The Future of Automation in Trading in Sports Betting

A Case Study of Huddle
By Tom Daniel, SVP of Trading

INTRODUCTION

The sports betting industry is undergoing a significant transformation, driven by increasingly sophisticated and complex betting products. One of the most notable developments is the advent of Same Game Parlays, which allow bettors to combine multiple outcomes within a single game, even when those outcomes are interdependent. This shift is akin to moving from solving a two-dimensional problem to tackling a three-dimensional one, necessitating a deeper understanding of the intricate relationships between different outcomes.

Calculating the odds for such complex bets surpasses the capabilities of human traders, highlighting the indispensable role of automation in modern trading systems. The true power of automation lies not only in its ability to scale operations but also in its unique capacity to manage the complexity of sports betting products. As the industry continues to evolve, the complexity of these products is expected to escalate further, making automation a critical component of trading strategies.

Automation addresses the current complexity challenges, but it is not a static solution. Instead, it represents a continuously evolving process that must adapt to the dynamic nature of sports betting. The ongoing development of automated trading systems is essential to keep pace with the increasing intricacies of betting products and to ensure efficient and accurate odds calculation.

In this whitepaper, we will explore **the future of automation in trading within the sports betting industry**, examining the technological advancements that are shaping this evolution and the strategies that will define the next generation of automated trading systems.

DEFINING AUTOMATION IN SPORTS BETTING

Concept

Automation in trading within the sports betting industry involves the use of advanced technologies to streamline and enhance the process of setting and adjusting odds. This technology-driven approach is designed to handle the increasing complexity and volume of data associated with modern betting products, such as Same Game Parlays. Automation ensures that the vast array of factors influencing betting odds can be processed swiftly and accurately, thereby improving the efficiency and reliability of trading operations.

Components

Algorithms: At the core of automated trading systems are sophisticated algorithms that process vast amounts of data to generate and adjust odds. These algorithms are designed to analyze various inputs, such as player statistics, historical performance, and real-time game data, to calculate probabilities and set appropriate betting lines.

Machine Learning (ML): ML, a subset of AI, allows trading systems to continuously improve by learning from new data. These models can adapt to changing conditions, such as player form or weather conditions, and refine their predictions based on historical and real-time data inputs.

Data Feeds: Automated trading systems rely on a constant influx of data from various sources. These data feeds include historical sports statistics, live game updates, team and player information, and external factors like weather and venue conditions. High-quality, relevant data is crucial for the accuracy and effectiveness of the models.

Data Architecture: Robust data architecture is essential for efficiently managing and processing the large volumes of data required for automated trading. This includes data storage, processing capabilities, and integration frameworks that ensure seamless data flow between different components of the trading system.

Human Oversight: Despite the advanced capabilities of automated systems, expert human oversight remains critical. Skilled traders monitor the outputs of these systems, fine-tuning the models in real-time and intervening when necessary to address anomalies or unexpected events. This hybrid approach ensures a balance between the precision of automation and the intuition and experience of human traders.

By integrating these components, automated trading systems in sports betting can manage the complexity of modern betting products, enhance the accuracy of odds setting, and provide a responsive and reliable service to bettors. **This synergy of technology and human expertise represents the future of sports betting, driving innovation and maintaining a competitive edge in a dynamic industry.**

ADVANTAGES (AND DANGERS) OF AUTOMATION

A modern sportsbook is effectively a data-management platform, taking in and producing 0's and 1's. The final output is a set of odds, also 0's and 1's, which are generated by the trading system and traders themselves.

Increasingly, the inputs are automated data feeds of one form or another. Examples include sports statistics, both historical and real-time, and information related to specific games such as line-ups, scores, penalties, weather, altitude etc. There is little benefit from sportsbooks collecting this data themselves as outsourced solutions are generally cheaper and more efficient. This is not to say sourcing data is not important. **Obtaining high quality, highly relevant data is an essential element in creating accurate models.**

Merely ingesting all the data is itself a challenge. It will come in at speed, in large quantities, in different formats, of varying quality and is fundamental to the profitability of a sportsbook - very much the 5 Vs of Big Data. To do this well, sportsbooks must invest in high quality data architecture and any technical debt from antiquated legacy systems will act as a millstone in this regard.

If consuming data is hard, then deploying the data to build effective models in a series of sub-processes is even more of a challenge. Trading is essentially a series of sub-processes, each somewhat self-contained but with complex data flows between each.

Each sub-process can be automated through models or algorithms. For example, player categorization is essentially a solved problem and most sportsbooks have lifetime value forecasts at a player level running more or less continuously. At a more advanced level, the creation of probability forecasts using statistics and simulation models are driving the most advanced pricing solutions, allowing for a wide range of betting opportunities that are combinable in SGPs.

However, mapping out the data flows to and from each sub-process is decidedly non-trivial and it is all too easy to create biases and even feedback loops, in which error can suddenly grow exponentially and cripple the entire system. In this circumstance, automation can be more problematic in handling complexity than human experts would be - the speed of automation can mean errors appear too quickly and spread throughout the system before they are detected while a human-driven system gives the experts more time to detect error and lower chances of creating systemic issues.

This presents something of a paradox, automation is a requirement to build a complex product but creates dangers of its own. A fully automated, hands-free trading solution with no human oversight is entirely feasible but probably ill-advised for now. Nevertheless, more and more processes are being automated and those sportsbooks with the right infrastructure, experience, and expertise are further along the path to full automation than those playing catch-up

IMPORTANCE OF DATA AND ANALYTICS

Data Collection

In the dynamic and competitive sports betting industry, collecting relevant and high-quality data is paramount. Providers must utilize advanced statistical models, real-time data feeds, and expert sports knowledge to continuously refine their pricing strategies and risk management practices. High-quality data forms the backbone of accurate predictive models and reliable market pricing, making it essential for sports betting platforms to source and manage their data meticulously.

Real-Time Data Feeds

The importance of real-time data feeds cannot be overstated. Huddle has invested significant resources to ensure their platform can price all markets with the minimum possible latency. This is particularly crucial for Micro Markets, where the availability window is extremely short. By leveraging reliable and robust technological solutions, Huddle ensures that data is processed swiftly, enabling clients to receive timely updates. This capability greatly enhances the user experience provided by HuddleOS. To achieve precise market offerings, the Huddle team developed a low-latency, play-by-play data processing solution, allowing for real-time market offerings and near-real-time play-specific settlements, which are critical for an optimal user experience.

Advanced Models

At the core of Huddle's product lies a suite of Monte Carlo-based models meticulously developed for each sport under analysis. These models underscore Huddle's dedication to precision and adaptability in sports forecasting. Monte Carlo simulations were chosen for their robustness in handling intricate, variable-rich environments and their ability to provide detailed probabilistic forecasts. These models excel in simulating a broad spectrum of outcomes, incorporating randomness to thoroughly assess potential scenarios and their respective probabilities.

Leveraging Real-Time Data

Huddle's proprietary Monte Carlo models, crafted over time using sophisticated statistical techniques, adeptly account for all variables influencing pricing. Real-time official data is leveraged to incorporate crucial information such as players on the court, injuries, disciplinary actions, and other contingencies, however minimal, that impact the underlying probability of outcomes. This unique pricing approach ensures maximum accuracy in odds setting, reflecting Huddle's commitment to integrating high-quality data into their models.

The meticulous collection and analysis of data are essential components in the automation of trading systems within the sports betting industry. By combining advanced statistical models, real-time data feeds, and expert knowledge, platforms like Huddle can navigate the complexities of sports betting with precision and reliability. The continuous refinement of these systems ensures that they can adapt to the ever-evolving landscape of sports events, providing a competitive edge and a superior user experience.

HUMAN OVERSIGHT AND EXPERTISE

Data science is an invaluable tool for predicting future outcomes, but sports betting presents a unique challenge: the events we aim to predict have never occurred under precisely the same conditions before. Every game is unique in various aspects, meaning we will never have a sufficiently large data sample to develop flawless models. The optimal approach is to identify analogous events, gather data from them, and search for trends and patterns.

Deciding the relevance of data is a somewhat subjective process. Rules change, players change, teams change, tactics change over time - sometimes even during a game. Knowing how relevant data are requires domain knowledge of the events. The data will also have gaps and outliers, how should they be managed? You need traders who are experts in the sports you want to trade.

The old adage holds true: "All models are wrong, but some are useful." Data science can generate remarkably accurate predictions when dealing with a sufficient sample size from relatively common events. However, even within a Normal distribution, 32% of values lie more than one standard deviation from the mean, and as we venture further from the mean, predictions can become increasingly unreliable. In sports, unexpected and "weird" occurrences are commonplace. If bookmakers withdraw their odds when uncertainty arises, they risk frustrating and ultimately losing their customers.

While data models excel in many scenarios, humans often outperform them in extrapolating results from limited data. This makes expert traders an indispensable component of trading systems. Their intuition and experience can navigate the nuances and anomalies of sporting events, ensuring a balanced and effective approach to odds setting and risk management.

Modern trading systems embody a hybrid solution, combining the strengths of both human expertise and automated technology. Expert human oversight is crucial for continuously monitoring and refining automated outputs, ready to intervene and take control when necessary. This synergy between man and machine outperforms either working in isolation. Just as a reasonably advanced chess player using a mid-level AI can often defeat the most advanced AI, the collaboration between skilled traders and automated systems results in superior performance, balancing precision with adaptability.

A good trader knows what goes into the model and how it works, but the best traders also know what DOESN'T go into the model and how to compensate. Currently, there is lots of data that cannot be quantified - psychological aspects of games, the body language and motivation of the players for example. This data can be very important but cannot yet go into models as it cannot be captured.

At Huddle, we are fortunate to have exceptional traders who possess in-depth knowledge of their respective sports and have played a pivotal role in developing our cutting-edge models. Their expertise allows them to swiftly and accurately adjust game parameters, ensuring seamless trading without waiting for market adjustments. Even during typical football games, our traders continuously fine-tune the models in real-time, adapting to the evolving play to more accurately reflect the unique circumstances of each specific game. This proactive approach ensures that our trading remains responsive and precise, maintaining a competitive edge in the dynamic world of sports betting.

CONCLUSION AND FUTURE OUTLOOK

The integration of advanced automation in sports betting represents a pivotal evolution in the industry, addressing the complexities of modern betting products and ensuring accurate and efficient trading operations. By leveraging sophisticated algorithms, AI, ML, and high-quality data feeds, automated trading systems enhance the precision of odds setting and enable real-time adjustments to dynamic game conditions. However, the synergy of automation with expert human oversight remains crucial, as it balances technological efficiency with the intuitive insights of experienced traders. As the industry continues to evolve, the future of sports betting will be defined by further advancements in automation, ensuring scalability, adaptability, and a competitive edge. This ongoing evolution promises a landscape where innovative technologies and human expertise work hand-in-hand to deliver unparalleled accuracy and reliability in sports betting.