Library Assistance Agent

Introduction:

Our team is developing an intelligent library assistance agent that can help users in finding and accessing books, as well as providing recommendations and answering questions related to the library. The software will be hosted on GitHub and accessible through a web application.

Problem Description:

The problem we aim to solve is to provide library users with an intelligent assistant that can help them find and access books, as well as provide recommendations and answers to common questions related to the library. The background knowledge required for this task includes knowledge of the library catalog, borrowing procedures, and library policies.

The library assistance agent will be able to assist users in finding books on specific topics or genres, provide recommendations based on user interests and past reading history, and help users locate books within the library. The agent will also be able to answer common questions related to library services, policies, and procedures, such as book availability, borrowing periods, renewal procedures, and overdue book policies.

To achieve this, we will use Answer Set Programming (ASP) and Structured Parallel Argumentation with Recursive Calls (SPARC) for automated reasoning. We will also use Natural Language Processing (NLP) techniques for English question answering. The user interface will be designed to be user-friendly and accessible to a wide range of users, including those with visual or auditory impairments.

Overall, the library assistance agent aims to make the library experience more convenient and enjoyable for users by providing them with personalized recommendations and assistance, and by answering their questions in a timely and accurate manner.

Based on the agent, we could answer following questions:

What is the library's opening hours?

Where can I find books on a specific topic?

How long can I borrow a book for?

How can I renew a book online?

What is the library's policy on overdue books?

What is the library's policy on lost or damaged books?

Do you have any new books on a specific topic?

Can you recommend any books based on my interests?

Do you have any copies of a specific book available?

What upcoming events or workshops do you have at the library?

Techniques Behind the Agent:

The techniques we plan to use for developing the library assistance agent include Answer Set Programming (ASP) and Structured Parallel Argumentation with Recursive Calls (SPARC) for automated reasoning. We will also use Natural Language Processing (NLP) techniques for English question answering. We will develop a user-friendly interface that allows users to interact with the software using natural language queries, voice commands, or text-based inputs. We will use web development tools such as HTML, CSS, and JavaScript, along with a backend framework like Django or Flask, to develop the web application.

Prototype:

The link to our GitHub repository for the library assistance agent project is https://github.com/UstcChenxu/library-assistance-agent. The link to the GitHub page for our web application is https://github.com/UstcChenxu/library-assistance-agent-application.

Our prototype web application includes a basic framework for the interface design, basic call of the ASP/SPARC solver, and user interaction. The interface includes a search bar and filtering options to help users find books based on specific criteria. The ASP/SPARC solver is able to generate book recommendations based on user preferences and past reading history. The user can interact with the software using natural language queries, voice commands, or text-based inputs.