Project Title: UniRanker

Project Summary:

Our project aims to offer a centralized platform to compare university and higher education institutions based on factors such as admission statistics and research output. This application will allow prospective students to create rankings of several higher education institutions based on their desired qualities. Users will be able to see the relative rankings of these institutions based on data, which can allow them to make more informed decisions. Students will be able to create accounts mark their favorite institutions, and rank these institutions later on. This personalized feature allows students to keep track of schools they are interested in and rank them based on their evolving preferences. Ultimately, the platform will serve as a comprehensive tool for students to explore, compare, and choose universities that best align with their academic goals and personal priorities.

Description:

The problem that we want to address is the unknown nature of college rankings. For instance, US News rankings rank schools based on factors that are not immediately apparent to students and may not be relevant to the student at all. We intend to change this by placing the factors that affect the ranking in the hands of the student. In doing so, students will be presented with rankings that are immediately relevant to their academic goals and financial situations. By presenting data-driven comparisons, we allow students to make more informed decisions regarding higher education.

We want to create a web application that individuals can easily use and interact with. We intend to create the application using React.js in the front end, Node.js in the backend, and a MySQL database. This will allow for a reactive front-end platform, as well as a dynamic backend framework. The MySQL database will store user information as well as the datasets about the institutions. These technologies will allow us to deliver a powerful web application that can handle complex queries made by users.

Creative Component:

For our creative component, we will incorporate a tool that allows users to select specific universities and compare them based on chosen factors. For example, users can choose factors such as desired campus facilities, tuition costs, faculty-to-student ratio, etc, to compare across various universities. These comparisons will be displayed through interactive bar charts, in which users can hover over to receive more information, and through detailed comparative tables. The results of the comparisons generated will be able to be downloaded and shared so that users can share the information with others, such as college counselors, parents, and peers. This provides users with an additional level of interactivity, providing them with more customizable

information and allowing them to make a more educated decision.

Usefulness:

This university ranking application is useful because it allows users to rank colleges based on their specifications. Although rankings for schools based on majors might be helpful, more is needed. Even in the same majors, every student is different; therefore, being able to specify their priorities further will allow students to find the perfect college that aligns with their goals. Additionally, this will help get over the unhealthy stigma of college rankings and will allow students to go to a college they actually like, instead of the highest-rated one. Students can base their rankings on factors like research output and employment trends, and find the college that will properly prepare them for their desired long-term goals.

The ranker will have an interactive dashboard where users can tweak various factors to adjust their rankings. Additionally, users will be able to change the weight of each factor, ensuring the ranking matches their goals perfectly. Although there are many similar applications, like US News, they do not offer specification options like ours do. Additionally, it is not specified as to what they are ranking on, so it is hard to know why the colleges are ranked as they are. On the other hand, our platform allows user-focused rankings, providing transparency on how data is weighted and aggregated, allowing for a more personalized experience.

Realness:

https://www.kaggle.com/datasets/yashgpt/us-college-data
https://www.kaggle.com/datasets/mbsoroush/universities-information-dataset/data

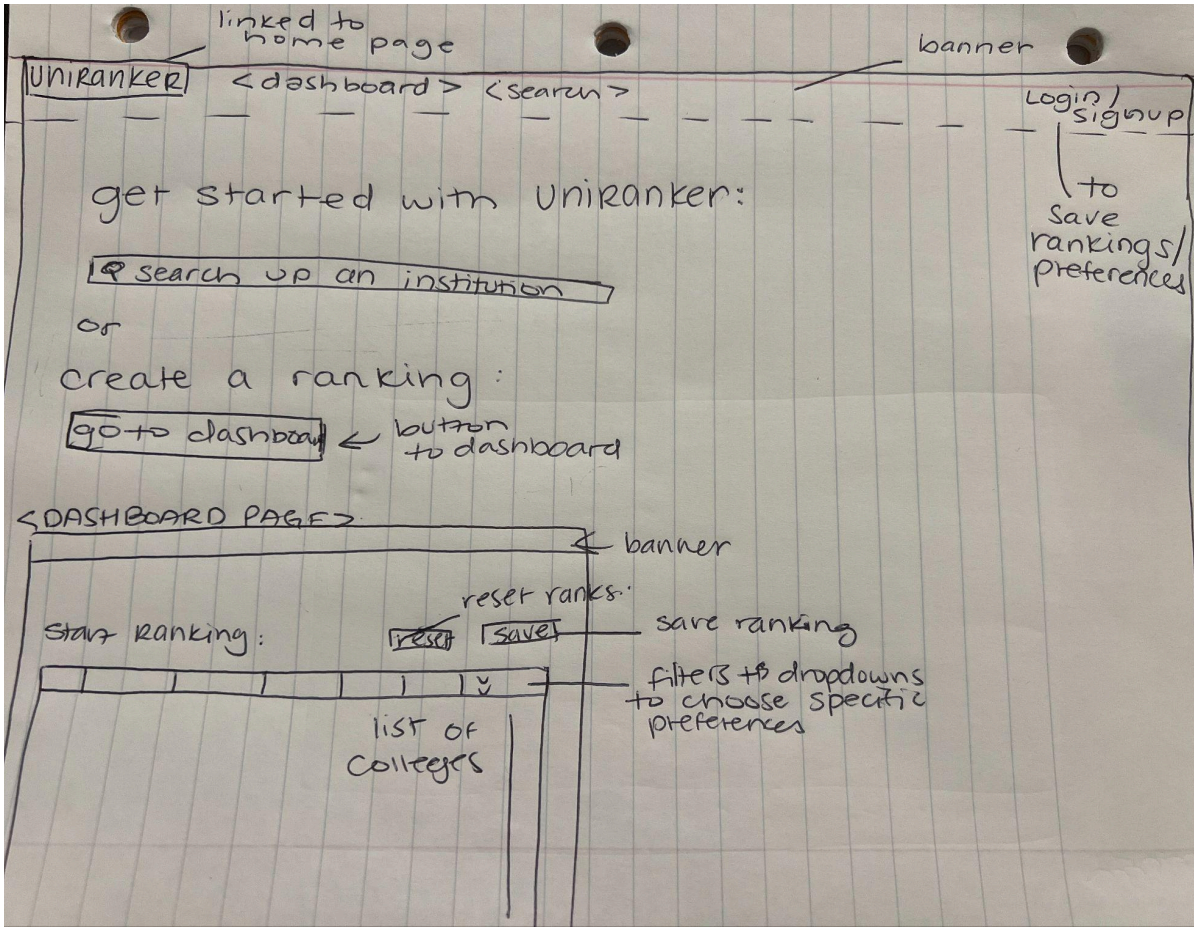
Our first dataset is the University Information dataset on Kaggle. This dataset offers a variety of factors amongst numerous colleges like alumni employment, student–to–faculty ratio, and research output. The data is in CSV format and it covers over 1000 universities with 12 variables for each university. This dataset will be the backbone of the ranking system and will allow users to have a template to further specify from.

The second dataset we are using is the US College Data on Kaggle. This dataset offers valuable information for college graduation rates, living costs, and the average student ranking. This dataset is also in CSV format and covers 777 universities with around 19 variables per university. This dataset will be used to further allow users to refine their college search based on their post-education goals.

Functionality:

With the UniRank web app, users can create a personalized account to save their preferences and mark their specific interests. They can customize rankings by assigning weighted preferences to factors like research output, employment trends, and student satisfaction, adjusting the importance of each based on their unique goals. Users can save their custom rankings for future reference, making it easy to revisit and refine their choices. The app offers an interactive dashboard where users can adjust preferences and search for specific universities to get insights

into each institution.



Responsibilities split:
Mahathi will design the overall look and feel of the website, including the home page, dashboard, and login/signup. They will also implement a user-friendly search bar with autocomplete that will be available on the home page. Anika will handle CRUD functionalities for user accounts, preferences, and university data, as well as create API endpoints for front-end communication. They will optimize keyword search queries with filtering capabilities. Pulkit will implement advanced database features like transactions and triggers for data consistency and auto-updating rankings while working with Anika to manage CRUD for saving and displaying personalized rankings. Noah will develop stored procedures for complex ranking calculations, ensure data validation with constraints, and build an interactive dashboard for users to set weighted preferences. Everyone will work on making a smooth frontend-backend integration based on their responsibilities in the frontend/backend. We will adjust responsibilities as necessary, eg. If the front is not developed by the time we are ready to start integrating, we will move responsibilities around.