

A Recommendation System for Collegiate Golf
The Impact of Instagram on the Portrayal of Female Athletes

A Thesis Prospectus
In STS 4500
Presented to
The Faculty of the
School of Engineering and Applied Science
University of Virginia
In Partial Fulfillment of the Requirements for the Degree
Bachelor of Science in Systems Engineering

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November 1, 2021

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

Every year, collegiate golf recruiters dedicate hours to researching high school golfers, attending tournaments that can last up to four days, and meeting with potential recruits to find new members for their team. They are forced to rely upon tournament scores, rankings, and intuition to determine if a player would be a good fit for their program. Some of the most widely used sources of information for recruitment are high school golf ranking systems such as the American Junior Golf Association (AJGA) ranking and the World Amateur Golf Ranking (WAGR). Despite them being relied upon so heavily, they are relatively unreliable resources for predicting college performance according to Brian Bailey's many years of experience as a collegiate golf coach (in-person communication, September 21, 2021). The recruitment process is intensive, time-consuming, and can be incredibly costly if a recruiter makes a poor judgment when evaluating recruits.

There are over 200,000 high school golfers in the United States. Less than 4% of them will end up playing for a Division 1 team and only about 8% will have the opportunity to play in the NCAA at all (Noble, 2021). Unless the player is highly ranked, he or she has to devote countless hours of work to acquire an offer from a school in any division. Moderately ranked players are nearly invisible to coaches so it is on the golfer's shoulders to reach out to coaches and recruiters in order to be considered (Richardson, 2019). High school players are also faced with the question of when to start the recruiting process. Some argue that players should start contacting coaches and planning unofficial college visits as early as freshman year of high school (Smith, 2020). Players have very little guidance about which college programs would be the best fit for them or how they will perform on collegiate courses with a new team and coach.

The team is proposing a system for matching players with schools that would align with their skills and background. This will allow coaches to easily access players that are predicted to improve their program and would mesh well with the team. It will give prospective recruits clarity about which schools would provide them the opportunity to improve and to make an impact on the team. The system aims to guide amateur golfers towards college programs that are at their level instead of golfers aiming too high or too low during the recruitment process. This technical project seeks to provide golf coaches and recruits with a more streamlined and data-based recruitment process, while later I will discuss how the portrayal of female athletes has been impacted by the introduction of social media.

A Recommendation System for Collegiate Golf Recruiting

Recruiting analytics have been used heavily in many sports, particularly in mainstream games such as baseball and football, and have provided numerous beneficial insights. One famous example is explained in the book *Moneyball* when general manager of the Oakland Athletics, Billy Beane, brought recruiting analytics to his team. Beane transformed “one of the poorest teams in baseball” to a team that won more regular season games than all but one other team in the league (Lewis, 2003, p. xi). There is an opportunity in the golf recruiting industry to introduce the use of analytics. It has the potential to provide guidance that can simplify the currently grueling recruiting process for both recruiters and the golfers hoping to play on the collegiate level.

The National High School Golf Association (NHSGA) describes three options for high school players to get assistance during the recruitment process: Self Service, Recruiting Platforms, and Full-Service Recruiting Help (NHSGA, 2020). The self-service approach includes

purchasing books or online resources to learn about the recruitment process (how to build out a resume, how to handle interviews with coaches, understanding recruitment guidelines, etc.) and handling recruitment without personalized assistance (WJGA, 2020). The second approach involves using recruiting platforms such as Next College Student Athlete (NCSA), Junior Golf Hub, and Recruiter Elite. These platforms guide golfers in creating profiles to demonstrate their abilities to recruiters. Golfers can join for free but in order to get personalized help on these platforms, users will pay between \$100 and \$2500. The last approach, Full-Service Recruiting Help, is the most expensive of the three. This entails hiring a personal consultant to guide the high school golfer through the recruiting process and can cost anywhere from \$1000 to \$5000.

In addition to the draining nature of the recruiting process, there are concerns about the disparity between teams and about scholarships. The time-consuming nature of recruitment places enormous strain on the coaches looking to recruit players. The process is significantly more manageable for teams that can afford to hire a full-time assistant coach to handle the majority of recruitment concerns (Ryan, 2019). Golfers looking to play at the collegiate level also have to consider the possibility of a scholarship when they are looking into schools. Some players approach the recruitment process with the knowledge that a scholarship is a necessity. It is difficult for athletes to determine whether a scholarship is a possibility, especially when the NCAA only allows Division 1 schools to provide four and a half scholarships to men and six to women (Drotar, 2015).

The last important aspect of recruiting that I will discuss is the timeline. As a freshman or sophomore in high school, potential recruits can receive or send questionnaires, golf camp information, NCAA published information and any information about the college that is unrelated to athletics. When an athlete enters their junior year, he or she is now able to receive or

send recruitment information and to interact with the coach through electronic means such as email, text, or phone (NHSGA, 2020). Once an athlete has reached his or her senior year, the athlete can take official or unofficial visits to colleges with a max of five total official visits (one official visit at five different schools) (NCSA, 2021). The amount of information that an athlete receives as early as freshman year of high school can be overwhelming and it is nearly impossible to know which schools to pursue.

Our team is working with a golf analytics company called GameForge to create a data-driven system of matching athletes to colleges and recommending athletes to collegiate recruiters. We will build machine learning models for GameForge that create the final recommender system which will be implemented on their web platform. This will allow coaches to optimize their rosters by finding the best recruits and cut down on wasted time during the recruitment season. It will also ensure that athletes focus their energy on the schools that will be the best fit personally and athletically. Aspects of universities that are largely unrelated to golf such as location, academic level, diversity, and others will be considered in determining which schools to suggest to high school golfers. The team is also intending to use data about previous player performance and scholarships to provide potential recruits with information about their likelihood of receiving aid. We will create a new ranking system to more accurately indicate players' performance and potential. This will be accomplished with publicly available data from the AJGA, WAGR, Golfstat (a source for college player rankings), and other amateur golfing records using predictive analytics and machine learning. Providing a more predictive ranking system will allow coaches and players to better understand the players' skill level and the rankings will be used to help create the recommender system.

The Impact of Social Media on the Portrayal of Female Athletes

Despite the abundance of social concerns of a recommender and ranking system for amateur golfers, the focus of this prospectus will shift to discussing the impact of the social media platform Instagram on the portrayal of female athletes. The motivation for discussing the inconsistency in how athletes of different genders are represented in the media comes from the inequalities that are apparent on the golf course. Golf is a male-dominated sport with only about 20% of golfers being female, a male-female ratio comparable to ice hockey or paintball (Matuszewski, 2014). Females in golf face an environment permeated with masculinity, stereotyping, and belittlement that drives many women to drop the sport altogether. Disparities in the restroom facilities and availability of equipment for women have contributed to feelings of neglect. Many women feel as if they are not being taken seriously on the course as compared to their male counterparts (McGinnis, 2005).

In addition to the discrimination that women face on the golf course, professional female athletes in almost every sport experience less media coverage, compensation, and respect for their athletic ability than males (Fink, 1998). Before Title IX was passed in 1972, there were 300,000 girls and women that participated in sports. After Title IX, that number increased to a total of 2.4 million by 2013. However, despite the incredible growth of female athletics, the media coverage of women's sports did not see a major increase. In the United States, women make up 40% of the athlete population yet women receive less than 2% of the television media coverage (Wenzhao Mu, 2018). In order for women to compete with male athletes for publicity, they have been sexualized, from tight and/or revealing uniforms to provocative magazine covers. The attention given to these women is directed at their physical traits as opposed to their athleticism (Liang, 2011).

The sexualization of female athletes presents a wide breadth of issues. First, research has showed that girls and college women are more inclined to self-objectification when seeing female athletes in a sexualized portrayal as opposed to their portrayal as performance athletes (Daniels 2009; Reichart Smith 2016). Secondly, Daniels's research with adolescent boys determined that they react to images of female athletes as performance athletes with more of a focus on their athletic ability than when viewing sexualized images (Daniels, 2011). The perceived performance and competence of an athlete is significantly diminished when the athlete is sexualized. This is particularly true when the athlete being sexualized is a female (Nezlek, 2015). Lastly, the sexualization of female athletes reinforces male dominance in sports since the portrayal of athletes in this way seeks to highlight the athletes' femininity while they participate in traditionally masculine activities (Liang, 2011). The introduction of social media, especially the platform Instagram that focuses on sharing photos, offers a means for athletes to cultivate their own public image.

Founded by Kevin Systrom and Mike Krieger in 2010, Instagram is a photo-based social media platform that allows user to share images, comment on other users' posts, and like photos (Blystone, 2020). In 2020, Instagram reached a total of 2.3 billion users and generated \$24 billion in revenue (Iqbal, 2021). Social media is now a key, and arguably essential, aspect to an athlete's brand (Su et al., 2020). The platforms allow them to shape their image and garner support and they can provide an additional source of income.

The theory of unintended consequences will be used to evaluate how Instagram has impacted female athletes. This will include examining how the athletes portray themselves (self-presentation) and how sports media accounts on Instagram portray female athletes versus male athletes. Unintended consequences is defined as the combination of "unanticipated consequences

with desirable results... and anticipated undesirable outcomes that present opportunities for decisions, clarification of values, and implementation tradeoffs” (Harrison et al., 2007, p. 542). According to Henk Flap, it is essential to consider six dimensions when analyzing unintended consequences: (1) the number of individuals that accomplish their goals; (2) whether the consequences are positive (unanticipated) and/or negative (undesirable); (3) number of other individuals affected; (4) whether the consequences are predictable; (5) how long it takes for the consequences to emerge; and (6) whether a corporation or individual persons are the “focal actor” (Flap, 2015). These six dimensions will be applied as I discuss the unintended consequences, both positive and negative, of Instagram for female athletes. I will specifically address whether Instagram has provided a new platform for athletes to disrupt the traditional depiction of female athletes.

Research Questions and Methods

The goal of this research is to address the question: How has Instagram impacted the way in which female athletes are portrayed? It will focus on how female athletes choose to portray themselves and how they are depicted on Instagram by popular sports media accounts. This question will be addressed by identifying unintended consequences of Instagram for female athletes, whether unanticipated or undesirable. These consequences will be analyzed using the six dimensions discussed above and previous research on the topics of female athlete sexualization in the media, implications of social media for female athletes, and female athletes’ self-representation on social media. The research question will also be addressed through a case study analysis of how two professional female athletes present themselves on Instagram and how

two leading sports accounts depict female athletes. The criteria for selecting these accounts is yet to be determined.

The posts from the individuals and the company accounts will be evaluated based on the image. Using a very similar categorization method as Mary Jo Kane applied in her research (Kane et al., 2013), images will be classified into four categories: athletic competence, combination, lady like, and sexual object. Images in the athletic competence category are those that depict the athlete in her uniform or other sports appropriate attire at the sporting venue. Combination images show the athlete in a non-athletic setting with some identifier of athleticism (i.e., holding a basketball) and a focus on femininity. Lady like images focus solely on the athlete as a female with no athletic identifier. Sexual object photos are those that depict the athlete in a highly sexualized manner. Photos that depicted a female in a sports bra in an athletic setting would not be classified as a sexual object photo, but rather an athletic competence photo. The classification is based more on the context of the photo than the amount of skin exposed. After classifying the images, an analysis will be conducted on the most frequent way the chosen athletes depict themselves and their followers' response (i.e., number of comments, types of comments) for each type of photo. This case study will provide insight into the disparity, if any, between the way that female athletes self-represent and how sports accounts represent female athletes on social media. Results of the case study will be compared and contrasted with research conducted on past depictions of female athletes in the media.

Conclusion

Recruiting is a tedious and costly process for golf coaches and potential recruits. The final deliverable for the technical project will be a machine learning based recommender system

that provides high school golfers with college teams that best fit their skills and preferences. The system will also provide coaches with suggested recruits that takes into account their current team's abilities and likelihood that the recruit would attend if extended an offer. This assistance will help to provide guidance and decrease costs for all persons involved in recruitment.

The outcome of the science, technology, and society research will provide insight into how Instagram has positively and adversely effected female athletes. Results could guide further understanding of the inequalities between male and female athletes. They could also help develop suggestions for how to improve upon the current social media platform to lift up athletes based on their athletic ability, rather than their appearance.

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