Intro to Artificial intelligence C951
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Task 1 CHATBOT WriteUp

Scenario: You are a career advisor working for a university that offers many degrees, including a degree in computer science. You know that there is a vast range of computing jobs and that students who are about to graduate are generally aware of their disciplinary preferences and personal strengths. The enrollment of computer science students at your university has been increasing and you can no longer meet with each of them individually to give career guidance. During a meeting of career advisors, your manager suggests that you develop a chatbot that may reduce your workload and interact with students to help them identify jobs in computing fields for which they are qualified.

You have been asked to identify five job types that require an undergraduate degree in computer science and to construct a chatbot in the Pandorabot environment. The chatbot will interact with individual students, help them identify their strengths and preferences, and help them decide which career options to consider.

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

Our manager indicates that the advisory staff is overrun with new students, so I've been commissioned to see if any of our workflow can be automated. Through conversations with my coworkers, I've discovered that our time as advisors is largely taken up by students who require help filtering through into a field of interest. To that end, I've written a chatbot to help assist students while the human advisors are indisposed, and ideally help them solve their issues without human intervention at all. The chatbot functions as a flowchart, with questions prompted by the bot and answered by the student, to inform which leg of the flowchart to follow, ending at a suggested job choice, and external link for more information. I've named them…. CareerBot.

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

CareerBot can recognize and identify eight unique personality patterns and recommend jobs where those traits would flourish.

Those jobs include:

- 000 - Indie Game Developer
- 001 - 3D Modeler
- 010 - Design Engineer
- 011 - Front End Software Developer
- 100 - Data Scientist
- 101 - Financial Analyst
- 110 - Engineering Manager
- 111 - Software Engineer

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

*included in zip file

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 asks the user three questions with two options for each question, thus leading the user to one of eight possible career suggestions. If we treat each option as a binary decision, each career can be indicated with a string of three binary numbers from 000 to 111 (see Section B). To test the bot, I ran through all eight answer combinations and ensured they went to their corresponding careers, and fixed any mismatches I came across.

For example:

The questions asked are the users

1 preference for code

2 preference for math

3 preference for control

If someone has a preference for code, math, and control, the career advised is Data Scientist, a math-heavy, code-intensive, control-oriented career. If someone has a preference for design over code, no math, and instruction over control, they're funneled into the Front End developer career suggestion, where visuals and following client suggestions are valued.

AIML was used to better simulate a text conversation with a human, rather than filling out questions on a form or in an app.

E. Create an installation manual for the chatbot that includes the web link to access the live chatbot in the Pandorabot platform.

PreReqs: a pandorabots.com account

-Navigate to PandoraBots.com and create a new bot

-Navigate to the code editor of the new bot and open the AIML folder

-There should be a link called File

-Upload the included codebase labeled careerbot

-ignore the warnings and overwrite the files

-Compile/Save

-Press the icon in the bottom right of the screen to demo careerbot.

-Type 'Hi' to start the prompt and navigate through the options

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

The environment for pandorabots and AIML in general is fine, very vanilla. The syntax is based on XML therefore its very similar visually to HTML. This makes it easy to create something that you can interact with with very little introduction (especially if the writer has a web design background). The instant chatbot feature to test alongside coding is helpful as well.

The limits of the format become clear if the task becomes complex enough. The user can only interact with one aspect of any given quiz or test at a time, and navigation is limited to picking the response that leads to that text, instead of just navigating to the text itself.

This chatbot is great for answering and digesting single inputs of text at a time, but it's not a human Advisor and should not be considered a full replacement to one, merely a supplemental service.

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

The effectiveness of the chatbot will be monitored based on the criteria for which is was designed. Namely, if the swell of students going to advisory meetings diminishes post-bot release, then we can be reasonably assured that it's working as intended. However, if the number of students does not abate, more studies will have to be performed to see what students need help with that chatbot cannot provide. CareerBot can ultimately become one aspect of a full AdvisorBot. Maintenance of the bot in it's current state can be performed by me to ensure the user experience is improved via an ongoing remove of bugs, however as the scope of the bot increases over time, more resources and possibly employees will need to be allocated to bot maintenance.

If the administration will allocate proper resources (read: pay us proper and fair wages) to this project over time, then users will experience better advice and fewer bugs over time, and the Advisory department will be free to assist where they're most needed.

H. Provide a Panopto video recording that includes a verbal summary of the capabilities of your chatbot and an example of human interaction with the chatbot in which it provides meaningful career advice.

https://wgu.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=2e1d5f55-c9dd-405d-a9b1-aeb30162e226