

# 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 development of application will be the responsibility of the student.*

## INFORM INSTRUCTOR:

Potential use of human subjects: N

Potential use of proprietary company information: N

## ANALYSIS:

### 1. Project topic AND description:

My project topic is an exercise of simplistic odds and probabilities under the context of Rock-Paper-Scissors. The application also implements an additional element of gambling.

### 2. Project purpose/goals:

The project intends to illustrate simplistic betting and gambling odds under the context of a simple game.

✓ Implement one descriptive method and one non-descriptive (predictive or prescriptive) method.

I will be using logistic regression with a Naive Bayes Classification to inform users on decisions.

✓ Use of collected or available datasets.

I will collect and record the matches entered and matches won.

✓ Includes a decision-support functionality related to the non-descriptive method.

The "Analyze" tab provides several visualizations to inform the user on where the safest bet can be placed.

✓ Use methods and algorithms supporting data exploration and preparation to make data usable.

The charts created from the datasets necessitate usable data because of the information required to make a proper bet.

✓ Implementation of interactive queries to access specific data.

Up to 8 active matches are loaded up at a time.

✓ Include a machine-learning method(s) and algorithm(s) to support the decision making functionality.

I'll be using the number of matches each player enters and the number of matches each player wins to determine the probability of them winning their match.

✓ Incorporate functionalities that will evaluate the accuracy of the application's outcome.

I am using a Naive Bayes Classification in the form of (matchesWon/matchesEntered).

✓ Provide an industry-appropriate security features that protects access to the application of data.

I provide login functionality to access the application.

- ✓ Include a tool(s) to monitor the applications functionality for maintenance purposes.  
The system logs its behavior from both the server-side and the client-side (with Vue DevTools extension installed).

**DESIGN and DEVELOPMENT:**

1. Computer science application type (select one): Web
2. Programming/development language(s) you will use: JavaScript/TypeScript
3. Operating System(s)/Platform(s) you will use: macOS
4. Database Management System you will use: SQLite
5. Estimated number of hours for the following:
  - i. Planning and Design: 8
  - ii. Development: 60 - 80
  - iii. Documentation: 20 - 30
  - iv. Total: 88 - 118
6. Projected completion date: June 2020

**IMPLEMENTATION and EVALUATION:**

1. Describe how you will approach the execution of your project:
  - a. Set up the server with the appropriate DB adapter.
  - b. Seed the database with the required schemas.
  - c. Return the raw result sets to the frontend.
  - d. Build out the front end components that can consume the data.
  - e. Format for display as necessary.
  - f. Create charts based on either formatted or raw data.
  - g. Emit synthetic events based on game results and save back to the database.

**STUDENT SIGNATURE**

\_\_\_Ray Marcus Perry\_\_\_\_\_

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

**COURSE INSTRUCTOR'S NAME:** Joe Barnhart



COURSE INSTRUCTOR APPROVAL DATE: May 9, 2020

---

Project Compliance with IRB Y/N: Y