

# 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 course 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.*

*Any cost 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: This project hopes to develop a web application that can predict if an applicant's tweets are using hate speech and/or offensive language. It would rate each applicant's twitter account, based on the likely hood that the twitter account was using this kind of speech/language.
2. Project purpose/goals: The objective of this project is to fulfill a need that is not adequately met within any hiring process or screening software. With the success of this project, 3Δ Consulting Inc. will be able to screen applicants for hate speech and offensive language, so that they may hire employees that would work well with their culture and the culture of their clientele. The goals of the project are to:
  - Deliver a working proof of concept, which takes an applicant's Twitter handle and pulls all tweets from Twitter, and shows the user a score of 0-100, 0 does not meet.
  - Further describe what kinds of tweets the applicant is posting by classifying it as hate speech, offensive language, or neither.
  - Provide the proof of concept in 6 weeks or less, with a cost of less than \$15,000.
3. Descriptive methods: To understand the data, I will create several descriptive visualizations that represent and make clear some aspects of the data. This includes:
  - Word clouds and bar graphs showing the data that was used to train the model
  - Word clouds and bar graphs showing a user's most used word
  - A pie chart showing the amount o tweets that have hate speech or offensive language versus tweets that do not.
4. Prescriptive method:
  - We will use a Recurrent Neural Network (RNN). This method uses a Long Short-Term Memory Network (LSTM), to remember the context of the word.

## 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:
  - EcmaScript (Basic Language of the Web)
  - React.js (Page Creation)
  - D3.js (Data Visualization)

- Node.js (Server)
  - Python (ML Backend)
3. Operating System(s)/Platform(s) you will use:
- Windows 11
  - Ubuntu (Unit Tests & Build on GitHub)
  - Google Colab
  - AWS
4. Database Management System you will use:
- None used
5. Estimated number of hours for the following:
- i. Planning and Design: 20 hrs.
  - ii. Development: 100 hrs.
  - iii. Documentation: 40 hrs.
  - iv. Total: 160 hrs.
6. Projected completion date: 4/30/2020

**IMPLEMENTATION and EVALUATION:**

1. Describe how you will approach the execution of your project:
- a. Download datasets from Kaggle.com
  - b. Clean dataset by removing bad data and normalizing the model
  - c. If multiple datasets are used combine datasets into one object
  - d. Create a machine learning model that works with the data
  - e. Run the training data through the model to train it.
  - f. Determine the precision and success of the model by running test data through it
  - g. If accuracy is not met, remodel the neural network by repeating the steps above
  - h. Create a web UI (and database) for using the trained model
  - i. Document the project

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

**STUDENT SIGNATURE**

\_\_\_\_Joshua A. Dix\_\_\_\_3/22/2022\_\_\_\_

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

**COURSE INSTRUCTOR'S NAME:**

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**COURSE INSTRUCTOR APPROVAL DATE: March 22, 2022**

