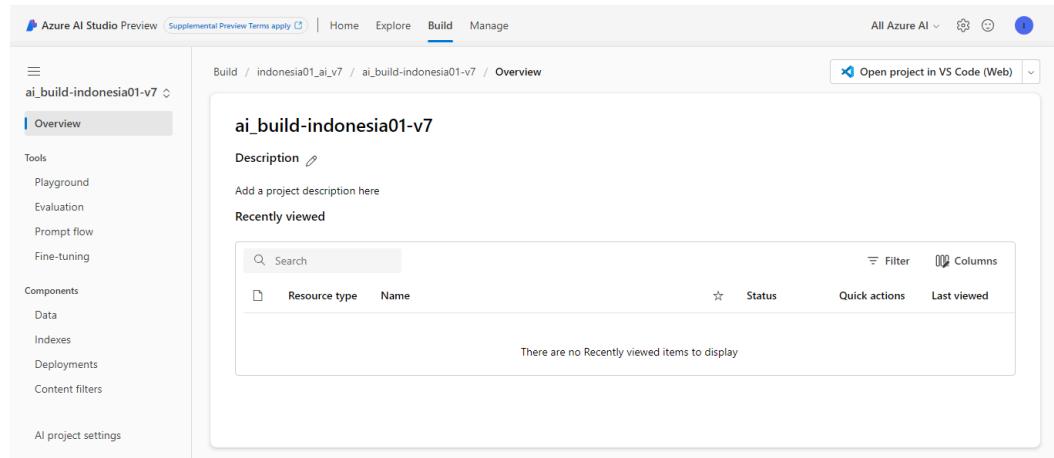
coordinators.



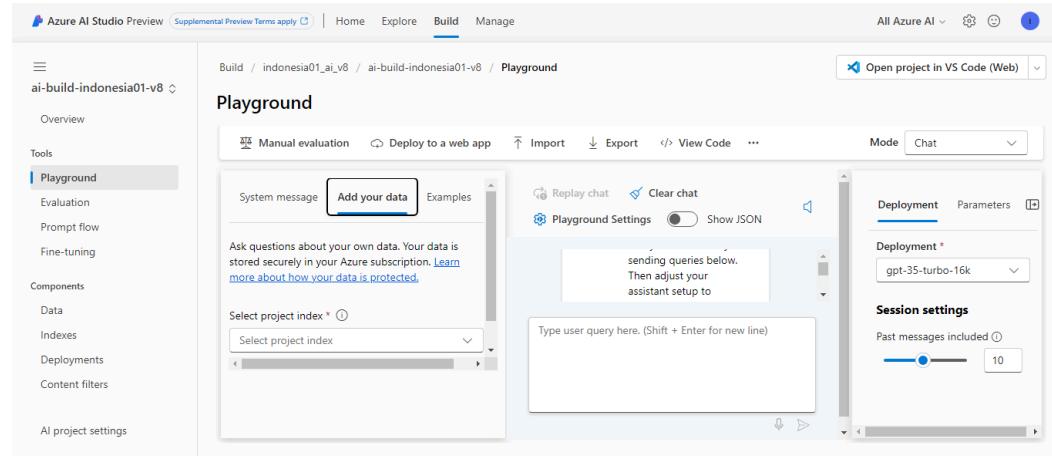
- d. Please wait while the Azure services are created for you in the **Review and Finish** tab. It might take a couple of minutes.



- e. It will automatically redirect you to the Project **Overview** page. Click on the **Playground** to start with the next step.



f. You will see the Playground in the screenshot below



3. Confirm a connection to the Azure OpenAI service

- On the right-hand side panel of the project playground, make sure the **mode** is set to **chat**, click on deployment, select the model from the dropdown **gpt-35-turbo16k**, and change the **past messages to include 10**.

4. Add your data

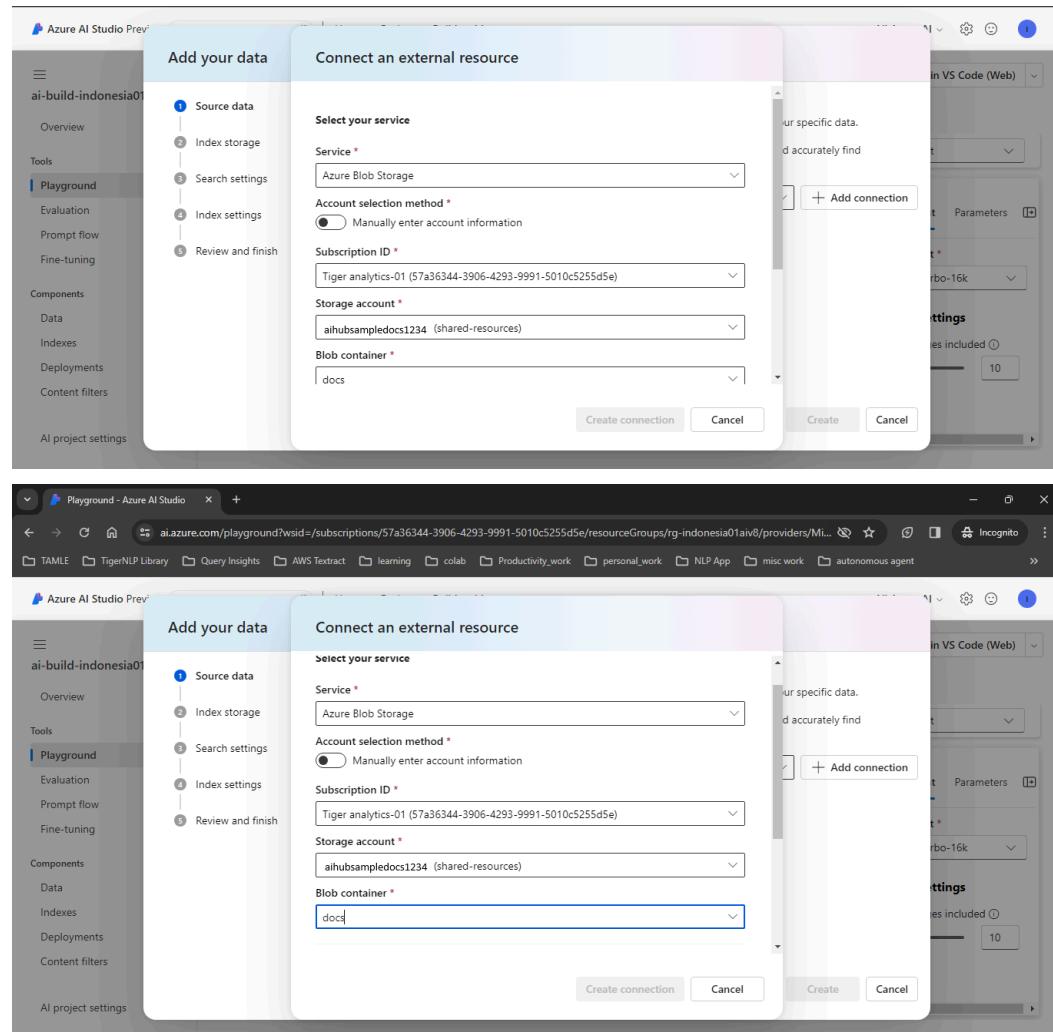
- On the left-hand side of the playground, go to **Add your Data** and click on **Add your Data**.

The screenshot shows the Azure AI Studio Preview interface. The left sidebar has 'ai-build-indonesia01-v8' expanded, with 'Playground' selected. The main area is titled 'Playground' and contains a chat window with a message 'System message' and a button 'Add your data'. Below the chat is a text input field 'Type user query here.' and a deployment panel on the right. The deployment panel shows 'Deployment' set to 'gpt-35-turbo-16k'. The top navigation bar includes 'Build / indonesia01_ai_v8 / ai-build-indonesia01-v8 / Playground' and 'Mode Chat'.

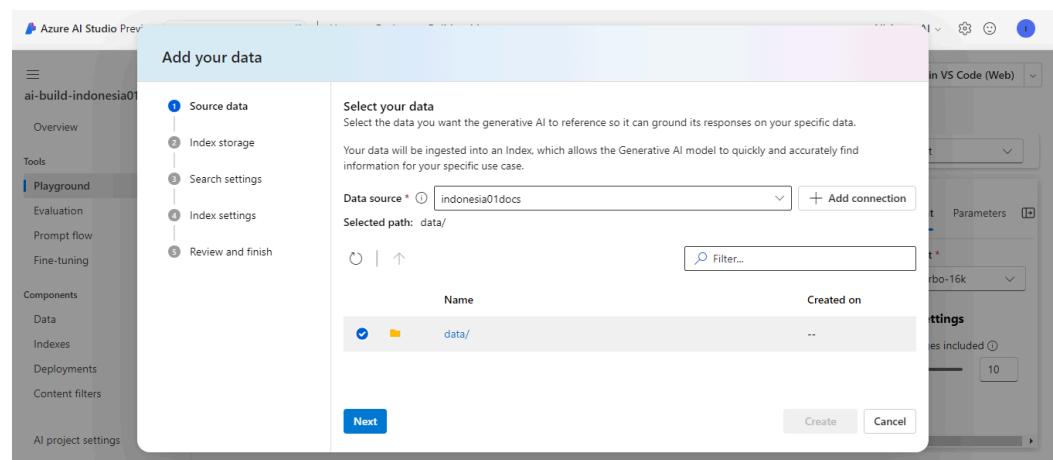
b. Click on **Add Connection**

The screenshot shows the 'Add your data' wizard in the Azure AI Studio Preview. The left sidebar shows 'ai-build-indonesia01-v8' with 'Playground' selected. The main area is titled 'Add your data' and shows the first step: 'Source data'. It includes a dropdown 'Data source *' with 'Select your data source' and a 'Create' button. To the right is a deployment panel with 'Deployment' set to 'gpt-35-turbo-16k'. The top navigation bar includes 'Build / indonesia01_ai_v8 / ai-build-indonesia01-v8 / Playground' and 'Mode Chat'.

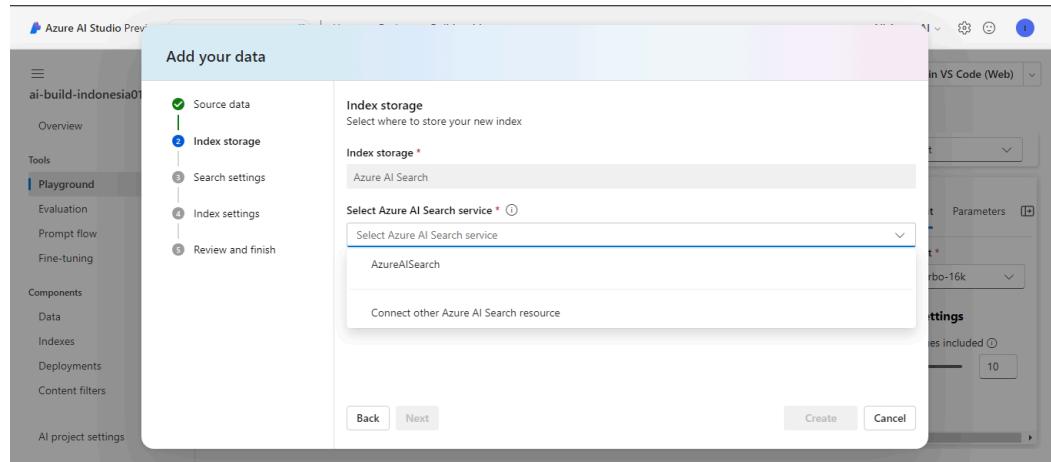
- c. The **subscription ID** will be populated by default. Select the **storage account**, which will be in the format **aihubsampledocs<numericalid>** and **blob container** as **docs**, and select the **Authentication method** as **Microsoft Entra-Based Id**. Enter the **connection name** appropriately, “**user-id + document**”. Example “**Indonesia01docs**”.



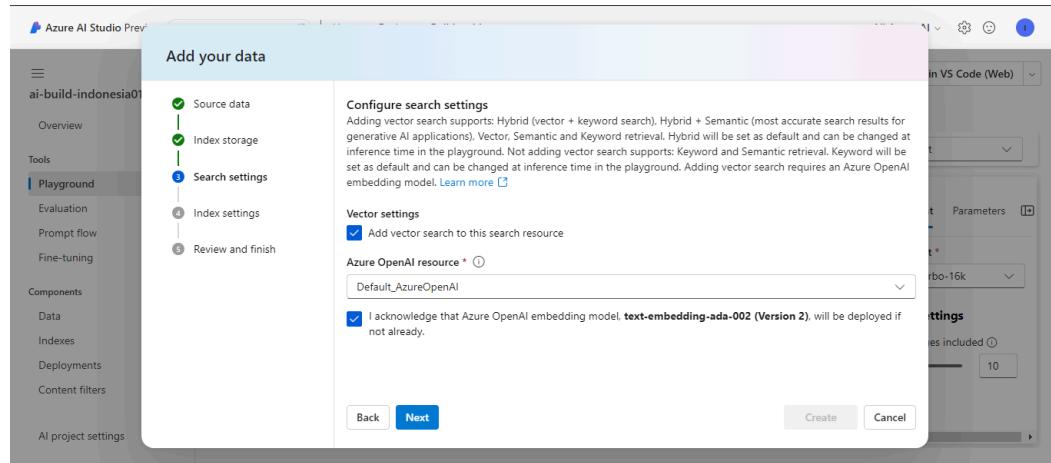
- d. Select the **data source** from the connections, select the **data folder**, and click **next**.



- e. Select the **AzureAIsearch** and click **next**.

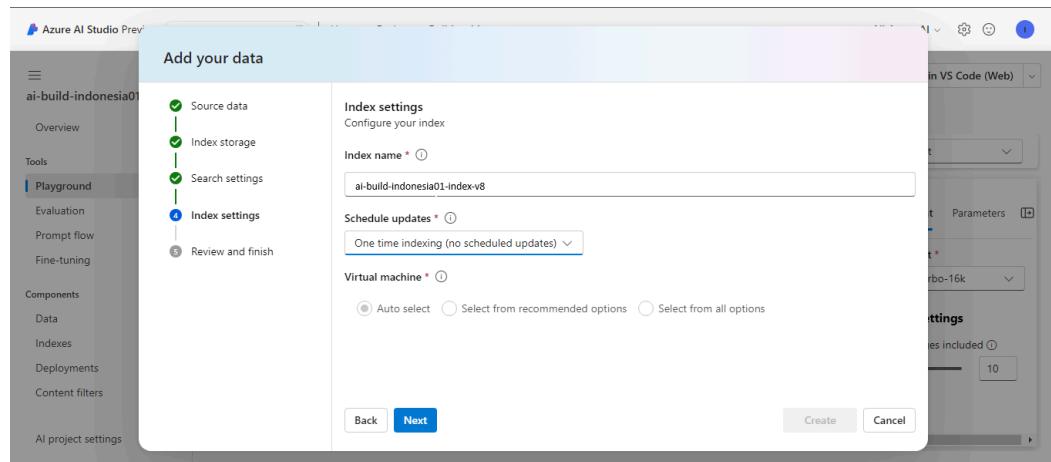


- f. Select the checkboxes to **Add Vector Search** and **acknowledgment** and click **next**.



- g. In the **Index Settings**, use the index name as follows:

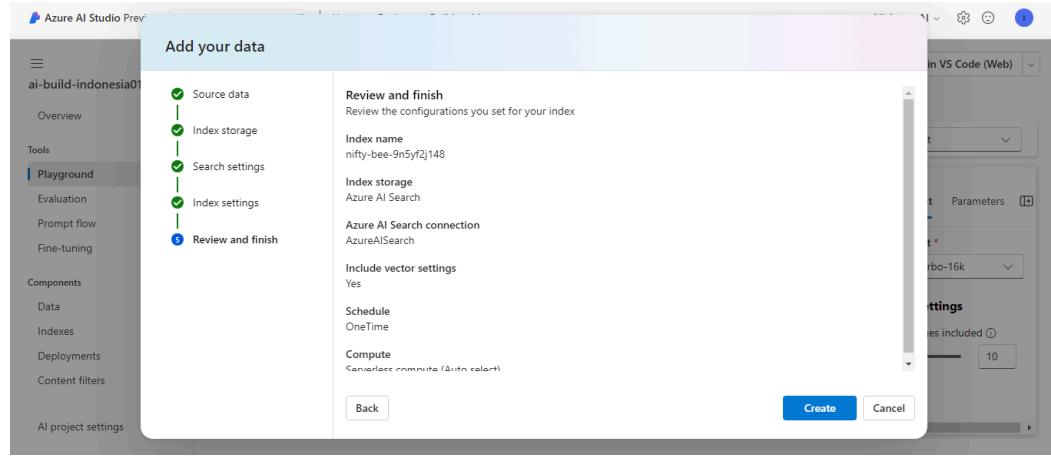
"ai-build-<userid>-index-<version>. Example **ai-build-indonesia01-index-v8.**



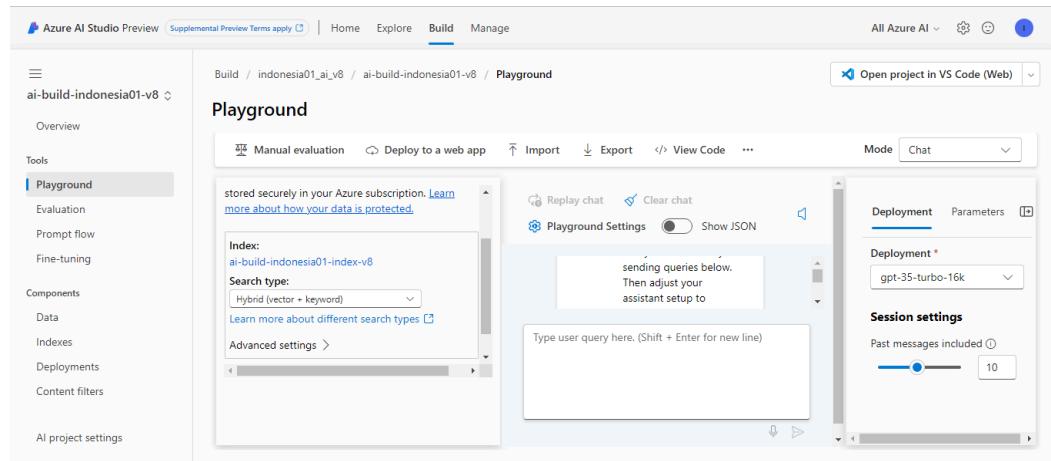
- h. Review the steps, click **Create**, and wait a few minutes to finish.

Note: After returning to the playground, if it takes too long to load the indexed data, please try the following steps:

You can refresh the browser, Clear cookies, Close the browser, log in again, and navigate back to the project you created.



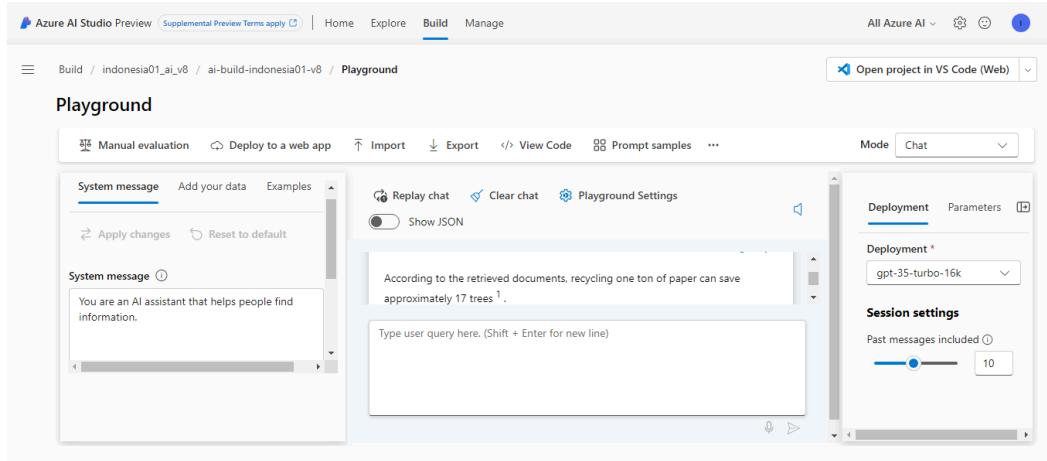
- i. In the playground, select the **index** you have created, for example, **a-build-indonesia01-index-v8**,
- j. Under the **Search type** dropdown, select **Hybrid (vector + keyword)**



5. Test the connection

- a. Ask a question in the playground chat box (Ex: "How many trees can be saved by recycling one ton of paper?")

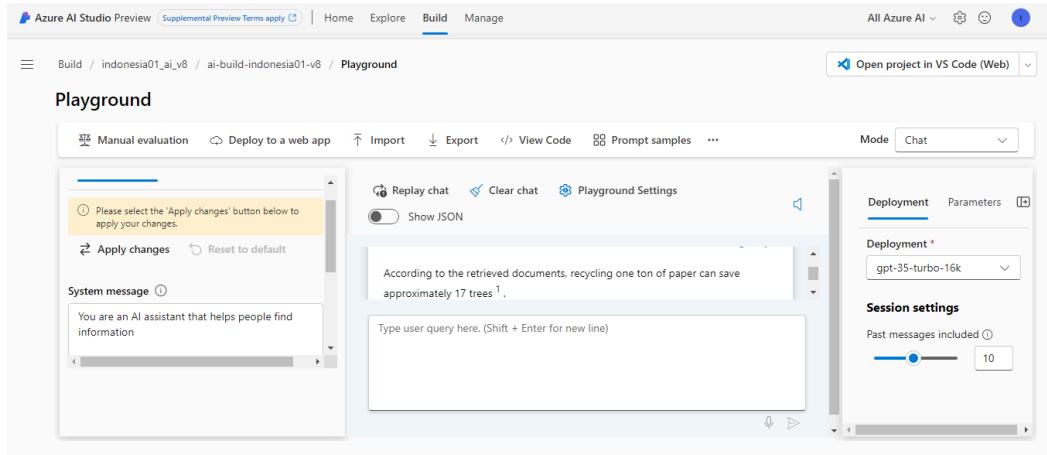
- b. If you get a system response, the connection is set, and we're good to go to the next step.



- c. The system is now set up to respond to general user questions. We can add our data in the backend to unlock the power of Azure AI studio, which is the ability to generate responses from the sources provided by the user.

6. Prompt

- a. Define the system prompt in the prompt box and click on **Apply changes** to reflect the changes in the system responses.



- b. You can find the sample prompts in the **Prompt catalog** section in the **Explore** tab.

The screenshot shows the Azure AI Studio Preview interface with the 'Explore' tab selected. On the left, there's a sidebar with 'Model catalog', 'Model benchmarks', and 'Prompt catalog' (which is highlighted). The main area is titled 'Prompt catalog' and contains a section titled 'Browse prompt samples for common use cases'. It features a search bar, a list of 'Prompts' (including 'Travel Assistant' and 'Social Media Post Analysis'), and filters for 'Modalities' (Image, Video, Completion, Chat) and 'Industries' (Retail, Education). A cartoon notepad character icon is in the top right.

7. Start asking questions

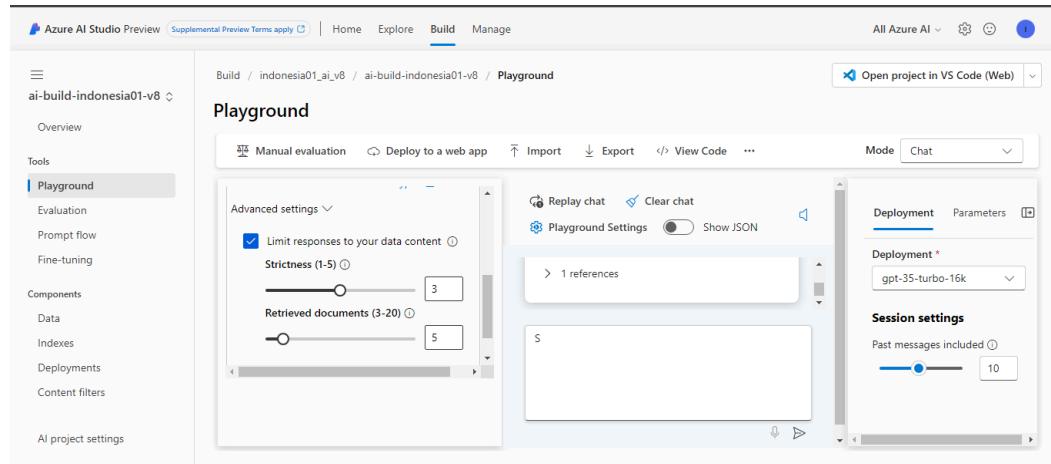
- Check on the responses from the data and ask questions. Some sample questions on the data can be found [here](#) (Please clone the repository or download the zip and navigate to the sample QnA spreadsheet in the **Data** folder to view sample questions).
- Please click the **Clear Chat** button in the chat box before asking an unrelated follow-up question.

The screenshot shows the 'Playground' tab in the Azure AI Studio Preview interface. The left sidebar includes 'Overview', 'Tools' (with 'Playground' selected), 'Components' (Data, Indexes, Deployments, Content filters), and 'AI project settings'. The main area is titled 'Playground' and shows a 'System message' box containing 'You are an AI assistant that helps people find information.' There are buttons for 'Reply chat' and 'Clear chat'. On the right, there are sections for 'Deployment' (set to 'gpt-35-turbo-16k') and 'Session settings' (Past messages included: 10). The top navigation bar shows 'Build / indonesia01_ai_v8 / ai-build-indonesia01-v8 / Playground'.

8. Tweak the parameters

- Suppose you want the responses to come not only from the source data alone but also from the external knowledge of the Azure OpenAI models. In that case, you can click on **Advanced Settings** under **Add your data** tab and uncheck **Limit responses to your data content**.
- Strictness** helps you set the threshold for relevant documents, and **Retrieved documents** help you set the number of chunks/documents that will be retrieved to

answer the questions.



- c. Please check this guide on [how to generate text with Azure OpenAI Service - Azure OpenAI | Microsoft Learn](#)
- d. Tweak the model parameters from the **Parameters** tab. You can find the definition of the parameters [here](#).
- e. Make changes to the prompts to change the response to how you like (for example, we can add to give the response in bullet points or a happy tone). Remember to click on **Apply Changes** after changing the prompt. You can click the **Replay chat** button to get responses to the existing questions in the updated prompt.
- f. Define variables by using the **Add variable** section for easy prompt changes. For example, tone can be set as a variable in the prompt whose value can be changed easily across different runs. Example `{{format}}`

- g. You can also **import** and **export** the chat settings (prompts, examples, parameters) to a JSON. You can try the same using this JSON (add JSON link). This feature helps share your workspace settings while working as a team.

- h. You can also click on View Code to get executable code in the programming language of your choice with the Azure OpenAI, data, and index connections already set.

```

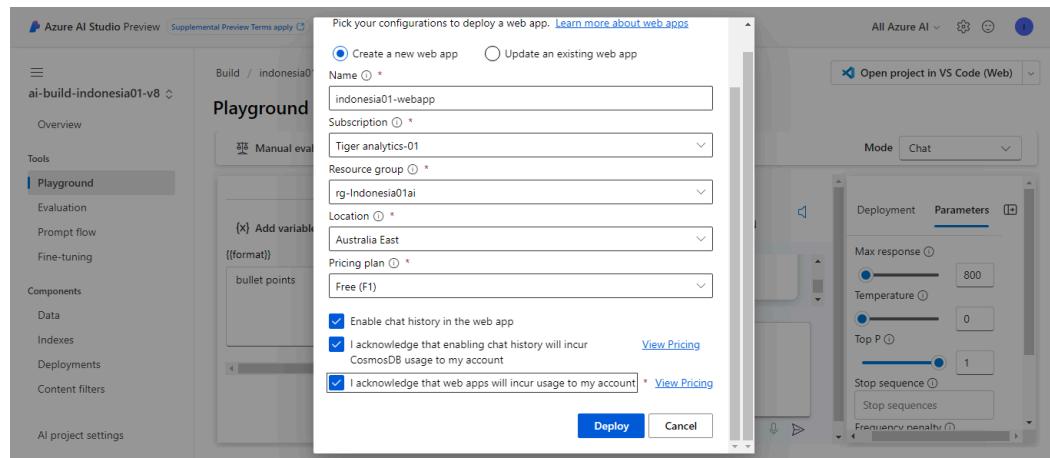
import openai, os, requests
openai.api_type = "azure"
# Azure OpenAI on your own data is only supported by the 2023-03-15 API version
openai.api_version = "2023-08-01-preview"
# Azure OpenAI setup
openai.api_base = "https://openai-tigeranalytics-01.openai.azure.com"
openai.api_key = os.getenv("OPENAI_API_KEY") # Add your OpenAI API key here
deployment_id = "your-deployment-id" # Add your deployment ID

```

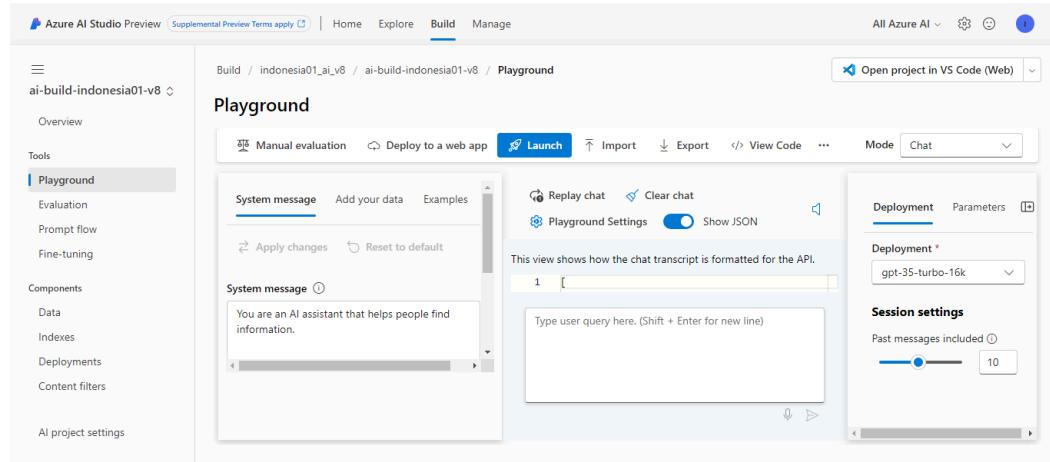
You should use environment variables or a secret management tool like Azure Key Vault to prevent accidental exposure of your key in applications.

9. Deploy the model as a web application

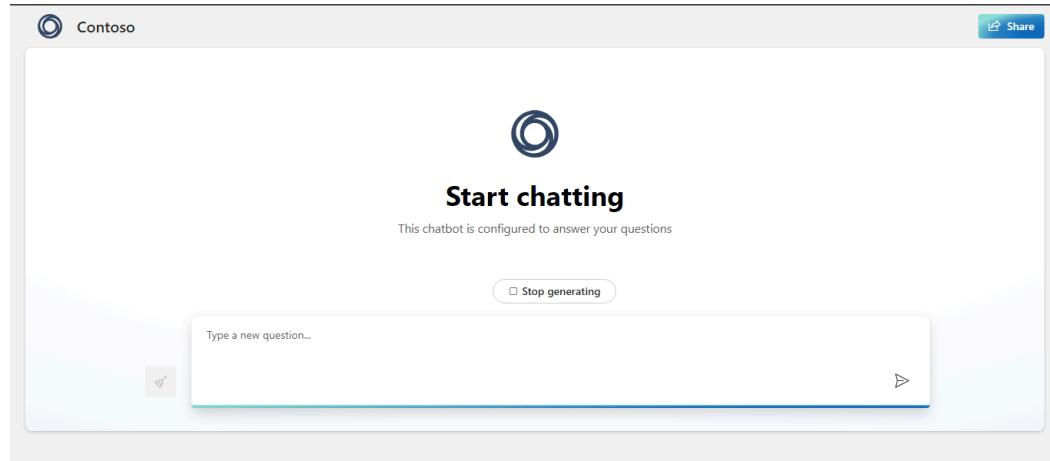
- Click on “Deploy as a Web App.”
 - Enter a name for the web app in the format “**user-id-web app**.” Example **“Indonesia01-web app”**
 - Select the subscription that gets populated by default, for example, **“Tiger analytics-01”**, resource group as the one you have created during the creation of the AI hub. generally, it will be of the format “rg-<userid>ai.” For example, **“rg-Indonesia01ai”** and its location are **“Australia East.”**
 - Select the **“Basic B1”** pricing plan.
 - Check all the boxes, including the acknowledgment related to pricing
 - Click the **deploy** and wait for a few minutes (this might take ~10 minutes) till the deployment is complete
 - If you get a message saying Deployment failed, please reload the page and try again
- h. Note: deploy the app first and then do the prompt engineering**



- i. After the deployment, click on the “**Launch**” button

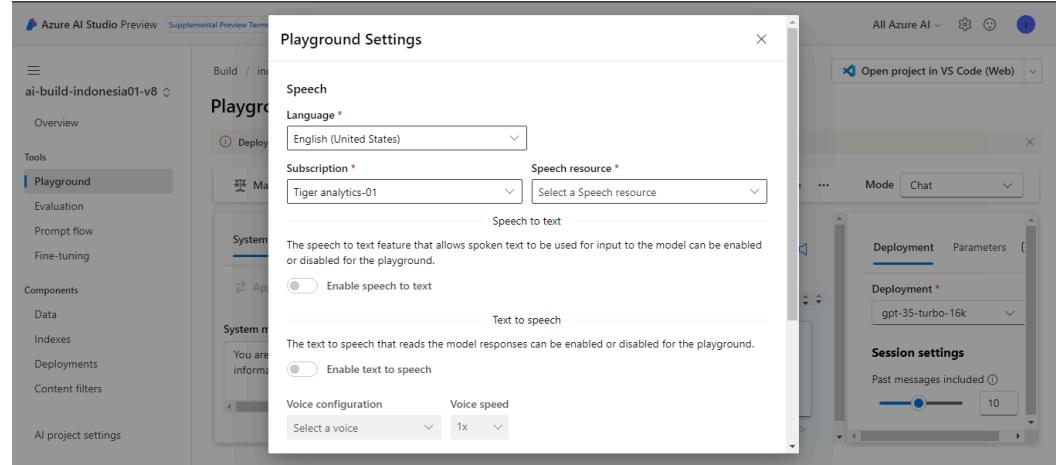


- j. Once you open the URL, you will be asked to “**Accept**” the invitation. Please do and proceed forward. If you see an error about the “**Authentication**,” please wait for a few minutes, and you will be able to see a sample web application, as shown in the **screenshot** below. You can start asking questions using the web application. People accessing your AI Studio project can also access the application via URL and ask questions. All the logs, user questions, and system responses are stored in a database.

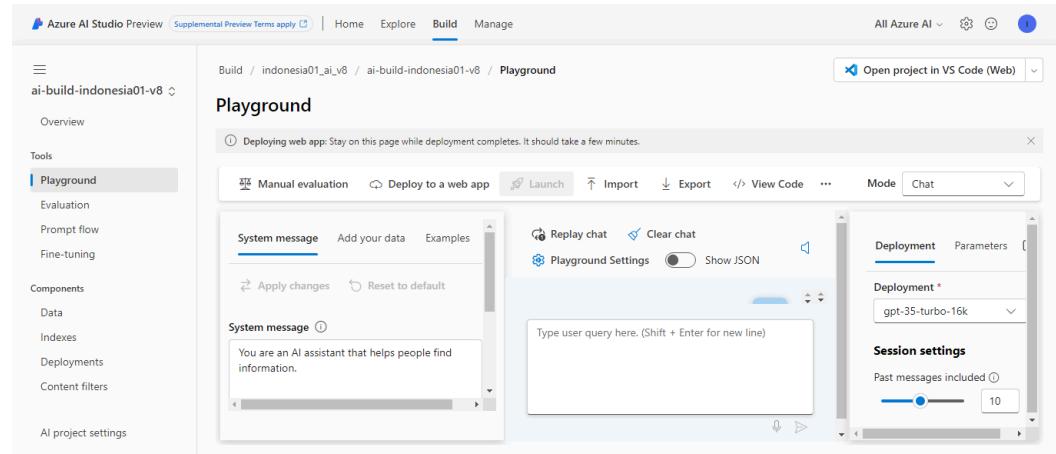


10. Additional Playground Features

- In the Playground settings tab, you can change the language and enable speech-to-text and text-to-speech capabilities. These use Azure AI services in the backend.



- You can also view the entire project in the VSCode web IDE and get responses in the terminal by clicking the “Open project in VS code(Web)” button in the **upper right-hand corner** of the playground.

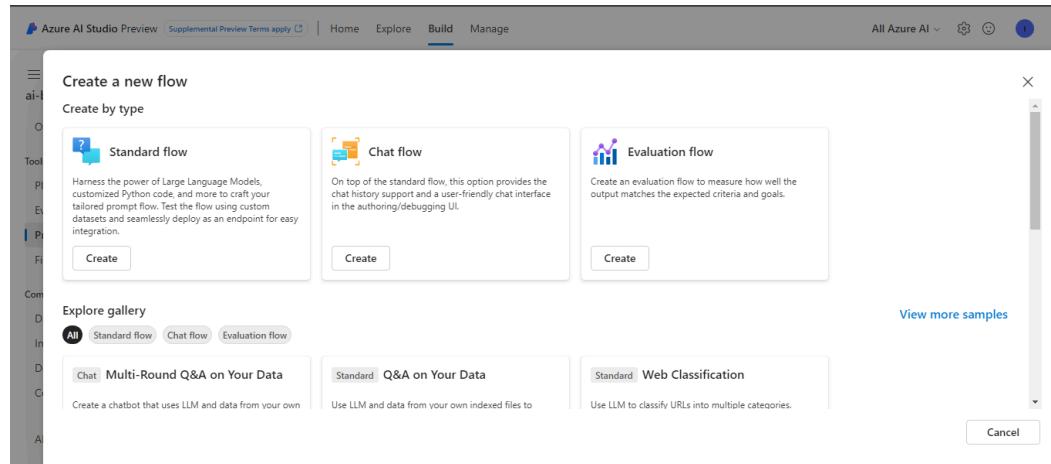


- You can look at the JSON of the chat transcript. This is formatted for the API calls.

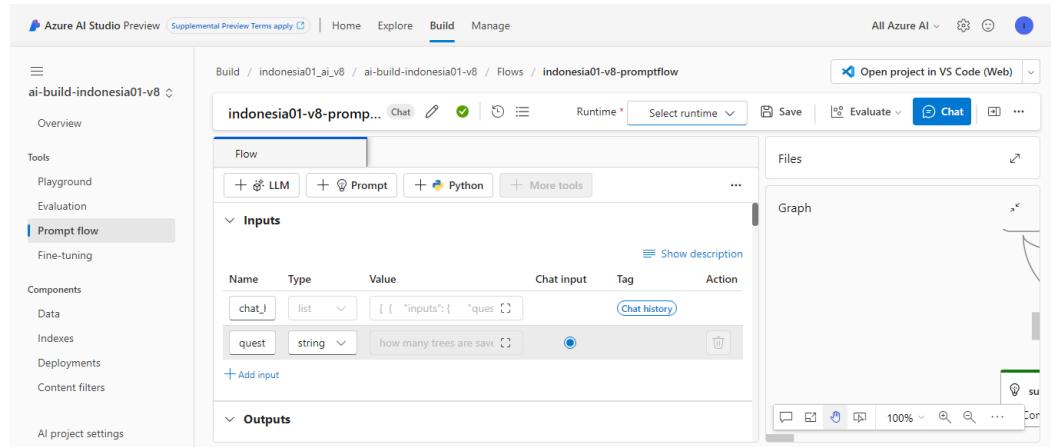
11. Prompt flow

- Go to prompt flow and click “**create**” to create a new prompt flow. You will find specific types of flows to be made and some of the “**Example Flows**,” which you can clone and

explore for further understanding.

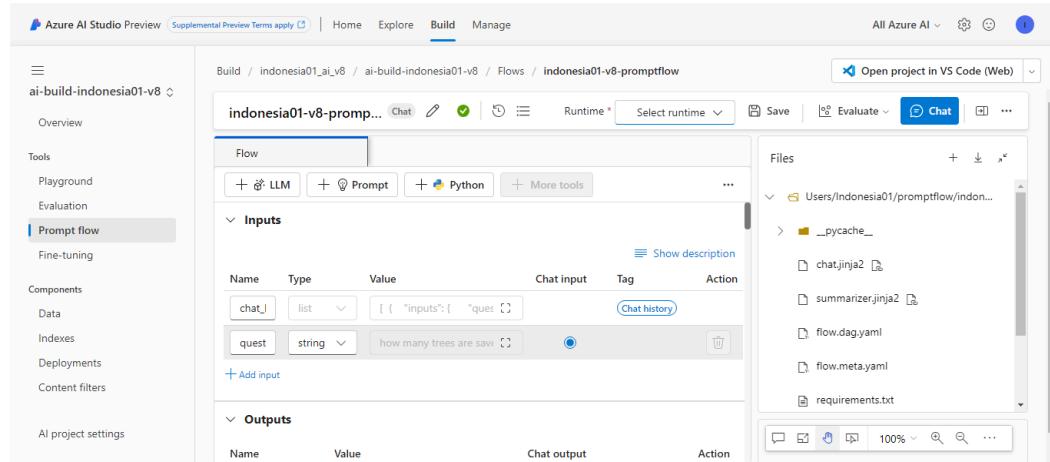


- b. In the prompt flow, you can see the “**graph**,” which gives you a bird's eye view of the whole flow, and the “**Files**,” which lets you download the prompt flow files to share your work.



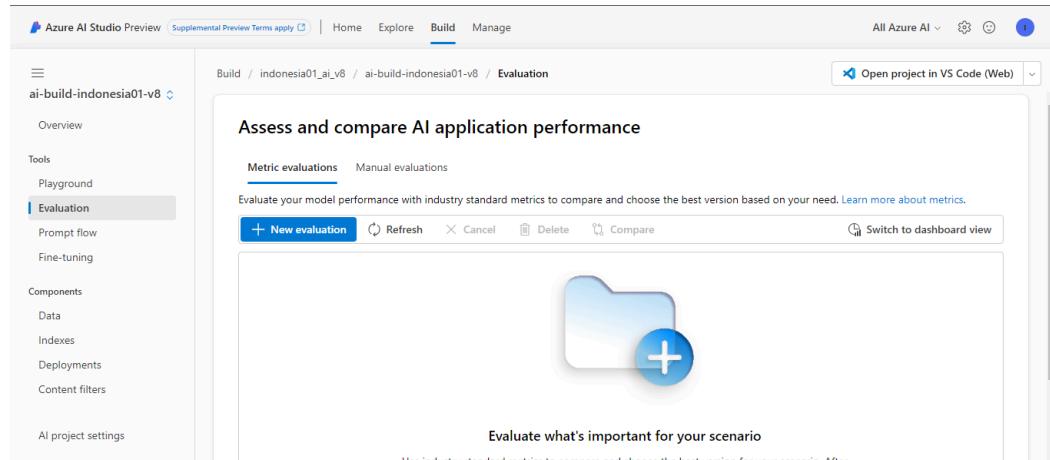
- c. You will also see the different tools available as part of the prompt flow, such as “**LLM**,” “**Prompt**,” and “**Python**” nodes, which will help you in development. To run the flow and chat with the application, select the “**Automatic Runtime**” and start it, then click on the

chat button to start conversing with the application.

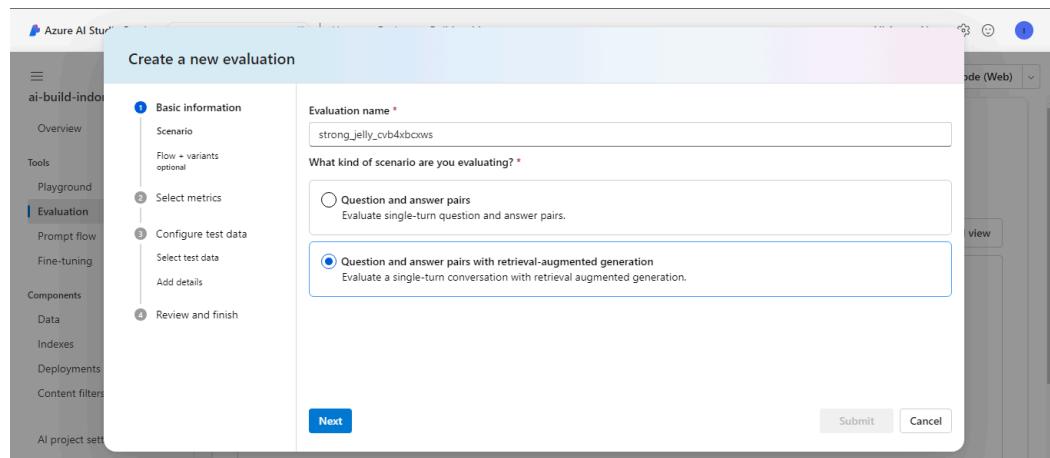


12. Evaluation

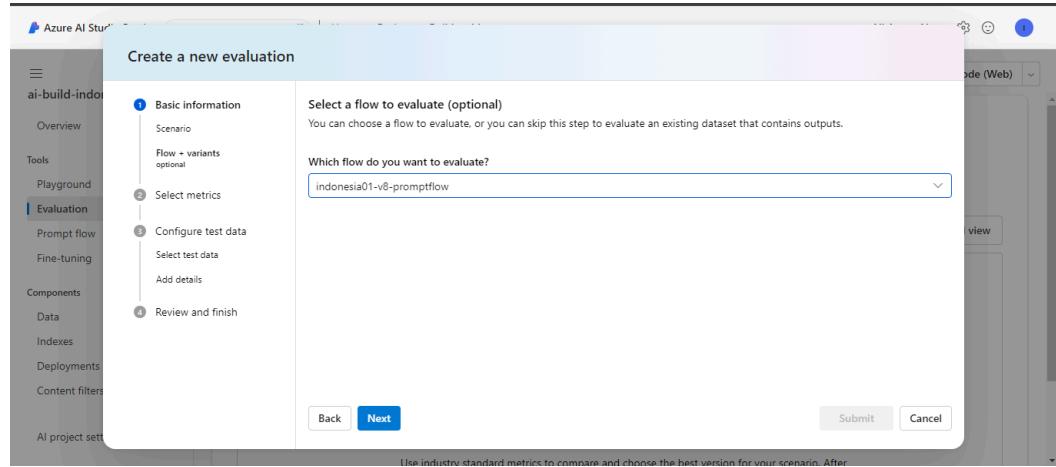
- To create a new evaluation flow, go to the playground's evaluation section and click the **new evaluation** button.



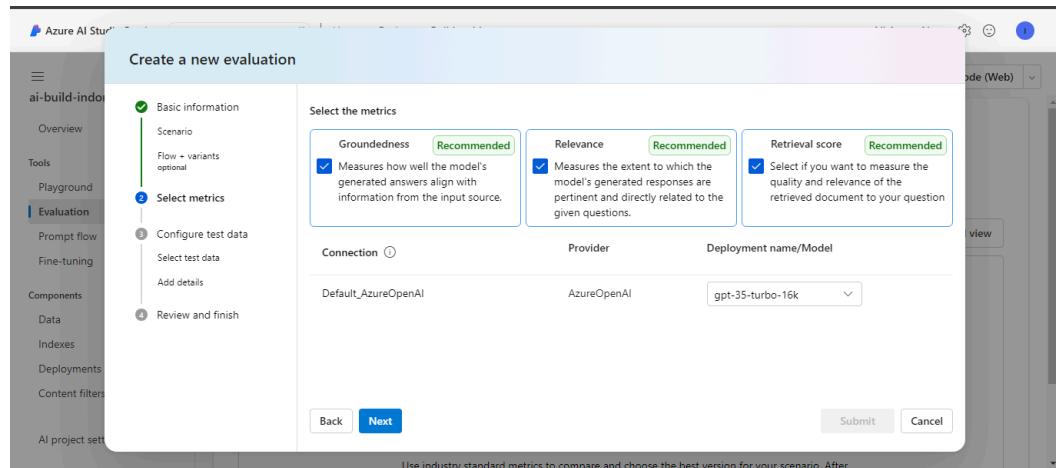
- Select the appropriate scenario to evaluate. Here, we will determine the second scenario: **Question and answers with retrieval augment generation**. Then click **Next**.



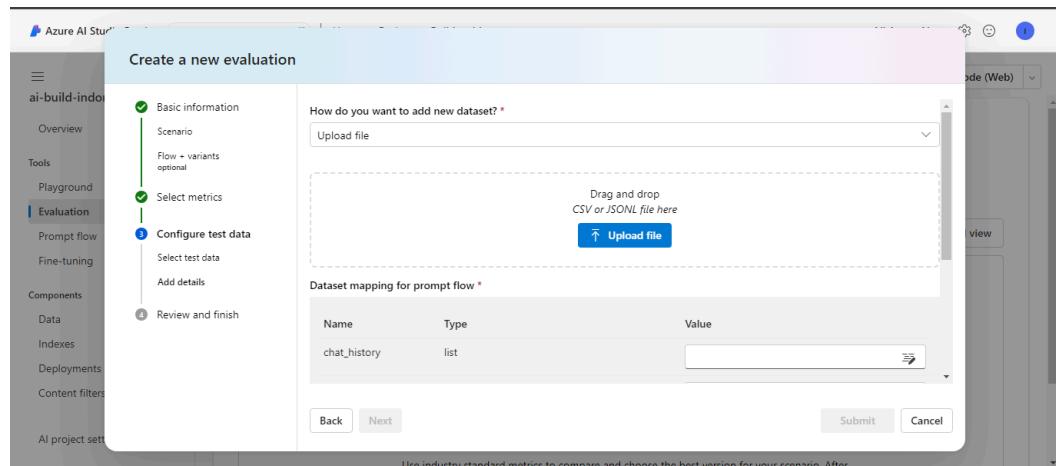
- c. Select the flow you want to evaluate from the dropdown and click Next.



- d. Select the metrics you want to use for the evaluation based on the definition and click next.



- e. You can add a new **dataset** or choose an **existing dataset**. Then click next. You can add **CSV** or **JSON** files. Regardless of existing or new data, you need to map the input fields in your data with the variables in the prompt flow. Once done, click next, review, and finish the flow.



- f. You can also run **manual evaluations** from the evaluation flow

- g. Click on the **new manual evaluation**, and you can import the data and set the prompt to populate the outputs and do the manual evaluation using **Thumbs up/down**

- h. Navigate to prompt flow, click **create**, and scroll down to the **Explore Gallery** section to find examples of flows pre-build on some everyday use cases. You can **clone** and use them to understand or build on it.

Note: The Azure service accesses used in this event are only valid during the event. Please contact your respective Microsoft account teams to follow up on continued access or if you have further questions.