

MSAM 2018 – @MWSprtAnalytics

ABSTRACTS– POSTER PRESENTATIONS



A Sequentially Updating Bayesian Network that Bests the Oddsmakers by Predicting the Total Number of Points Scored in NBA Games

Enrique M. Alameda-Basora¹, Hieu Pham², and Sarah Ryan¹, Iowa State University

Abstract: With a total of 1,230 games each regular season, the National Basketball Association (NBA) provides more opportunities than most other sports leagues to wager on a game. Bettors commonly place wagers concerning the game result at specific time points in the game. This work focuses on the Totals betting strategy, also known as the over/under. Although many forecasting models have been built to predict the total number of points in an NBA game, these models fail to provide bettors engaged in live-betting with predictions that are also based on the current game being played. In this work, we aim to sequentially update the probability that the total score exceeds that set by the oddsmakers as the game progresses, through a machine learning-based network, and then use this probability to influence our betting decision at the end of the first, second, and third quarters. Research methods include data collection of team statistics over the last five NBA seasons, validation of data using statistical tests, specification of the network structure using specialty domain knowledge, parameter estimation for the corresponding attributes, and feature selection using Bayesian Model Averaging (BMA). We plan to benchmark prediction accuracy against an amateur betting strategy as well as a Bayesian Network whose structure is specified using an iterative algorithm and assess the quality of the model on the games played during the 2018-2019 NBA regular season. If the execution of the model is successful, it will provide potential bettors with a tool that estimates the joint probability distribution of scoring totals at different time points in the game to aid in their decision making.

Peak Performance Age in Sports

Michael Anderson and Kyle Berst, Central College

Abstract: This poster will detail the analysis of peak performance age in basketball, soccer, football, golf, and running. Research was started by defining peak performance age for each sport, then a sample of retired athletes were analyzed based on their seasonal stats. This poster includes comparisons of peak performance age of athletes among a variety of sports as well as positions within specific sports.

Analysis of Right-Handed vs. Left-Handed Batting in College Softball

Samantha Craig and Brandi Gilbert, Central College

Abstract: The game of softball seems to give an advantage to right-handed players in the field. Our poster looks at whether left-handed players are given an advantage when it comes to hitting. Using on-base percentage and statistics from NCAA Division I college softball, we analyze whether dominant hand affects a player's ability to get on base.

How Does Temperature Affect Hitting and Pitching Performance in MLB?

Kyle Dell, John Horner, and Nick Thompson, Central College

Abstract: This poster will present research on the effect that temperature can have on offensive and pitching performance for the 2018 Minnesota Twins. It will also present an in-depth look at Trevor Bauer's individual pitching performance in a high and low temperature game.

Value of the Serve in Tennis

Tanner Finken and Lauren Kriegel, Central College

Abstract: Tennis players are always told that serves win games. In this poster, we used 2017 ATP match data to look at the correlation between a player's 1st and 2nd serve percentage and their win percentage.

Ronaldo vs. Messi: Who's Performed Better Since 2009?

Logan Huinker and Caleb Schlatter, Central College

Abstract: In this poster, we will be discussing the hotly contested debate of who is the better soccer player: Cristiano Ronaldo or Lionel Messi? The development of a rating system and an analysis of the data we gathered led us to an interesting conclusion.

College Basketball Analysis

Chenjie Li, Illinois Institute of Technology

Abstract: In this poster, we show the project we have been working on for our Illinois Tech men's basketball team since early this year based on our initial phase. The initial phase started in 2016 with two former graduate students. They used web scraping to the play-by-play, and calculated statistics such as plus-minus, true shooting percentage, offensive-defensive rating and built a turnover-based simulation from which our team benefited a lot and made history in making our team's first NCAA Division I National Basketball Championship!

Unlike NBA and NCAA tournaments, we did not have nicely formatted data at hand to manipulate, so we built up a database on our own. We went to websites which have some stats of games, got the raw data, used our program to "clean" the data, and then put them in our system so that we could query and manipulate the data. Based on our data, we have been trying to find the strength and weakness of each team and players to help the coach and players to realize which aspects they need to focus on; by looking at the play-by-play data, we found the performance of the different combination of lineups, and based on that, we also tried to find the synergy between 2 or 3 players, which helped our coaching staff to make decisions based on different situations.

Using Statistics to Simulate a Baseball Game Between Central College Baseball Teams from 2013 and 2015

Tristan Murphy and Cheyanne Scholl, Central College

Abstract: This poster will present a simulation of a baseball game between two different years of Central College baseball teams. To achieve this, we used probabilistic methods to assign values to different possible outcomes of an at-bat. The goal of the project was to simulate a baseball game to determine the better team.

Evaluating Pro Football Focus Player Grades

Matthew Voss, Iowa State University Sports Analytics Club

Abstract: Pro Football Focus uses a variety of position-specific formulas to evaluate and grade professional and college football players on a 0-100 scale each week and season. This presentation evaluates these player grades for NFL players, comparing how ratings in different position groups are distributed, as well as how the ratings correlate with team records, and the relationship between players' ratings and their draft positions.