AI Scouts In Baseball: How AI can potentially revolutionize scouting in professional baseball

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Abstract
This project uses artificial intelligence chatbots to create scouting reports for Major League Baseball players and evaluate on metrics that the AI believes to be the best representation of their abilities. These reports and evaluations are then used to solve various tasks that the AI would not be able to create scouting reports that could rival those of employed personnel who are scouts for teams in Major League Baseball.

Introduction
In Major League Baseball there are a multitude of ways in which a player is evaluated. While many still point to the classical statistics of batting average, home runs, runs batted in, and stolen bases, there are new statistics and sabermetrics that are becoming more significant in the evaluation process. These new metrics have changed the way that the scouting process is done in baseball and with AI becoming more prevalent, this process could be altered even more.

Methodology
In order to begin the process with the AI chatbots, I first had to find data to feed the AI that they could use to base their decisions off of. The first source of data I decided to use was BaseballSavant which is a website that provides player matchups along with stats and metrics, and advanced statistics in a user-friendly way. The second source of data I used was Fangraphs which is a website that contains articles and statistical reports on all of the players in Major League Baseball. These sites were used to limit the AI’s knowledge when creating the scouting reports and evaluations. I also specifically fed the profiles of both Rizzo and Cicimer on each of these sites to the AI so the AI had direct access to their respective statistics and metrics.

The next step of the process was prompt engineering with the AI chatbots. I wanted to create prompts that would help the AI use the data given as efficiently as possible to create the most comprehensive and insightful reports possible. I began the process by telling each chatbot that they were to pretend to be a quantitative data analyst for a Major League Baseball team. You are tasked with creating a scouting report on Anthony Rizzo (or Adam Duvall is interested in his abilities and will use statistical data in your report). I followed this statement with the request to make the reports more “complex”, “comprehensive” and to add specific statistics like Weighted Runs Created Plus (wRC+) for Rizzo and Fielding Independent Pitching (FIP) for Cicimer. I would then ask each chatbot to name three main critiques with their report and then have the AI chatbot revise these critiques into account. Moreover, I asked both chatbots the general limitations of their scouting reports in general.

After getting a report from the Toronto Blue Jays’ sixth year, Major League Baseball as he has previously spent time with the San Diego Padres and Chicago Cubs before being traded to the Yankees in the summer of 2021. The second player chosen for the project was Adam Cicimer. Cicimer is a thirty-two-year-old relief pitcher who plays for the Toronto Blue Jays. Overall, both AI models were able to work with the data given and create their own metrics. I also asked the AI to give each player an overall rating from 1-100 using the data given and the metrics that were previously calculated. Moreover, I told the AI to use data from the source Spotrac, which is a large website with information on sports teams and player contracts, to decide how much each player was worth and if it incorporates a multitude of factors to evaluate each player. These metrics were very interesting and allowed for new perspectives on each player’s abilities. However, the AI struggled to quantify each player’s value for each of the metrics and thus struggled to compare each player to the rest of the league.

The Google Bard AI took less prompt engineering to get results and was able to create metrics for each player. The AI was also able to quantify each player’s value with each metric and then compare each player to the rest of the players in the league based on the data given and created metrics. The created metrics were not as in-depth as those with ChatGPT but were unique while still being easy to understand. The AI was also able to rank each player against the other players in the league in a list style and explain its reasoning.

Results
User-Interface: The ChatGPT AI would understand the majority of prompts I gave and would struggle to fulfill what was asked of the prompt. It would often acknowledge this fault and recommend alternative ways that I myself could go about completing those tasks. However, ChatGPT became much more difficult with Google Bard because it took a long process of trial and error in order to determine what prompts could generate the best possible results. However, when asked to critique its scouting report, the AI was able to name critiques and directly revise its report to an extent. The Google Bard also understood the majority of prompts that I would input and would always produce a result. The AI also had an easy time incorporating different statistics and metrics into the report based on what I prompted which made the process of adding to the report very easy. The AI also responded well through the prompt engineering process and did a great job of what questions would the AI write based on a specific prompt rather than if the AI was even respond to this specific prompt. The AI was also able to name critiques with its scouting report and directly revise these critiques when prompted to.

Ability to read and comment on data: The ChatGPT AI was somewhat able to use the data provided to create a scouting report and evaluation of both players. When prompted to discuss a specific statistic, the AI would speak to the statistic and pull information from articles on the internet. However, it struggled to compile this data into a report that used the statistical data to make conclusions and for the most part, the AI made general comments based on the statistical data.

The Google Bard AI had a much easier time incorporating statistical data that it felt was most important into its reports and evaluations. Overall, the data was form the statistical data to compare each player to the rest of the league which shows a combination of using a data and knowledge of what is currently happening. While the reports were not extremely comprehensive, Google Bard was able to do a better job at combining statistical data and helpful commentary into the reports.

Future and Ethics Statement
Prior to doing this analysis, my expectation for the work was that the AI would be able to summarize statistical data and make conclusions on each player based on this data but would not be able to speak to the non-statistical side of evaluating a baseball player. In addition, the reports and evaluations are ultimately limited by the data that I gave the AI and by the information that is available online about each player. In the future, I would extend this project by creating a list of links and articles on each player that can be used to help the AI learn more about each player in order to improve its ability to make comprehensive scouting reports. I would also experiment with players who have not played in Major League Baseball yet and thus do not have as much data available online as opposed to those who have been playing professionally for a longer period of time. One ethical concern is the idea of taking the human factor out of the scouting process. A large part of evaluating players is seeing them in person and how they interact with what they are faced with. The AI scouting process would remove this element and instead base its knowledge solely on what is available to it.

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AI assisted scouting reports

Barry Zito’s free agent scouting report

Image 1

Image 2

Image 3

Image 4

Figure 1: Free Agent Scouting Report

Figure 2: AI Scouting Report

Figure 3: Human Scouting Report

Figure 4: Future and Ethics Statement

Figure 5: References/Acknowledgements