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)

There is NO proprietary information included in my submission.

ANALYSIS:

1. Project topic and description:

    Fine Canine Cuisine (FCC) would like to start a new marketing campaign featuring Fine Canine Ambassadors for each type of product currently offered. FCC posted the need for applicants on social media and the response was overwhelming. FCC customers sent in over 10,000 pictures of their furry companions. In order to make a selection, the Marketing department would like for all the dog pictures to be organized by breed so that candidates may be reviewed efficiently.

    To proactively decrease the number of accidents potentially related to drowsy driving by company drivers, WeGovU Logistics is sponsoring this project which centers around an image classification by machine learning solution that categorizes the subject as drowsy or not drowsy.

2. Project purpose and goals:

    The purpose of developing this solution is to integrate its utilization into the existing onboard video recording and communication devices. This enables the solution to serve as an early warning system, allowing more time for the driver to be alerted of signs of drowsiness and preventative measures to be employed.

3. Descriptive method:

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Within this project, several descriptive methods will be used. The source of the dataset will be formally communicated and shared. As of the time, development has focused its attention on an existing dataset on Kaggle and will include several examples in the documentation. Data cleaning methods, criteria, and normalization will be documented.

4. Predictive and Prescriptive method: This solution utilizes a supervised image classification algorithm that facilitates a Convolutional Neural Network to predict if the subject in the image is drowsy. If the solution identifies signs of drowsiness in the image, an alert will be generated notifying the user.

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:

   The OS during development is Windows 11 and the development environment is Google Colab

4. Database Management System you will use: N/A

5. Estimated number of hours for the following:
   i.   Planning and design: 16
   ii. Development: 80
   iii. Documentation: 16
   iv. Total: 112

6. Projected completion date: February 23, 2024

IMPLEMENTATION and EVALUATION:

1. Describe how you will approach the execution of your project.
   a. Acquire a proper dataset.
   b. Review and clean the dataset.
   c. Select and create a model for the data.
   d. Train the model using 80% of the data set.

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e. Evaluate performance.
f. Verify solution meets project requirements. If not, make adjustments to the model and/or data as needed and restart from step c.
g. Complete documentation and create visualization tools.

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

STUDENT'S SIGNATURE

_____**Steven Bennett**_____

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.

COURSE INSTRUCTOR'S NAME:

Jim R Ashe

Jim Ashe, Ph.D. Mathematics

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COURSE INSTRUCTOR APPROVAL DATE:

Friday, February 9, 2024

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