

Case 2: UCSAS 2024 USOPC Data Challenge

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Introduction

The sport of artistic gymnastics has long been a source of national pride and international recognition for the United States. The breathtaking performances, grace, and unparalleled athleticism displayed by American gymnasts have not only brought numerous Olympic medals home but also served as an inspiration for generations of aspiring athletes. As we approach the next Olympic Games in Paris 2024, the need for innovation and precision in athlete selection has never been more crucial. Our goal is to predict the best five-member lineups for both the USA Men's and Women's artistic gymnastics teams, optimizing for total medal count. Other goals include exploring optimizing lineups for weighted medal counts or for team medals vs individual medals.

Historically, this selection process has relied heavily on the expertise and intuition of coaches and selection committees. However, in the era of data-driven decision-making, the role of predictive analytics and machine learning in the world of sports has gained unprecedented significance. The study will be of upmost significance for several reasons including: fairness and transparency, insight into lineup strategies in gymnastics, and perhaps most importantly, helping the USA maximize their medal count potential for the 2024 Paris Olympics.

While some prior studies have explored the use of data analytics in sports, they often fall short in the context of artistic gymnastics. Many of these studies are limited in scope and do not consider the nuanced aspects of gymnastics performance. Also, previous judging in artistic gymnastics with some apparatus being more difficult to judge. We will explore how to mathematically account for this in our analysis.

This study aims to overcome these limitations by collecting and analyzing extensive, athlete-specific data and incorporating domain expertise from the gymnastics community. It will offer a comprehensive and customized approach that addresses the unique challenges and opportunities presented by artistic gymnastics and provides the USA Olympics Committee with a robust tool to make informed and data-driven decisions.

Methodology

Results

Discussion

Appendix

Works Cited

Gunston, Jo. "Judging the Judges – How Statistical Analysis Evaluates Fairness And . . ." Olympics.Com, 19 Oct. 2023, olympics.com/en/news/how-statistical-analysis-evaluates-fairness-accuracy-gymnastics. Accessed 06 Nov. 2023.