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Master Thesis

Data Analytics in Football: Pitch Control and Beyond

Author's complete name

1st Tutor complete name

2nd Tutor complete name

Place and date

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The digital revolution is currently one of the most significant challenges of our time, altering numerous aspects of society. Football, in particular, has also been influenced by this transformation. Technological advancements and digitalization have resulted in a swift upsurge in the number of measuring devices, data collection and volumes of data. The leading data companies worldwide, including IBM, Intel, SAP and Microsoft, are vying for superior data analytics tools and leveraging sports as an example domain to showcase their products and brand power [Footballytics, 2021].

The practice of data analytics in football has a long history, dating back to the post-World War II era, when data collection and analysis was undertaken manually using pencil and paper [Footballytics, 2021]. It wasn't until Moneyball was published in 2003 that significant progress began to emerge: The book, "The Art of Winning an Unfair Game" introduced sports analytics to a broader audience. It illustrated the use of data analytics in identifying undervalued players and constructing a successful team. Since then, data analytics has become an integral component of sport, football inclusive [Footballytics, 2021].

One of the best examples of data analytics being applied to sports is basketball. Teams use data to analyze player performance, identify strengths and weaknesses, and develop strategies to win games [Sarlis and Tjortjis, 2020]. They use in-memory analytics, visualization, the cloud, mobility, camera footage, and sensors to transform their game. This performance analyses are of vital importance to a team, aiming to reduce expenditure, enhance team worth and refine processes across all levels and segments of operations. The German Football Association (DFB) and the National Basketball Association (NBA) are two unique cases of digital transformation from the sports world. Successful teams turn player performance data into action and gain a competitive advantage.

Over the last years, football analytics has gained significant popularity, aiming to delve deeper into the game by utilizing advanced data analysis techniques to optimize team and player performance. This chapter examines the various areas of football where data can be used for analysis, alongside the commonly found data types within this industry.

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