**Computer Science Capstone Topic Approval Form**

The purpose of this document is to help you clearly explain your capstone topic, project scope, and timeline. Identify each of these areas so that you will have a complete and realistic overview of your project. Your instructor cannot sign off on your project topic without this information*.*

*Note: You must fill out and submit this form. Space beneath each number will expand as needed.*

*Note: Any costs associated with developing the application will be the responsibility of the student.*

**INFORM INSTRUCTOR:**

Potential use of proprietary company information: (Y/N)

**ANALYSIS:**

1. Project topic and description: Amazing LLC submitted a request to create a program that assists their logistics staff in finding the fastest route for their trucks to travel instead of doing it by hand or plugging it into a map application. This will streamline their logistics and create routes for trucks to reach their deliveries in time, using the best-case scenario.
2. Project purpose and goals: Provide a route planning tool that runs a simulation for their trucks to make timely deliveries and marks out the route they should take for each truck. Since this program was already implemented for WGUPS in Salt Lake City, we will implement it at Amazing LLC’s Warehouse 3 location in Oakley, California.
3. Descriptive method: Visualization using graphs like the nearest neighbor graph and scatter plots. This will show the space difference between each delivery and possible data correlations. Other charts, like bar charts, can also be included to show the total miles or time traveled compared to a previous iteration done by hand.
4. Predictive or prescriptive method: I plan on using a nearest-neighbor algorithm to find the closest delivery within 20 miles. This will continue until all packages are delivered. Total miles, total time, individual miles and individual time for each truck will be shown upon simulation completion.

**DESIGN and DEVELOPMENT:**

1. Computer science application type (select one):

* Mobile (indicate Apple or Android)
* Web
* Stand-alone

1. Programming/development language(s) you will use: Python
2. Operating system(s) or platform(s) you will use: Windows 11
3. Database Management System you will use: N/A
4. Estimated number of hours for the following:
   * 1. Planning and design: 30
     2. Development: 60
     3. Documentation: 40
     4. Total: 130
5. Projected completion date: January 10th, 2025

**IMPLEMENTATION and EVALUATION:**

1. Describe how you will approach the execution of your project.
   1. Evaluate what needs to change with the program and plan on implementation.
   2. Research what methods are needed to meet rubric.
   3. Check in with Instructor to make sure the methods are valid.
   4. Implement methods and changes as needed.
   5. Execute code to make sure changes are valid. If not go back to step C and check with instructor.
   6. Once code is complete create visualization and documentation.
   7. Submit project for review.

* **This project does not involve human subjects research and is exempt from WGU IRB review.**

**STUDENT’S SIGNATURE**

**Richard La Frentz**

By signing and submitting this form, you acknowledge that any costs associated with the development and execution of the application will be your (the student's) responsibility.

**INSTRUCTOR’S SIGNATURE:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**INSTRUCTOR APPROVAL DATE:**