Academic Advisor

Proposed by Utkarsh Jain

Description of the Problem

Student's usually have a hard time picking the courses that they should take. They have to find a course that both interests them as well as helps them fulfil their degree requirements. A lot of times students are forced to take a course that doesn't interest them to fulfil a requirement when a more interesting alternative exists which they are not aware of. Also, when taking a lot of higher level courses, students usually need to find a course that has a relatively lighter work load. The aim of the Android application will be to help students make the most of their time at UW-Madison by helping them pick courses that fulfil their degree requirements and pique their interests.

Application Features

Features of the Android application will include,

1. Providing a list of suggestions for each requirement which will be ranked using multiple factors such as interests(which the user will choose when setting up the application), major, average G.P.A etc. This can be implemented by getting data (using a python script) of Course Grade Distribution from pdf's available on https://registrar.wisc.edu/course_grade_distributions.htm. Each course fulfilling the requirement will be given a score based on how well it matches with the user's interests, major etc. The list will display courses ranked by their scores. For example, a CS major looking for courses to fulfil the Biology requirement would be shown CS 576 Introduction to Bioinformatics on the top of their list of suggestions. Ratings from ratemyprofessor.com can also be used as a factor to rank the courses.

2. Students looking for a course with a light workload to satisfy a specific requirement can select the requirement and a list of courses ranked according to Average GPA will be displayed. The list will be displayed based on the data from https://registrar.wisc.edu/course_grade_distributions.htm and ranked by the average G.P.A.

3. The user can view potential sequences of courses. If the user has selected Economics and as one of their interests, then potential course sequences for upcoming semesters such as ECON 101->ECON 102->ECON 330 will be shown. These sequences will show students which courses they will be able to take in the future if they take a certain course in the current semester. By following these suggested sequences, student's can build on their knowledge and gain higher level of knowledge in a field that they care about instead of taking multiple uncorrelated courses. Data can be collected by selecting course lists of each subject in the UW Course Guide and scraping the webpage. Once data is collected,

a directed graph of courses can be implemented where each node is a course and and is connected to the courses for which it is a pre-requisite. For each course, the neighbours of the course in the graph will be the courses that can be taken after it.

4. Once the user indicates the timings of the courses that they are taking, only courses that have timings which don't conflict with their current schedule will be suggested.

Additional Features

1. Once courses have been chosen, the application will try to generate the best schedule by trying to get equal distribution of classes throughout the week and by trying to ensure that there is sufficient time between classes to reach the next class.

Customer and Testing

Students and advisors at University of Wisconsin-Madison will be the customers for this application. Advisors can use the application while helping students pick courses for their upcoming semester. Ann Groves Lloyd, an advisor in the College of Letters and Sciences, will help test our application. She has years of experience in helping students pick courses and will provide her opinion as to whether she thinks the suggestions given by the application are courses that a student of a given interest and major would eventually take. She can also help throughout the development process by providing suggestions for features for the application. The application can also be tested by a group of current UW-Madison students and they can give us feedback on whether they found the suggestions provided by the application helpful in choosing courses for the upcoming semester.

Demo

The application will be demonstrated by using hypothetical examples of students. The interests, major etc. of the hypothetical students will be put into the application and then the ranked list of suggestions for courses based on the inputs will be generated.

Justification for Difficulty

There will be multiple phases in the development of the Android application. First programs to extract data from the Course Guide, Course Grade Distribution, etc will have to be written. Then the features of the application will have to be implemented. A friendly UI/UX will be vital to success of the application as the aim of the application is to make the process of choosing courses easier and students should not have a hard time navigating through the application. We will have to go through multiple iterations to improve the suggestions given by our app. I feel such a project is neither too easy nor too difficult for a group of 6-8 students to complete in one semester.