PART 1: Comparison with Similar Products

Our tool, Take the Lead fantasy, is not the first technology to exist that is used as an asset in daily fantasy sports. Popular websites, such as fantasy cruncher and rotogrinders, have their own optimization software that people use. These websites are popular for a reason, as they are the only tools out there that do the necessary function. However, there are also big problems that exist within these softwares. The first problem aligns with the optimization algorithm itself. These websites all use a system called projections, in which players have an individual projection that is trying to accurately predict how well they will do for an upcoming contest. The problem, is that these projections do not account with player correlation, especially when building lineups. If a certain team has players that project very well, then the optimizer will place those players in the same lineup. This is not optimal for trying to win a large-field contest however, as you need outlier performances from your lineup, and it is not likely players on the same team will all have outlier games. Therefore many of the generated lineups will not have the necessary upside that must be present in order to win a large-field tournament. Another issue with these websites is the accessibility to an average player. These websites cost a considerable amount of money to use, and there is also a large degree of difficulty in figuring out how they work. Most daily-fantasy sports players simply do not have the bankroll to pay for these sites, and spend weeks figuring out how to use them, losing money in the process. To use these sites, players would have to spend weeks trying to figure out the best way to use that, and before that happens they might give up and leave the industry, which could lead to the decline of the industry itself. Finally, the last issue is the difficulty of using these other websites. For a player looking to take the next step into multi entry, they have to learn how to use these other optimizers. The problem, is that these optimizers take weeks to learn. A user must figure out exactly what specific setting will actually get them optimal lineups, and this takes trial and error. All the while, they will have to be testing these suboptimal lineups in contests, causing them to lose money until they finally figured out a good strategy for generating lineups. This difficulty has created a barrier for daily fantasy players looking to make the jump from hand building lineups to using an optimizer. Take the Lead fantasy aims to remove that barrier for all players.

Take the Lead fantasy will differ from these existing websites in multiple facets. First of all, the software algorithm will be unique to the industry. The algorithm will be based on correlation between players, instead of pure point projection.Other optimizers simply generate a lineup based on highest total projection, but this creates sub optimal lineups. We are using correlation to generate lineups, which is unique to the industry. This will give our lineups an edge over lineups from other websites. Another difference with our website will be the overall layout. Other websites are very difficult to use, and even more difficult to learn. Our website will cut out the complicated settings, and allow for a user to easily use and understand our software. This means there is no period where a user is testing suboptimal lineups, trying to learn the optimizer. With simple to understand settings, a user can seamlessly create lineups with desired constraints, without a struggle of needed to learn what everything is. Finally our website will not require any sort of expensive costs, like other optimizers. We want our software to be beneficial to the collective whole of the dfs community, not just veterans. Having no cost removes the barrier to using an optimizer, and that is a goal of Take the Lead Fantasy.

The differences in our website will matter because of the possibilities it opens for new daily fantasy sports players, as well as existing players. As it stands now, it is very difficult for new players to compete in tournaments due to the learning curve of other websites, as well as cost of entry. Even current players have the issue of other optimizers generating suboptimal lineups, ruining their chances of winning a tournament. The goal of Take the lead fantasy is to eliminate those things, and to remove the barrier to competing in daily fantasy sports. Our website will be much more effective than others, as our algorithm is more optimized. This will lead to better lineups being generated, and so better results in tournaments. Therefore, the final impact is higher probability for a player to win a tournament, as they are given better lineups.

PART 2: Target Audience

Take the Lead is a consumer facing lineup generator geared towards giving the individual user a competitive edge in daily fantasy contests. we aim to create a platform that is both easy to use for beginners, and provides reliable statistical tools for experienced users.

Take the lead offers numerous advantages over the competition, especially in price. Our focus is to create as many winning lineups and collect as much data as possible. To support this, our company uses the freemium model. Basic features are made free to all users, with more advanced functionality made exclusive to premium members. Functionality such as highly projected lineup generatorsand basic correlation statisticare free to all users, while advanced data mining and combinatorial optimization algorithms are limited to premium users. This allows users to access all the benefits that a standard optimizer offers for free, while allowing our company to collect data to help improve our generators. The premium membership makes use of the full cloud-computing suite. Most of our calculations are done on private servers, tremendously reducing costs. However, when larger computations are required, computations are farmed out to the cloud to produce the most optimal result.

Unlike competing companies, Take the Lead does not require a weekly, monthly, or seasonal payment. Premium members can select between purchasing Lead credits for single-use lineup generation, or relinquish 10 percent of their earnings after netting positive in a contest. We also produce revenue from ads to still give regular the option to use advanced projections at no cost.

TransitionExperienced fantasy players are accustomed to having an edge over the competition, but they have never had access to the features that Take the Lead excels at. Correlations, Associations, Standard Deviations, and more advanced statistical models are conveniently offered in our central repository, allowing users to make clearer and more confident predictions. While these models alone may not be difficult to gather, there has never been an easier, more accurate, and faster tool to give users the advantage they need to rise to the top of a contest.

With Take the Lead, inexperienced users can learn to create high-performing lineups with ease. Users no longer have to undertake the laborious task of understanding complicated math and statistics to be successful. Creating a lineup is easier than it has ever been before with our intuitive interface. By offering a more affordable, intelligent, and multifunctional platform for both experienced and inexperienced users, Take the Lead brings a new enthusiasm to fantasy football. How will you create awareness in the target audience?

PART 3: Societal and Global Impact

Take the Lead Fantasy addresses a niche market in the daily fantasy football sports industry. By making mass entry contests more accessible to the casual user, it bridges the gap between aspiring players and professional level statistical analyses. We are focused on creating a community of players who are educated in their lineup construction process. As it currently stands, around 76% of all DraftKings players are net losers in the long run. If our product is widely used, we anticipate the percentage of profitable fantasy players to increase. We would then expect the number of users entering multiple lineups in fantasy contests to also increase in turn. This will boost profits for fantasy companies like DraftKings because they will gain a greater demand.

If Take the Lead occupies a prominent role in the daily fantasy sports community it will provide users with many services that are currently inaccessible. Inherently, Take the Lead will not be designed in a way that it will be put to bad use. We aim to provide a superior solution to lineup optimization for our target audience. Our product will not be subject to legal regulation, as it does not handle financial transactions and the distribution of payouts. We are simply concerned with creating the lineups and we do not intersect directly with any online gambling outlets. However, our product’s viability will be closely tied to the livelihood of the online daily fantasy sports industry. We must remain vigilant on the regulation surrounding the daily fantasy sports industry, because without it we will not have a user-base for our product. Fantasy sports have been criticized for occupying a loophole under the Unlawful Internet Gambling Enforcement Act of 2006. This act outlawed all forms of online gambling games and casinos. Yet under federal law, fantasy sports are classified as a “game of skill,” and therefore do not fall under the scope of the Internet Gambling Act, making it legal.

While daily fantasy sports have traditionally occupied a controversial space in online betting, new gambling legalizations in 2019 have cemented it as a permanent fixture. New Jersey was one of the first states to pioneer the re-legalization of sports betting. Citizens of the state now have available outlets for online and offline sports related gambling such as betting on game totals and game lines. Other states like Massachusetts and Rhode Island have laid down the legislature to fully legalize sports gambling. With the legalization of many types of online sports betting, the forecast for fantasy sports will only become more stable. This demonstrates significant potential for increasing market growth.

In the long run, the increasing legalization of fantasy sports provides Take the Lead with a lucrative opportunity to extend our services to NBA, NHL, and MLB contests in the future. Our process for generating lineups would remain similar across all of these major sports. At its core, our algorithm generates viable and desirable combinations from a highly variant set of data. Our solution to complex optimization problems is relevant not only in fantasy sports, but also in any scenario where the generation of optimal combinations is crucial. The algorithmic processes and strategies we develop at Take the Lead could extend beyond the sports world to have marketable utility in business analytics, stock trends, and portfolio construction.

Revised Writing 1

Mihir Mankad

The industry of daily fantasy sports is one that has been steadily growing over the past few years. Daily fantasy sports is an industry within fantasy sports, in which players compete against others by building a team of professional athletes. These teams score points associated with statistics within the sports, and the lineup with the highest number of points wins. These lineups have constraints such as a total salary, player cost, and number of players from a single team. With the rise in popularity of fantasy websites such as fanduel, draftkings, and yahoo, daily fantasy players are always looking for an edge that helps them optimize and come up with better lineup solutions than other players. The problem, however, is that tools that help lineup optimization are not accessible to the casual player. This makes it very difficult for new daily fantasy sports players to have success right away, which may turn them away from the industry. This is a problem as it is pushing dfs towards a state of oversaturation of pro-level players. When that happens, the dfs industry will start to decline as new players will not be able to compete anymore. This industry is very popular and very successful, and also plays a role in the popularity of modern sports. With the number of users surpassing ten million, the impact that has on sports viewership is very important. This is why it is a major problem if the industry starts to decline, as it would affect the entire sports industry. Our solution to this growing problem is to create an optimization software that is both accessible and successful for the new player. Take the Lead Fantasy will both be cutting edge and user-friendly, allowing new dfs players a way to get into the industry and compete.

With our idea for a new look dfs website, we will be able to give new players the tools to succeed in the industry. Many people have expressed interest in the dfs industry, but they do not know how to get into it, and do nott have the tools to compete with the veterans. We want to create a tool that would be beneficial to anyone trying to get into the already massive dfs industry. This project should receive funding because it addresses a major issue in the dfs industry, and serves as a way to increase the number of people within it. By enabling non-professionals to have access to a successful lineup generation process, we will allow those players to compete in large field tournaments. A tool like this would be extremely beneficial for anyone who has an interest in getting into the dfs industry.

The technical challenges of our project include designing an algorithm based on correlation between players, rather than the standard mean projection. We will have to do thorough statistics research, and then apply this algorithm in a way that can be understood by any individual regardless of background. A complex web application must be designed so that it includes multiple settings to control the generation of lineups. This is challenging because we must offer multiple customizations while at the same time allowing our algorithm to do its job. The application must react to the user preferences and seamlessly work with the database in order to let the user have control over the lineup generation parameters. Our database must also update whenever a player is injured, a player’s salary changes, or a player’s position changes. We have some ideas to make a simple user interface that can easily be understood, while at the same time still being complex enough to generate good lineups. Ultimately, the goal is to make a very beneficial dfs lineup generator that allows new players to gain an edge on the competition.

**Eric Wendt Writing 1 Revised**

For decades, Fantasy Football has been a fast-growing competitive industry valued at $7 billion annually. Fantasy competitions allow users to act as a virtual sports team manager, selecting real NFL players to fill a team roster via web application. The newly created team plays weekly games, collecting points from players that reflect real-time gameplay. Examples of scoring points include touchdowns and passing yards for offensive players, and sacks and tackles for defensive players. Fantasy Football generally falls into two categories: season or weekly teams. Take the Lead focuses on weekly contests. Each week, users enter lineups into the contest. Contests winners are determined by the highest number of points scored by a lineup. With enough knowledge of the game, an experienced fan should be able to win a considerable amount of money. However, there are many real-world variables that determine the outcome of a player’s performance, and it could be a daunting task to account for them all. Take the Lead enhances this process by combining effective data-mining algorithms with cloud computing and visualization to generate desirable contest lineups in an intuitive environment, giving users a competitive edge.

Currently on the internet, there exist few platforms for generating lineups, such as Fantasy Cruncher and RotoWire. The most common feature these optimizers use is *player projection.*Projections are a numerical value that measures a player’s chances of scoring points. The fundamental problem with these projections is they only account for individual player performances, rather than the entire lineup. It would be more helpful to know which players typically perform well in addition to which players are positively affected by this. For example, take a quarterback that throws 5 touchdowns in his weekly game, compared to the opponent team’s quarterback, who only threw 2. It would earn a given lineup more points to include the receiver of the quarterback who performed well. Since the quarterback’s exceptional performance was shared by the receiver, it can be said that the two players have a ***positive correlation***. Take the Lead takes advantage of this concept by mining for positive correlations between all possible players in a lineup. Algorithms such as apriori, k-means clustering, and Expectation-Maximization are implemented to predict the highest certainty of performance possible.

The greatest technical difficulty that Take the Lead addresses is the sheer computational density of the available data. The contest website *Draft Kings* allows for approximately 430 eligible NFL players, with a lineup size of 9 players. The number of team combinations is extraordinarily large, growing exponentially. Algorithms such as Apriori help reduce these data-sets by excluding infrequent player sets, but since our interactive application allows for users to enter lineups to measure their efficiency, a fasting reacting computation is needed to perform this action. This is where cloud computing contributes to Take the Lead. By making use of a *High-Performance Cluster*, Take the Lead can provide comparisons of lineups at a much faster rate than a standard server. This technical hurdle is not present in other lineup optimizers that rely solely on individual player projections. The next biggest difficulty is the *representation* of the mined data. Since Take the Lead measures correlations between players, a simple table of individual gameplay statistics is not effective. Take the Lead uses a more sophisticated approach to data visualization, showing individual performances, as well as their associations to other players in a clean and concise web-plot. Users may then enter lineups into the web plot to easily visualize how their lineups fair and can be improved.

With the help of Take the Lead, users can feel more confident about their lineups and gain a strategic advantage over professionals, while having access to helpful services that provide a more exciting experience to fantasy football. If you decide to contribute to our series A funding, Take the Lead will soar past the competition.

Joe Hallal Revised Writing

Nearly 10 million users around the globe are registered on daily fantasy sports websites. The most popular sport in daily fantasy is football, in which users wager real money on the results of player performances in NFL games. Advanced daily fantasy players submit mass entries to contests: it is common for a single user to enter 150 different lineups per contest in order to account for a wide range of potential outcomes. We are seeking funding for Take the Lead, a generator that will automatically create statistically optimized NFL daily fantasy lineups. Take the Lead will give fantasy players of intermediate and advanced backgrounds the tools that professional players employ to succeed. Current optimizers for NFL fantasy contests employ “naïve” algorithms to build lineups that can also be difficult to use. Take the Lead’s website application will provide an improved generator that incorporates real statistics and correlation to craft successful lineups. Our features will all be presented to the player in clean, usable UI along with easy to understand data visualization options.

A key factor that distinguishes Take the Lead from existing lineup generators is our use of correlation. Correlation is a critical component in assembling a successful lineup, particularly in fantasy football. If a user has drafted a quarterback and receiver of the same team and they connect for a touchdown, his lineup receives 0.04 points per passing yard, 0.1 points per receiving yard, 4 points for a passing touchdown, and 6 points for a receiving touchdown. This makes it imperative to construct lineups that factor in correlation, such that a user can maximize the number of points he may earn. However, no existing applications currently do this. While this makes Take the Lead unique, it also presents a technical challenge, as our lineups are not based on mean projections. To overcome this, we will use data mining techniques to determine the correlation between players on the same team, and we will incorporate that information into our generation process. For instance, if the quarterback Tom Brady is shown to have a high positive correlation with his receiver, Julian Edelman, then our application will be more likely to pair instances of Tom Brady with Julian Edelman in the user’s lineup.

Along with our optimization of correlation, Take the Lead will provide various customization options so users can have more control over the generation process. Take for example a user who would like to draft Tom Brady in 40 percent of their lineups: it will be as simple as checking a box next to his name and typing in a percentage. If the user wants to have no players from the New England Patriots, he will be able to easily deselect the team altogether. This presents another technical difficulty: accounting for a wide arrangement of user preferences. To balance these customization options with our statistically backed process, we will employ a Python script that will flexibly generate lineup combinations.

We realize that the user is trusting us to help them when real money is at stake. In this regard, we want to offer more transparency into our generation process, such that the user can gain a better understanding of his results. Our application will offer visual tools to represent past player performances, correlation, and other necessary information. These representations will take the form of graphs and pie charts that the user will be able to access with ease, ultimately increasing his confidence in our techniques. In addition to these aesthetic infographics, our application will use Angular to create a simple and usable interface that improves upon other industry options. It will allow the user to easily export his lineups in CSV format, which can be uploaded directly to websites, such as Draftkings and Fanduel, with minimal hassle.

The goal of Take the Lead is to provide a comprehensive tool that improves user success in NFL daily fantasy contests. Our algorithm will generate intelligent lineup combinations and provide the tools needed to customize and understand a user’s results. The comprehensive, data-backed algorithm will appeal to advanced and professional players, while our easy to use UI will also attract intermediate players looking to step up their game. We are focused on making this tool accessible and ensuring our users have everything they need to become more profitable in daily fantasy football.