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:
   Using a dataset of student performance data, an application will be created that will predict a student's GPA based on their attendance and study habits. This application will rely on machine learning to perform multiple regression and create a predictive model.

   The client for this project is a fictitious school district. For the purposes of this project, the open-source dataset will be treated as if it came from the high schools in the client district. My role is a district official who is studying student performance data. The district is hoping to find trends in the data to share with their staff, students, and community. Their ultimate goal is to understand factors that impact performance so that they can provide their stakeholders with tips for improving GPA.

2. Project purpose and goals:
   At the macro level, the district is hoping to find trends in the data to share with their staff, students, and community. Their ultimate goal is to understand factors that impact performance so that they can provide their stakeholders with tips for improving GPA.

   This project is a small portion of that effort, specifically focused on the relationship between GPA, attendance, and study habits. These are academic related factors that students have a lot of control over. This application will be shared with stakeholders to help them understand the relationship as part of their initiative to improve GPAs in the district.

3. Descriptive method:
   This project will use multiple regression to quantify the relationship between the three variables. This will be used to create visuals for the user to inspect, mainly graphs and tables.

4. Predictive or prescriptive method:
   The regression formula will be used to predict a GPA given the number of absences in a school year and number of hours spent studying each week. The user will be able to input values and see the predicted GPA.

DESIGN and DEVELOPMENT:

1. Computer science application type (select one):
   - Mobile (indicate Apple or Android)
   - Web
   - Stand-alone

2. Programming/development language(s) you will use:
   I will be using Python and data analytics libraries such as numpy to perform the data analysis and predictions. The application will be created in Jupyter Notebook.

3. Operating system(s) or platform(s) you will use:
   MacOS Sonoma

4. Database Management System you will use:
   None. Data will be loaded from a csv.

5. Estimated number of hours for the following:
   i. Planning and design: 5
   ii. Development: 15
   iii. Documentation: 10
   iv. Total:30

6. Projected completion date: October 22, 2024

IMPLEMENTATION and EVALUATION:

1. Describe how you will approach the execution of your project.
   a. Acquire and clean data.
   b. Perform multiple regression on the data.
   c. Generate visuals from the data and regression.
   d. Create interactive prediction feature that allows the user to enter values.
   e. Make adjustments as necessary to make user interface clean and easy to use.
   f. Create documentation.

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

STUDENT'S SIGNATURE

Kelsey Holley

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: James R Cisko

INSTRUCTOR APPROVAL DATE: 10/15/2024