

AIML Pandora Chat Bot

C-951 Task 1

Robert J. Robinson

Student ID: #01168728

Scenario:

As a career advisor at a university offering a variety of degrees including computer science, I recognize the diverse range of opportunities available in the computing field. As more students enroll in the computer science program, it's become difficult to provide personalized career guidance to each of them. To tackle this, I've developed a chatbot that can streamline the process.

My chatbot “wgubot”, is built in the Pandorabot environment, is designed to interact with individual students, identify their strengths and preferences, and help them navigate their career options. It focuses on five key job types that require an undergraduate degree in computer science. With this chatbot, students can get personalized advice to help them identify the most suitable computing jobs they're qualified for, and links to that careers respective page to find out more information.

A. Functionalities of the Chatbot:

The chatbot is designed as a Career Guide for students in the Department of Computer Science. The chatbot utilizes a decision tree to help students explore careers within computer science based on their personal interests and skill sets. The chatbot is equipped with two primary functionalities:

Top 5 Careers of 2023:

The chatbot provides a list of the top five promising careers in Computer Science. This feature allows students to understand the potential job prospects in the field. According to Simplilearn (n.d.), there are numerous high-paying jobs in the tech industry. This part of the chatbot selects 5 from the cited list, but many others could be added over time.

Help Me Choose a Career:

This feature walks the student through a series of questions to identify potential career paths. The chatbot's questions are based on both technical skills and personal interests. Based on the responses, the chatbot provides recommendations for specific careers that match the user's profile.

B. Five Computing Job Types:

Based on the interaction with the chatbot, it can recommend the following five jobs:

Full Stack Developer

Full Stack Developers are proficient in both front-end and back-end development, responsible for building the user interface, server, and database of software applications. They use a variety of technologies such as Ruby on Rails for server-side logic, React for building user interfaces, and Golang for efficient back-end services.

Cybersecurity Engineer

A Cybersecurity Engineer is a professional responsible for protecting systems and networks from threats and attacks. They design, implement, and maintain security systems to ensure the safety of an organization's data and infrastructure.

UI/UX Designer

A UI/UX Designer is responsible for the user interface and user experience design of an application or a website. Their role is to ensure that the product not only is aesthetically pleasing but also offers a seamless user experience. They design and implement the interface, create user flow diagrams, and gather user feedback to improve the overall user experience.

Data Scientist

Data Scientists are professionals who convert complex data into insights or predictions using various mathematical and statistical methods. They collect, cleanse, and use a variety of data analysis methods to interpret, analyze and visualize complex data sets.

Cloud Engineer

Cloud Engineers are IT professionals responsible for managing an organization's cloud-based systems and processes. This includes setting up architectures using cloud providers, like AWS or Azure, managing cloud environments, and collaborating with development teams to create and deploy software.

C. Generated Chatbot Code:

The AIML code provided above supports these five job types. The code includes decision-making logic that guides the user to these five potential careers based on their responses to the chatbot's questions. The code can be found in the wgubot.zip file, and instructions for reading and using it is found in section "E".

D. Chatbot Training Cases and Use of AIML:

The chatbot training cases were selected based on common traits and interests associated with different careers in computer science. The questions focus on users' preferences regarding design aspects, coding, web applications, working in a development environment, networks and security, and databases.

The AIML code was used to implement this decision-making process. For example, if a user expresses an interest in design and has extensive experience with web applications, the AIML code directs them towards a career as a UI/UX Designer. AIML's <srai> and <star> tags were used to create a common response for greeting patterns such as "Hello", "Hi", and "Hey".

E. Installation Manual:

Here are the simplified steps to access and run the bot via the Pandorabot website:

1. Visit www.pandorabots.com from your desktop computer.
2. Sign in and proceed to your dashboard.
3. Create a new bot by clicking the plus icon under the "My Bots" header.
4. Name your bot and make sure to select "Blank Bot" under context.
5. Click on your bot's name on the left-hand side and use the Edit dropdown to access the **Code Editor**.
6. In the **Code Editor**, find the file dropdown and choose upload.
7. Upload the following files from the unzipped 'wgubot' compressed directory:
 - udc.aiml (this should replace the default udc file included in a new bot)
 - cybersecurityengineer.aiml
 - datascientist.aiml
 - fullstackdeveloper.aiml
 - uiuxdesign.aiml
 - cloudengineer.aiml
8. Start interacting with the bot by clicking the orange icon at the bottom right of the screen and greeting the bot with a Hello, Hey, or Hi

F. Strengths and Weaknesses of the Chatbot Development Environment:

Strengths:

- AIML has a low barrier to entry, and after about thirty minutes of online tutorials, allows the user to create a robust chatbot.
- AIML allows for complex flows of conversations. As the templating syntax also allows for a detailed pattern match, allowing for easier conversations and expanding the list of careers if desired.
- The development environment provides a useful testing suite for troubleshooting and refining the chatbot. There are inline error messages if there is something that is not apparent to the user and allows for quick debugging.

Weaknesses:

- AIML lacks some modern NLP features, such as understanding context and maintaining conversation state.
- Debugging can be complex as the error messages are sometimes difficult to interpret to a newer developer.
- AIML is an older language, and there are more modern alternatives available.
- The editor happens only in the browser, causing some difficulties if you have your own personal flow set up for development.

G. Monitoring and Maintaining the Chatbot:

This chat bot was built with top trends of 2023 in mind, and ongoing assessment and updates will need to be made as the job market changes. Monitoring can happen via the pandora UI and we can also set up areas where we can look at user input, and possibly provide a channel for feedback. This allows the chat bot the agency to improved based on the data driven by its users.

I. Sources

The following sources were used for research and used as backlinks in the ChatBot.

1. Coursera. (n.d.). What is a Full Stack Developer?. Retrieved July 17, 2023, from <https://www.coursera.org/articles/full-stack-developer>
2. Forbes Advisor. (n.d.). How To Become a Cyber Security Engineer. Retrieved July 17, 2023, from <https://www.forbes.com/advisor/education/become-a-cyber-security-engineer>
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4. Coursera. (n.d.). What is a Data Scientist?. Retrieved July 17, 2023, from <https://www.coursera.org/articles/what-is-a-data-scientist>
5. TechTarget. (n.d.). What is Cloud Engineer? - Definition from WhatIs.com. Retrieved July 17, 2023, from <https://www.techtarget.com/searchcloudcomputing/definition/cloud-engineer>
6. Simplilearn. (n.d.). Top 10 Highest Paying Tech Jobs in 2023. Retrieved July 17, 2023, from <https://www.simplilearn.com/highest-paying-tech-jobs-article>