

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 them on metrics that the AI believes to be the best representation of their abilities. These reports and evaluations are then critiqued by the AI before being revised to become more comprehensive. The focus was on two players in Major League Baseball, with one being a position player and the other being a pitcher. The operating hypothesis is that while showing potential, 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. AI introduces a process with technological capabilities and without the human bias that could have the potential to play a part in the evaluation process. These models are able to be trained with a large amount of data and use all of that data to assess the abilities of players which can then be used by organizations in Major League Baseball to make informative decisions.

This project uses two players in Major League Baseball chosen at random in order to use the AI models to create scouting reports and evaluations. The first player used is Anthony Rizzo. Rizzo is a thirty-three year old first baseman who plays for the New York Yankees. 2023 is his thirteenth year in 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 is Adam Cimber. Cimber is a thirty-two year old relief pitcher who plays for the Toronto Blue Jays. 2023 is Cimber's sixth year in Major League Baseball as he has previously spent time with the San Diego Padres, Cleveland Indians, and Miami Marlins before being traded to the Toronto Blue Jays in the summer of 2021.

This project will use the artificial intelligence chatbots of ChatGPT and Google Bard to create, revise, and rewrite scouting reports and evaluations on both of the players. ChatGPT, short for "Chat Generative Pre-trained Transformer," is an advanced chatbot developed by OpenAI. It is built upon OpenAI's GPT-3.5 family of large-language models and is designed to provide detailed responses and engage in conversations with users. This innovative chatbot has gained attention for its ability to answer complex questions and carry out a variety of advanced tasks. It has been fine-tuned using both supervised and reinforcement learning techniques, enhancing its performance and making it capable of providing human-like interactions. On the other hand, Google Bard is a large language model (LLM) chatbot developed by Google AI. It is powered by PaLM 2, Google's most advanced LLM. Bard can generate text, translate languages, write different kinds of creative content, and answer your questions in an informative way.

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 that I decided to use was BaseballSavant which is a website that provides player matchups along with statcast metrics, and advanced statistics in a user friendly way. The second source of data I used was Baseballreference which is a website that provides baseball statistics for every player in Major League Baseball history. The last 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 Cimber on each of these sites to the AI so the AI had direct access to their respective statistics and articles.

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 that they were "Pretend you are employed as a quantitative data analyst for a Major League Baseball team. You are tasked with creating a scouting report on Anthony Rizzo (or Adam Cimber). You are 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 Cimber. I would then ask each chatbot to name three main critiques with their report and then produce a new report taking these critiques into account. Moreover, I asked both chatbots the general limitations of their scouting reports in general.

After getting a report, I asked the AI to create three metrics to evaluate each player on. Originally, both AI models used three widely used statistics so I made it clear that the AI was to create their own metrics with a value of 1-100 to assess each player and explain what factored into each metric. 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 created. 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 this number differed from their current salary, if the AI believed they were being overpaid/underpaid. The last task I gave to the AI was to rank each player relative to the other players in Major League Baseball who play the same position.

Metric	ChatGPT	Google Bard
User-Interface	Moderate	Good
Ability to read and comment on data	Moderate	Moderate
Results	Poor	Good

Results

User-Interface:

The ChatGPT AI would understand the majority of prompts that I would input but 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 accomplishing what was asked in the prompt. This made prompt engineering much more difficult with ChatGPT because it took a long process of trial to 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 revise its report to an extent.

The Google Bard AI 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 it became a question of what details would the AI write based on a specific prompt rather than if the AI can 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 was able to 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. The AI was also able to use the statistical data to compare each player to the rest of the league which shows a combination of using the data and knowledge of what each statistic means. 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.

Results:

The ChatGPT AI took much more time and effort with prompt engineering to get results. However, when the AI produced results, it was able to create its own metrics that incorporated 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 quantify their overall value relative 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.

Conclusion

While ChatGPT demonstrated very interesting opinions and metrics, it was often inconsistent and took a large amount of prompt engineering to get these results. Google Bard was able to respond to each prompt fairly easily and seemed very aware of the flaws of each of the results which was then used to make the results more comprehensive. While both AI models are still being developed, Google Bard showed more ability today to analyze data and produce reports that can properly evaluate a player. However, ChatGPT clearly showed that it could be capable of even more in-depth analysis in it's work, even if it is not fully capable of it at this time.

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 drawback to this analysis could be 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.

AI assisted scouting reports



Barry Zito's free agent scouting report

References/Acknowledgements

Baseball savant: Trending MLB players, Statcast and Visualizations. baseballsavant.com. (n.d.). <https://baseballsavant.mlb.com/>

Fangraphs baseball. (n.d.). <https://www.fangraphs.com/> MLB stats, scores, History, & Records. Baseball. (n.d.). <https://www.baseball-reference.com/>

MLB stats, scores, History, & Records. Baseball. (n.d.). <https://www.baseball-reference.com/>

Spotrac.com. Sports Contracts, Salaries, Caps, Bonuses, & Transactions. (n.d.). <https://www.spotrac.com/>