Sports Analysis Bot

Team CS Enthusiasts

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Abstract

In sports analytics, the increasing complexity of data needs innovative bots capable of analyzing large datasets to extract meaningful insights for sports coaches, players, and personnel. Our proposed bot leverages state-of-the-art machine learning and natural language processing to automate data analysis, such as player metrics. This tool aim to improve strategic decision-making, enhance player performance, and boost fan engagement by utilizing the power of data analysis in Python, tools like BeautifulSoup, Flask, and SQL databases, in conjunction with real-time sports data from API's such as ESPN's. Using Agile methodologies, our project will progress through cycles of planning, execution, and evaluation to meet objectives within this semester.

Introduction

The need for a capable bot to handle data analytics is growing in the fast-paced field of sports analytics. Sports organizations encounter difficulties in analyzing and obtaining practical insights due to the abundance of data sources, which span player performance statistics. A specialized bot with cutting-edge machine learning and natural language capabilities could automate this process, simplify data management, and give coaches and staff real-time insights. A bot like this may provide sports with a competitive edge by using data analytics to improve fan experiences, optimize athlete performance, and enable data-driven decisions for all.

Related Work

Some of the relevant software tools for this project would be Python because it is widely used for data analysis, machine learning, and web scraping. For web scraping, we could use BeautifulSoup. To build a front end we could use Flask. To store player data we could use SQLite or MySQL. We could use scikit or TensorFlow to build our predictive model. We would need to retrieve player data by accessing ESPN API. We need to research whether we want to store data in our program or if we will access the readily available datasets. Additionally, we need to research what is the best predictive model to use for our bot.

Software Engineering Process

Every software project needs an effective process to get more things done, and to get things done properly. For our project we will be using the Agile Approach [1]. Because we only have less than a semester to complete this project, we want to make sure we can get as much done as possible. The agile process will give us flexibility in our project, and we need this because we don’t fully know how we want to implement the project so it will allow us to

change things as we go. With this framework we can work on our project in the following order:

- Planning, this can be in sprints or in meetings where we talk about what we need to get done or want to get done
- Design, in this step our team will investigate how we want the backend or frontend of project to look
- Develop, here we will put our planning into action and start working on the project by coding
- Testing, For the bot we want to make sure that we are getting results that are expected and this is what we will be doing in the testing phase
- Review, we will finally review what we did and restart the process to work on more parts of the project.

Using a process like Agile will help our team get parts of the project done in a timely manner. Having this structure will also make it easier to break the problem down into smaller parts and get it done easier.

References

[1] S. Laoyan, "What is agile methodology? (a beginner's guide) [2023] • asana," Asana, https://asana.com/resources/agile-methodology (accessed Feb. 18, 2024).