Project Proposal -- Team 1

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# Business Problem

For our project, we want to develop software that will provide more opportunity and options for students to commute to, from, and around college campuses. In short, our program will provide the fundamentals for a "last-mile" transportation service on college campuses using electric scooters. Our software will allow a user to find an electric scooter in one of several docking stations on campus. The user will then be prompted to decide which other docking station they would like to travel to. Our program will be able to handle this user interaction along with analysis of data.

We have looked into businesses with a similar business model and noted problems that they have encountered. These problems include, but are not limited to:

* Overpopulation of docking stations
* Underpopulation of docking stations
* Limited choice of destination
* Overuse of a particular scooter
* Underuse of a particular scooter

To solve these problems, we plan to use several data analytic practices and incorporate these into a simulation that will provide a solution. To account for the overpopulation and underpopulation of the docking stations, we plan on providing an incentive to users to travel to a nearby docking station for a cheaper price. This will relieve stress on the overpopulated stations while providing more activity to the underused stations. Another way to help this is adding smaller docking stations nearby to the original docking stations. This way, it provides overflow but a close substitute for users.

Along with the incentive to park at other stations, we also plan to offer our users benefits based on their history with the company. For example, if a customer has x number of miles traveled, they will get a discount on their next ride. We plan to implement these rewards with total money spent and total amount of time spent riding as well.

Not only will our program help to alleviate the over/under use of certain stations, but it will also help direct users towards certain scooters based on their overall use. Some scooters could potentially get more miles than others, leading them to wear down quicker and resulting in the company having to pay for a replacement. We plan on implementing a system that tracks each scooter’s total mileage and time driven. This will help us know when to ‘reserve’ or put a scooter on idle while we let users choose other options. We hope that this will more evenly distribute the use of every scooter and in the long run, preserve the life of each scooter.

On our application, users will have the ability to create an account or log in to an existing account via the frontend GUI of the application. The backend of the application will handle account creation and user authentication. The backend of the login portion of our program will utilize a database to store user account information. We will develop the login portion of the application in Python with an embedded SQLite database. Once fully developed, we will migrate to a live database hosted on either the AWS platform or Google Cloud platform. We plan to take advantage of these services free tier offering.