PROJECT INFORMATION & SUBMISSION FORM

Project Category

Software Development

Problem Identification [clearly define the problem or opportunity for which you are seeking a solution, and provide any relevant historical/background information]

Have you ever needed to predict or simulate the outcome of any event or situation, such as the stock market based on trends, an election result based on polling, that one golfer or tennis player making it to a certain round based on previous rounds/tournaments, your College Basketball March Madness Bracket? This is a problem that millions try to solve each year for retirement, personal financial gain, bragging rights, for fun, etc.

Project Objectives [list/describe the desired outcome, problem resolution, end product or opportunity taken]

Design a system that, given the completed 2022 college football D1 (FBS/FCS) season data as well as the eventual live/daily updated 2023 data, mine/process that data, rank that data, and then based on the processed data results predict or simulate the games outcomes, futures, college football playoff teams, and the eventual champion.

Success is defined in many ways, some being: your results accuracy in comparison to the 2022 season results, your results beating third party predictors, your results within a standard deviation of AP pollsters, your results out-performing random selections.

Project Requirements [define the business (why project is happening), solution (functional & non-functional), design specifications, and/or stakeholder requirements that align with the project's resources and objectives]

- The system (in Java or Python) should be able to read and process a JSON data feed.a
- The system should be able to rank this data using the best method of prediction, be it ELO, Glicko-2, TrueSkill, Monte Carlo, a home-grown method, asking ChatGPT, etc., and understanding/determining the pros and cons to each.
- The system should be able to, with the newly ranked data, predict/simulate the outcomes of future games (head-to-head comparisons, a simulator that uses randomization, etc.).
- The system should allow users to view these predicted results through a UI (Vaadin 24+) that will provide the daily predictions before that day's games and display the previous day's game's results. This will be a basic grid showing the teams and their expected outcomes and whatever pertinent prediction data, nothing more, nothing less.
- The system should include an automated server/system (Tomcat or similar standalone servers, CronJobs, etc.) that will automatically process the data daily.

Other Processes:

- Defining the project through a Planning Iteration (for the semester) and following an Agile style development process which defines tickets, adds story points for difficulty and time, adding these tickets to two-week sprints, and completing that work in two-week sprints.
    - This project can be broken down into many different components and tickets that can be worked on simultaneously between various group members.

- Using a GitHub repo with Git to collaboratively develop the code.
- Testing processes for each ticket.
- Code reviews for each ticket.

Project Constraints [identify any known limitations and barriers, e.g., budget, staff, size, specs, technology, etc.]

- I will personally provide the data.

PROJECT INFORMATION & SUBMISSION FORM

Sponsor Division Name: MSCI Analytics Engineering

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[this section to be completed by AMC-3]

Semester: Spring 2023

University: OU

Assignment STEM

College: Computer Science

_____ **UNIVERSITY**

FACULTY POC:

Name:

Title:

Phone:

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