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# Albright Rideshare

507341

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Bachelor of Sciences

Submitted in partial fulfilment of the requirements for

College Honors

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## Introduction

The Rideshare Program was first introduced at Luther College in Decorah, Iowa as a way for students to easily connect with each other to share car rides. It started as a bulletin board and soon after was fully integrated into a website for easier access. The students at Luther College who first developed the application released the code to be public on GitHub, which allowed me to take the Rideshare application and adapt it for use at Albright College. The goal was to give students an easy way to find a ride home during a break or to possibly carpool with someone to get back to Albright.

The Rideshare application is created and maintained using the Google App Engine. This allows the application to be always be running on Google's infrastructure and gives Albright the freedom from maintaining servers to house the application. The programming language used to handle all of the backend processing and handling of the application is Python. Javascript is used to display the Google map and handle all functions associated with the map.

## Usage of the Rideshare Application

Rideshare is a web application that allows students to create and share rides in an easy way online. A student can either create a ride that they will drive other students, create a ride to advertise that they need a ride, or join a ride already created that is going where they need to go. It features a fully functional Google map that allows students to find the location that they need to go to and create rides by clicking on the map. Students can also use a search box in the controls above the map to input their address and create a ride from there. The search box uses Auto Completion powered by Google to help users input a specific address.

The map displays all currently created rides as markers and allows users to view the info associated with that specific ride. Any student can click on a marker and try to join the ride as

either a driver, if the ride still needs one, or as a passenger. In order to easily search for rides that may match a users criteria, the student may use the controls above the map to filter the rides on the map. The filter will remove all markers on the map that do not fall between the dates specified by the filter.

All the bottom of the Rideshare main page underneath the map that displays all the rides, there is a table that displays all information about the currently created rides. Instead of searching the map for a specific ride, a student can look in the ride table to find a ride that matches their criteria. For ease of access, a student can click on the destination of a ride in the table to join the ride as a driver or passenger.

Each student also has their own personal home page that displays information about all rides that the student is involved in. This pages includes a table of information where the user is the driver. It shows the ride information such as destination, time of departure, and number of passengers that are allowed. Underneath this table each passenger is displayed with their contact information so the driver can easily and quickly get in touch with the passengers if he or she needs to. The driver can also edit the ride information to change the time of departure or contact information.

The personal home page also includes a table of information for all the rides that the user is a passenger for. This table shows all the information that the driving table has but doesn't allow the user to edit any of the information about the ride.

### Upgrade the Backend Functionality

One major part of this project was upgrading the backend of the Rideshare application from using Python version 2.5 to Python version 2.7. The reason that this migration was needed was because Google stopped supporting Python 2.5 on the applications that it hosts so any new

applications need to use Python 2.7. Some new features that Python 2.7 includes is the use of the High Replication Datastore to store data, concurrent requests to the application, and allows the use of the Jinja2 templating engine.

To perform the upgrade, multiple pieces of the code had to be changed and reworked. The first change was that Python 2.7 allows you to be directly run a Web Server Gateway Interface (WSGI) application. In Python 2.5, the application had to make use of an adapter named `run_wsgi_app` that ran the program as a CGI script. The main advantage of running a WSGI application is the ability to concurrent requests to your application which speeds up access for users.

When Google upgraded to Python 2.7, it also upgraded the included web framework from webapp to webapp2. The new webapp2 featured improved URI routing and a more flexible dispatching mechanism. This meant that all the handlers defined in the Rideshare application already had to be upgraded to use webapp2. It also meant that the original webapp templates used in the Luther Rideshare program were no longer able to be used. The new templating engine used for the Albright Rideshare program is now Jinja2.

### Adapting Rideshare For Use At Albright

In order to adapt Rideshare to be used at Albright College, two major changes needed to be made. The colors and theme of Luther Rideshare do not match Albright's colors so the color scheme and style had to be changed to reflect Albright. The second change was that the original Luther Rideshare supported social login from sites such as Facebook or Google+. Albright Rideshare only allows Albright students and faculty to log in and use the service so the log in system had to be changed to reflect this.

The color scheme in the original Rideshare was blue for the logos and a tan color for the backgrounds of each page. This did not reflect the looks of an Albright application so I changed the color scheme to be more red and white. The logos and menu are now colored red with the background being white. Changing the log in system was a matter of writing an entirely new system to only allow Albright students access. The new system uses the Google App Engine user service to allow Gmail accounts to log in to the application and then redirects to a page depending on the kind of account used. If the account is not a valid Albright account, the application will redirect to an error page that will ask the user to sign out and use an Albright account. Logging in with a valid Albright email address will send you to the home page of the Rideshare application.

#### More Changes

The original Rideshare application had a few outdated pieces as well as extra code that did not benefit the application as a whole. One change that needed to happen was the code needed to be cleaned up. The overall functionality of the app may not have been affected but there were a lot of extra files and code that was included in the original project. Miscellaneous files that were not used and multiple file imports that were never used were removed from the Albright Rideshare application. These files were just taking up space and were not needed at all.

Another major change was going from using webapp templates to Jinja2 templates to structure the HTML pages. The original webapp templates were depreciated when Google upgraded from Python 2.5 to Python 2.7 as detailed above. The newer version of Python allowed the use of Jinja2 to create and manage HTML templates. Jinja2 allowed the application to send data from the servers to HTML pages dynamically and to help create a better experience for any user of the Rideshare program.

Some other changes that were made was the addition of Auto Completion on the create ride search box. The feature is powered by Google's own data and helps users to more easily search for the address that they want to create a ride for. I also added a base handler that every other handler in the application inherited from. This allowed the use of convenience functions throughout the code that cleaned up the code to be more easily read by others and to provide better functionality to each separate handler.

#### Future Addition to Albright Rideshare

The Albright Rideshare program is functional to be used right away but there is always room for improvement. In order to be the most effective tool for students to connect and share rides, the application will have to evolve over the years to improve and attract more users. There are many new features that have not been added yet that will continue to improve the functionality of the Albright Rideshare program.

The first feature that would be nice to have is for the application to suggest rides to users. When a student goes to create a ride, ideally the application will check to make sure that there is not a ride that almost fills the students criteria and then suggest if he or she would want to join that ride. It would help students better be placed with rides and also save them the trouble of calculating out if a ride is worth joining or not. This same service would be put into use if a ride that is currently happening goes past the requested destination.

Another feature that is in the plans of making is an option for students to filter rides based on the location of the ride. The application currently lets a user filter the rides on the map to only show rides that are leaving between a range of dates. This new functionality would allow users to enter their destination and see if any rides are going to be close by. This feature falls



closely with the suggestion of rides but it allows users to look at the current rides and decide for themselves which ride they would want to join.

In addition to filtering the current rides, a feature that allows users to see how far away a ride is from their requested destination. Ideally a student would be able to enter in an address and the application will calculate how far away that destination is from the specified ride already created. This will allow users to more accurately make a decision whether they want to create and advertise for a new ride or try to join the one already established.

One feature that was in the original Rideshare application but did not get transferred over yet to the Albright Rideshare program was a way for passengers to rate their driver from their experience. There would be a way to rate a driver and then away to look up your driver and see past ratings that he or she have gotten. This would allow students a way to get to know their driver better and make a better decision on whether they want to join a ride or not.

The last improvement that could possibly happen would be to take Albright Rideshare from an application to set up rides to and from Albright into an application that lets students set up rides to and from any place. As it is right now, Albright Rideshare only allows students to set up rides to either go from the college to a destination or from a location to the college. It is possible that the Rideshare program might evolve into a way for Albright students to share rides to anywhere that someone is willing to drive to, such as close by events.

### Conclusion

Overall the Albright Rideshare program is a service that helps students connect with one another and share rides together. This not only helps the college community get to know each other better but also helps save the environment from having less cars on the road. My goal for this project was to take the original Luther Rideshare program and update it to reflect Albright's

wants and needs. This involved upgrading the backend code from Python version 2.5 to Python 2.7 and to improve the templating engine to now use Jinja2. I also removed any extra code or files that was included in the original program so make it more clear and easier for someone else to continue this project after I have finished. There are many more plans for the future of the Albright Rideshare program but the first workable version is ready to be used by the Albright community.

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