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Course: D951 – Introduction to Artificial Intelligence

Assignment: Task 1

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PART A

Explain the functionalities of the chatbot and how they will meet the needs described in the scenario.

Due to a huge increase in student enrollment in the Computer Science department, a new chatbot application has been developed to ease the workload of CS career advisors at Pumpkin Spice University. Careerbot is a chatbot that is designed to help current computer science students explore potential career paths. The chatbot interacts with the user by prompting them to select their preferences and strengths. The bot uses simple questions and buttons to determine the best job suggestion for the student. At the end of the survey, the student is presented with a job result as well as a link to a webpage where they can read more about their job recommendation. The Beta version of this chatbot is being released this month. If careerbot is successful in the CS department, it could be deployed to the other academic departments in the future.

PART B

Identify five computing job types that your chatbot can recommend based on student interaction with the chatbot.

Careerbot can recommend these five computer science jobs: Data Analyst, Software Engineer, Video Games Developer, UX Designer, and Cybersecurity Engineer.

PART C

Provide the generated chatbot code files to support the five identified job types from part B.

The zipped chatbot code files have been submitted with this report.

PART D

Explain how the chatbot training cases were selected and how you used artificial intelligence markup language (AIML) to enhance the functionality of the chatbot. Provide examples of the chatbot's functionality that represent the selected cases at the end of the training process in support of your explanation.

Careerbot utilizes postback buttons and URL buttons. AIML buttons offer users quick options that align with their individual preferences. Buttons simply the chatbot and make it efficient and user-friendly. Postback buttons allow the bot to match the postback attribute with the pattern element to display the next question.

Two types of training cases were used in the chatbot design: 1) initial greeting and 2) student preferences. Two training cases were used to represent 2 students with differing preferences.

Case 1: The student types an intital greeting such as "hi," "hello," or random text such as "asdflkjhlahui".

Case 1 bot response: The bot will initialize and prompt the user to click the "Start" button.

Case 2: Jamie is a CS student who is technical and artistic. She loves using HTML and CSS to create aesthetic apps. Jamie also enjoys learning about psychology. She opted to take psychology classes in high school and at university.

Case 2 bot response: The bot will suggest that Jamie consider a career as a UX Designer. It will also provide a URL where she can read more about this job.

Case 3: Randy is a CS student who is highly skilled at math and statistics. He is not particularly artistic. When he was in high school, he would make powerful Excel spreadsheets in his business computer class. He enjoys coding, but he is not sure that he wants to write code all day. He does not know much about CS jobs except he has a few friends that are software engineers. He would like to explore different career opportunities.

Case 3 bot response: The bot will suggest that Randy consider a career as a Data Analyst. It will also provide a URL where he can read more about this job.

PART E

Please follow the instructions below to use careerbot.

How to Use careerbot: An Instruction Guide

1. Open your browser of choice and go to https://home.pandorabots.com/home.html.

2. Click "Sign up Free" and follow the steps to create a free account. If you already have an account, click "Sign In" and enter your login credentials.

3. Next, go to https://home.pandorabots.com/dash/bot-directory.

4. Input "careerbot" in the search bar at the top of the page.

5. Click the yellow icon at the lower righthand side of the page to open the chatbox message window.

6. In the chat box, type "hi" to start careerbot.

PART F

Assess the strengths and weaknesses of the chatbot development environment and explain how they supported or impeded the construction of the chatbot.

Strengths of Pandorabots/AIML:

1. AIML is easy to learn, even for beginners. I found that I could start coding with AIML right away; it reminds me of HTML.

2. Pandorabots is a simple, web-based, user-friendly platform. I appreciate that Pandorabots is web-based. I can utilize the platform from any computer without having to download anything. This means that bot creation is faster and more efficient. I also appreciate that you can test the bot right on the code editor page. This feature was very helpful when I was coding careerbot.

Weaknesses of Pandorabots/AIML:

1. Natural, human conversation is difficult to simulate with AIML. Careerbot uses buttons to prompt users to make a choice between 2-3 preferences. This design works well for this project, but careerbot cannot offer in-depth career advice. Complex, unstructured, and open-ended conversations are difficult to simulate with AIML. This is because the bot's responses are fixed; AIML requires predefined patterns and responses. Simulating a natural conversation would require hundreds of lines of code to account for all the different pattern and response possibilities. Machine learning NLP platforms like Dialogflow or Rasa are better at simulating realistic, human conservation.

2. Pandorabots only offers basic analytic tools. While Pandorabots does provide logs of conversations, it does not provide any other analytic tools. If you wanted to gather more user data, like user sentiment, engagement trends, or drop-off points, you would need to utilize third-party analytics tools.

PART G

Explain how the chatbot will be monitored and maintained to improve the final user experience.

Careerbots will be monitored and maintained by the Computer Science department in the following ways:

1. Key metrics will be collected throughout the first month of deployment and every month thereafter. The number of user interactions and the fraction of students who use the chatbot will be monitored closely. The computer science department has this goal: At least 50% of all computer science students currently enrolled at PSU have used careerbot.

2. Google Analytics will be utilized with Pandorabots to provide more insights into user engagement.

3. All CS students will be sent a survey via Google Forms where they can provide feedback on the chatbot. The form will ask students what they like about the bot and what improvements could be made.

4. Each quarter new features will be released. These features will be thoroughly tested before deployment. As a part of future releases, more career paths will be added.

PART H

Panopto Video Link:
https://wgu.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=16c2e792-1245-4a8e-9874-b21a010aa82f

PART I

Sources for URL buttons:

Game Developer Job Description [Updated for 2024]
https://interviewguy.com/game-developer-job-description/
Author: Interview Guy Editorial Team
Accessed: 10/30/2024

What is a Cybersecurity Engineer?
https://www.comptia.org/blog/what-is-a-cybersecurity-engineer
Author: Jessalynne Madden
Date: 8/18/23
Accessed: 10/30/2024

What Does a UX Designer Do?
https://www.coursera.org/articles/what-does-a-ux-designer-do?msockid=2c29284f9d336ae32f3c3c5a9c166bb2
Author: Coursera Staff
Date: 09/19/2024
Accessed: 10/30/2024

What Does a Data Analyst Do?
https://www.careerexplorer.com/careers/data-analyst/
Author: Career Explorer
Accessed: 10/30/2024

What Does a Software Engineer Do?

https://www.careerexplorer.com/careers/software-engineer/#what-does-a-software-engineer-do
Author: Career Explorer
Accessed: 10/30/2024