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Date: 2/16/21

Subject: **Proposal for CSCI 455 Project - Scholar Seek**

Abstract

This scholarship recommendation project is a continuation of a project from CSCI426 (information retrieval). The continuation of this project will include the implementation of more robust features and an enhanced database, which will distinguish this project from its previous state. The new planned features will also expand the scope of the app. The project, in its state from CSCI426, serves as a scholarship recommendation service, using a user's profile information to match them as best as possible with scholarships from scholarships.com. With the features planned for development in CSCI426, the app will also serve to help prospective college students find the higher education institution that best suits them and it will even help them explore potential majors. Our CSCI455-Project will help students who are financially struggling find the best scholarship, explore potential majors, and find the college best suited for them by using their profile information to recommend likely candidates.

Motivation

Attending college comes with a heavy price tag that many cannot pay in full upfront. Even with a college savings plan or aid from FAFSA (Free Application for Federal Student Aid), paying for college can be a tremendous burden that impacts students for the rest of their lives. Historically the price of higher education is only increasing. Even when adjusted for inflation the increase in cost for attending higher education is increasing substantially. According to the National Center for Education Statistics, just between 2007 and 2017 there was a 30 percent increase in the cost of higher education at public institutions. Additionally with the world being

hit by the corona virus pandemic, many have struggled even more to pay for schools and college. Thus financial aid is more important than ever now - particularly scholarships.

Our primary goal is providing relevant scholarship recommendations based on several factors that most scholarship requirements are based on. We recommend the scholarships in our app based on gender, age, area of residence, GPA, SAT scores, disabilities (if any), organization, ethnicity, and other possible traits that uniquely define a student.

Also, individuals who are looking to attend college and apply for scholarships, might face the trouble of figuring out what college fits best for them, and even what they would like to study in college. As students that had to go through the decision making process to figure out where to go and for what major, it's a very overwhelming experience. This is where we would like to step in and make this process less stressful, by limiting their scope of colleges and majors based on who they are. By limiting the plethora of colleges and majors to ones that would fit the user best, would significantly save time and effort of the user figuring out what would fit them best. Instead they would be able to spend more time researching the colleges that fit them best, as well as look into certain fields based on the major they were recommended. This allows it to be a stepping stone in a person's development in their academic and future career life.

Related Works

Scholly, perhaps the most prestigious scholarship app on the market, featured on shark tank and recommended by many teachers nationwide is the most popular scholarship recommendation app. It is a subscription service where users create profiles based on their interests, achievements, and unique characteristics. Examples of questions asked during profile creation include gender, race, GPA, state, and grade levels. When the user profile is complete, Scholly uses an embedded recommendation algorithm to match the scholarships that best fit the profile and create a priority list. The recommendation may be searched by deadline or scholarship amount. Each listed scholarship has a link to the application website, which can be stored in a saved personal list, which allows users to add an application deadline to your dashboard calendar [1]. It should be noted that while offering some free services, scholly is quite heavily monetized which for many students who depend on scholarships for the financial viability of their education, is an insulting and degrading prospect.

Scholarships.com is a scholarship database website that allows users to search or navigate manually. The website includes 3.7 million scholarships, totaling 19 billion U.S. dollars. Users can also create profiles to narrow or filter scholarships according to their preferences. When users manually search for scholarships in a directory, the available scholarships are organized by a wide range of categories that include subcategories of scholarships listed [2].

The College Board's Scholarship Search engine has been an industry leader in scholarships and grants. The College Board is affiliated with more than 2,200 programs that support scholarships and grants. The search engine system has an algorithm where the user enters personal and academic information and displays the scholarship to which he or she is qualified. The personal information required includes gender, citizenship, minority background, disability, blindness, parent/spouse thinking, racial background, religion, and special conditions. There is also a complete page for personal information to be filled out for a particular organization, such as an employer, club/organization, or military status. The required academic information includes degree levels, educational status, and a major. The College Board scholarship search also filters out what types of awards students can receive, allowing users to find help based on academic performance or proven financial needs [3].

Our Approach

Scholar Seek's first function is to provide scholarship recommendations to students based on basic profile information that the user provides. Scholar Seek web scrapes from Scholarships.com to deliver this service to its users. Scholar Seek provides the recommendation by creating a binary string from the user's data and comparing that to a binary string created from scholarship data. The closest matches are provided to the user. After the user selects a scholarship, similar scholarships are suggested to the user based on the one they are viewing.

Scholar Seek distinguishes itself from scholarships.com by providing the following two features in conjunction with the aforementioned feature. The first is a service that recommends college institutions to prospective students and the second is a service to help students discover their future major or field of discipline. The college recommendation feature will use much of the same information the user already provides for the scholarship recommendation service and some additional information if the user decides to provide it, to recommend a college closest to the user's data and preferences. Scholar Seek will accomplish this by web scraping from gpacalculator.net and using the same data scraping and comparison strategy used in the scholarship recommendation feature.

The major recommendation feature will make use of a short survey asking the user which academic classes they enjoy and which academic classes they perform best in to provide them with areas of employment that match their interests and skills. If the user indicates that they perform poorly in, for example, mathematics, but their favorite class is math, the user will be recommended to explore STEM majors with the expressed caveat that success in STEM majors

depends in many cases on skill in mathematics. Users may also search for prospective majors by preference of outcomes; job demand and graduating salaries.

What differentiates Scholar Seek from its competitors is several factors. First, Scholar Seek's monetization model will be kept to a format that is the least intrusive and burdensome for our end user, the prospective college student. Unlike Scholly, no subscription service is required to access all of Scholar Seek's features and unlike college board, Scholar Seek is not in the pocket of higher education institutions. Depending on the user's chosen interests, performance, and outcomes, Scholar Seek might suggest career alternatives that do not require higher education such as the trades, military and other careers. Scholar Seek is also an app built by college students for prospective college students and will allow the user to view and discriminate potential schools and career paths by criteria that are materially relevant such as outcomes, cost, and location.

Expected Tools and Technologies:

- Front End: React Native, and JavaScript
- Backend: Python, Flask, Selenium, Google API, postman, JWT, and Pytest
- Database: MongoDB, and Redis
- DevOps: Git, Docker, Jenkins, Ansible, AWS EC2, and AWS ALB

Bibliography

1. Scholly, <https://myscholly.com>
2. Scholarships.com, <https://www.scholarships.com>
3. CollegeBoard,
<https://bigfuture.collegeboard.org/scholarship-search#!personalinformation>