

College of Science and Technology

School of Science and Technology

**ISYS30221: Artificial Intelligence 2022-23**

# Design Note and Conversation log

*By*

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1. **Design notes:**

This chatbot is implemented with Task A, B and D, which concludes the function of basic conversation, rule-based logical reasoning and Translator Lens” using Azure Cloud. The program initializes the AIML agent and creates a Kernel object to bootstrap and initialize the AIML. It loads custom AIML files related to fruit topics and reads the QA pairs from the CSV file and stores them in a dictionary.

For image translation, the program uses the Computer Vision client to read the image file and extract the text. It can also use the Text Translation API to translate the text to the user's specified language.

The program also includes functions to process user input including fruit or healthy food question, and process general knowledge requests. The input is preprocessed by removing stop words and lemmatizing the text to reduce its dimensionality. The program uses a TF-IDF vectorizer to convert the text to a numerical representation and calculate the cosine similarity between the user's input and the possible answers to provide the most appropriate response.

Program Explanation: The program has three main functionalities - chatbot, image recognition, and text translation. From a user's perspective, the program takes input in the form of text or an image and returns an appropriate response. The chatbot can answer general knowledge questions, provide information on a specific topic, and engage in casual conversation. Image recognition allows the program to recognize and extract text from images, which can then be translated into the user's preferred language.

Employed AI Techniques: The program employs several AI techniques such as natural language processing (NLP), machine learning, and Azure computer vision. NLP is used to process text input, tokenize it, remove stop words, and apply lemmatization to improve the accuracy of the chatbot's responses. Machine learning techniques such as cosine similarity are utilized to match user questions to the knowledge base and provide the best possible answer. Azure computer vision techniques are employed to perform image recognition, identify text in the image, and translate it into the user's preferred language.

Here is the demo link: [Recording-20230315\_000933.webm](https://myntuac-my.sharepoint.com/:v:/g/personal/t0267278_my_ntu_ac_uk/EXlHDSiO4l9EuGAOrNd3I9gBssN2rc3PDhququ2uzUFA1Q?e=5Xc5x4)

1. **Conversation log:**

For each implemented task (see below) show 5-10 sample input/output pairs. For each conversation log (i.e., each input/output pair), copy-paste the text/images or copy-paste the screenshot from some actual conversations between you and the chatbot into your report.

The conversation log pairs should collectively cover the implemented features. Where appropriate, annotate around the log with brief comments that explain which feature/component generated this, and how, for any particularly remarkable output.

Task A:

User: hello

Chatbot: Hello, How are you?

User: hi

Chatbot: Hello!

User: thank you

Chatbot: You’re welcome!

User: what is a cat #topic that not related to fruit

Chatbot: I’m not sure. Would you like me to look that up for you?

User: What can you do?

Chatbot: I can help you with any questions or problems you have. Just let me know what you need.

User: Who created you?

Chatbot: I was created by university student.

User: how is food digested #read the qa pairs,csv and output the answer

Chatbot: Digestion begins in the mouth, when we chew and swallow, and is completed in the small intestine. Digestion involves the mixing of food, its movement through the digestive tract, and the breakdown of food into smaller molecules. The digestive process varies for different kinds of food.

User: how long should I keep leftover food

Chatbot: When refrigerated, most cooked leftovers can be kept for 3 to 4 days, and should be reheated to 165 degrees before consuming.

Task B

User: Check that apple is blue #incorrect statement

Chatbot: This statement contradicts with the knowledgebase.

User: Check that mangoes are sweet #correct statement

Chatbot: Correct.

User: Check that mangoes are juicy

Chatbot: Correct.

User: Check that mangoes are sour

Chatbot: This statement contradicts with the knowledgebase.

User: I know that grapes are green #new statement

Chatbot: OK, I will remember that.

User: Check that banana is yellow and round

Chatbot: Correct.

User: Check that apple is yellow

Chatbot: This statement contradicts with the knowledgebase.

User: Check that mangoes are blue

Chatbot: This statement contradicts with the knowledgebase.

User: Check that apple is in season during the winter

Chatbot: This statement contradicts with the knowledgebase.

Task D

User: language

Chatbot:

What is the source language? en #translate from English to French

What is the target language? fr

Enter a sentence to translate (or "back" to return to the main chat): hi

Translated text: Salut

Enter a sentence to translate (or "back" to return to the main chat): How are you?

Translated text: Comment vas-tu?

一張含有 文字 的圖片

自動產生的描述