DEVELOPING A RECOMMENDATION SYSTEM FOR COLLEGIATE GOLF RECRUITING

IMPACT OF UNETHICAL BIASES ON RECOMMENDER SYSTEMS

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SOCIOTECHNICAL SYNTHESIS

Recommender systems are being used more frequently in many different fields and recruiting processes, but they can come with various biases that have harmful effects on the recruiting process. The technical project looked at developing an online recommender system that can be used for college golf recruiting by matching high school golfers with college teams. The purpose for doing so is that this recruiting process is very disorganized, and there is great difficulty in determining which golfer would be the best fit for a college team, and vice versa. The tightly coupled science, technology, and society (STS) research used the Actor-Network Theory framework to identify types of biases in recommender systems, show the impacts of those biases, and provide solutions to reduce those biases and their effects. These topics are tightly coupled because they each deal with recommender systems as the technology of focus and developers of the systems as the main social group.

A recommender system for college golf recruiting was needed not only to give coaches more confidence in their recruits and in the future of their team, but also to show junior golfers the teams that would be good fits for them, based on their preferences and golfing abilities. To develop this recommender system, our technical team broke down the analysis into two main tasks. The first task was to discover the factors that make a college player and team successful in college golf, and the second task was to determine the current junior golfers that could potentially become successful college golfers. Overall, the main goal of this approach was to use a combination of junior and college golf data to develop predictive models for the recommender system.

Four predictive models were created that form the basis of the recommender system. The first model is a multi-state classifier model that predicts with 60% to 85% accuracy the college rank of a current junior golfer, where the rankings were binned as: Top 25, Top 50, Top 75, and Top 100. The second model is a binary classifier model that predicts with over 85% accuracy whether or not a junior golfer will be a Division I caliber college golfer. The third model is a lookalike model that takes a given college golfer of interest and generates a list of current recruits that are predicted to become most similar to that college golfer. Finally, the fourth model is a simulation that uses the lookalike model to show the impact of adding potential recruits to the team's performance. These models were developed to be used in conjunction with each other in order to provide meaningful recommendations to junior golfers and college coaches.

While recommender systems have become a useful technology to help match a recruit with a recruiter, many common biases exist in these systems that must be recognized and prevented. By using the Actor-Network Theory framework, the STS research first examined the types of biases that can make their way into recommender systems and then displayed the impacts that they can have on the recruiting process. Many scholarly articles were referenced that discuss the types of biases in the systems and the way in which human bias leads to bias in the systems. Evidence and examples from large, well-known companies were also provided to show the detrimental impacts of bias in recommender systems. Finally, some potential solutions were presented that aim to significantly reduce bias in the systems.

The first solution is to change the design of the recommender system, and this is the best solution for recommender systems tailored for one user. The second solution is to make recommender systems more memoryless, thereby making each recommendation as independent as possible from all prior ones. The third solution is for the recruiter to frequently monitor the

recommendations and performance of the system and for the developers to release frequent updates to address any performance issues that may have arisen. The final solution is to improve bias prevention training programs by making them more rigorous and personalized.

The technical research showed the potential for recommender systems to improve recruiting processes, but these systems are still flawed with the significant issue of bias in them, as shown through the STS research. The provided solutions have the potential to improve the performance of recommender systems, but they will depend on the willingness of the relevant social groups to take the initiative and implement them.

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