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: Based on grades is a student a boy or a girl? A Predictive Program.

2. Project purpose and goals: The user will answer a question about what their grades are, and then the algorithm will predict if the user is a boy or girl. This data could help a school determine if they are making the right adjustments to help male students catch up since females often do better in school.

3. Descriptive method: For this project, the descriptive method would entail analyzing and summarizing the grade data to understand the academic performance trends of boys and girls. This would involve calculating statistical measures such as mean, median, mode, variance, and standard deviation for grades, both overall and by gender. Data visualization techniques like histograms, box plots, and scatter plots could be used to represent the data distribution and identify any differences between boys and girls in their academic performance.

4. Predictive or prescriptive method: This will be achieved by using machine learning algorithms to analyze the grade data and identify patterns or features that differentiate between boys and girls. The algorithm will consider various factors such as the distribution of grades in different subjects, the frequency of certain grades, and any trends or correlations in the grades data. Logistic Regression will be implemented to assess the association between the categorical dependent variable (gender) and the independent variables (grades) by calculating probabilities using a

logistic function. This model will enable schools to predict the gender of students based on their grades, which can help them tailor their support and educational strategies to better meet the needs of male students.

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: Python

3. Operating system(s) or platform(s) you will use: Windows 11

4. Database Management System you will use: MySQL

5. Estimated number of hours for the following:
   i. Planning and design: 2
   ii. Development: 6
   iii. Documentation: 1
   iv. Total: 9

6. Projected completion date: April 4, 2024

IMPLEMENTATION and EVALUATION:

1. Describe how you will approach the execution of your project.

I will write the project in IntelliJ making sure to create a multinomial logistic regression model to sort the data for the user.

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

STUDENT'S SIGNATURE

Ian Pinehart

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.

Charles Paddock

INSTRUCTOR'S SIGNATURE:

_____

INSTRUCTOR APPROVAL DATE:4/7/2024