AI-Assisted Player Selection: A Conceptual Framework for Optimizing Matchday Decisions Through Performance Analysis

Fatima k. Albusaeedi
Abu Dhabi School of Management (ADSM)
Abu Dhabi, UAE
Adsm-215340@adsm.ac.ae

https://doi.org/10.63962/JYXG1586

Abstract—The professional football business is becoming more data-driven, but the choice regarding matchday selection of players can be fraught with hunch and scant statistical data. This paper introduces an Artificial Intelligence (AI)-oriented model of improving player selection in the UAE Pro League. The framework combines performance analytics, machine learning, contextual data, and explainable AI to help make transparent and objective decisions. In a design-based, qualitative study, we show that AI has the potential to enhance human expertise, resulting in consistency, equity, and tactical expertise. There are also ethical and practical considerations of AI in sports.

Keywords—artificial intelligence, data analysis, machine learning, sport analytics

I. Introduction

One of the most important aspects in professional football is the process of player selection, which has a direct influence on performance, risk of injury, team morale, and future growth. Conventionally, subjective coach evaluation and simple statistics had been the staples of this process. The adoption of artificial intelligence (AI) into everyday matchday selection is not a standard practice, even in the face of a rapid technology change, despite being used to create a wealth of performance data [1], wearable sensors and optical tracking appear [1], and wearable sensors can monitor verbal cues in local and open-air matches [1]. Contemporary football sports produce enormous amounts of data on player performance, such as technical, physical, tactical, and physiological data, as well as contextual information such as opponent style and fixture congestion [1]. This data can give us a wide picture of match preparedness, but its amalgamation into the decision-making process is hard [4]. Most clubs, the UAE Pro League included, fail to transform data into a systematic selection policy, which could introduce inefficiencies, inconsistency, and diminished accountability [3].

This research was designed to create a theoretical AI-based framework in order to assist professionals in football (PFL) in choosing who to select in the matchday squad, in this case, the UAE Pro League. This study used a qualitative, design-based methodology, which includes a systematic literature review, consultations with experts, including coaches and analysts, and a developmental framework [2]. The research answers two research questions:

How can an AI-based system enhance the uniformity of player selection? and what performance metrics and contextual variables are most suited?

The main value of this work lies in an innovative, context-specific framework that closes the divide between high-technology sports analytics and the real context of decision-making within a football club. It promotes research through its explicit approach to merging the concepts of Explainable AI (XAI) and multi-criteria decision analysis (MCDA) to the field of sports selection and provides a framework of ethical and open human-AI cooperation. It is a flexible, systematic framework available to practitioners, enabling clubs to audit and refine their selection procedures to use data as an aid and not as a replacement for expert coaching action.

II. Literature Review Overview

The development of the AI-driven selection system would require the integration of the knowledge of a range of related fields: the current level of AI in the field of sports analytics, the complexity of football performance analysis, and the principles of efficient decision-support systems design. A critical review of the latest literature indicates significant developments and gaps.

The use of AI and ML in football has grown in multiple dimensions. In their systematic review, Rico-Gonzalez et al. (2023) emphasize the increased application of ensemble models and deep learning in tasks, such as predicting performance outcomes and estimating injury risk. They mention that such techniques are very effective in capturing non-linear relationships in large-scale sports data. Their review, however, also shows a strong bias in the literature towards post-hoc analysis and is based on elite European contexts, with a lack of research aimed at prescriptive, decision-oriented solutions to league systems at other stages of development.

In addition to this, Enaganti and Pappas (2025) show that ML can optimize sports problems, such as NFL

draft options, through the use of Random Forest classifiers and simulation. Their article confirms the application of ML to prioritize a variety of targets (e.g., player talent vs. team need), which can be directly applied to matchday selection. The permanence of a draft, however, is a stark contrast to the dynamic, weekly rhythm of team formation, which has to consider the variable conditions of players and immediate tactical conditions.

It is as important to know what to analyze as it is to know how. The seminal research by Carling et al. (2007) confirms that player performance is multidimensional by nature, and it involves technical, physical, tactical, and psychological elements. Their assertion that no evaluation can be complete without contextualization is very strong, since the same statistical result can be interpreted in different ways based on the match status, quality of opponent, and location of pitch. This highlights a shortcoming of most early AI sports models, which assumed that data existed in isolation. In the meantime,

Zhang and Li (2021) provide a literature review on how AI is broadly used in sports and the prospects of improving fairness and accuracy. Nevertheless, they also warn of the imperfection of the technology, such as integration of hardware-software and the possibility of unjust results in case systems are not properly handled, which leads to a necessary debate on the ethics.

The moral aspect of AI in sport has already become an urgent academic issue. A systematic scoping review conducted by Kim et al. (2025) presents the primary ethical issues into four categories, including fairness and bias, transparency and explainability, privacy and data ethics, and accountability. Their work finds that the most discussed concerns are privacy, and the least developed are accountability mechanisms. This is supported by Ghorbani Asiabar et al. (2025), who state that in sensitive fields such as injury prediction, explainability is absent without strong data protection mechanisms since this aspect will keep athletes trusting. The collective finding of these reviews is that there is a gaping disconnect: most ethical practices are highly abstract, with limited articles offering a specific and practical framework of ways to act upon these issues in an operational unit, such as a selection tool.

Lastly, the emphasis on decision-support system literature focuses on the philosophy of augmentation rather than automation. Good systems are systems that work together with human experts, give interpretable advice, simulate scenarios, and allow sensitivity analysis. This is in line with the argument of Ks (2020) in an exploratory study on the use of AI in football around the world, when the researcher notes that the highest value of the technology is improving human decisions and competitiveness in teams, rather than eliminating the human factor. The problem is then to design a system not as a black box but as a glass box, making its reasoning transparent. This necessity introduces the concept of Explainable AI (XAI) to prominence as the mandatory feature of any tool that should be used in high-stakes and real-world applications in sports.

A. Maintaining the Integrity of the Specifications

The template is used to format your paper and style the text. All margins, column widths, line spaces, and text fonts are prescribed; please do not alter them. You may note peculiarities. For example, the head margin in this template measures proportionately more than is customary. This measurement and others are deliberate, using specifications that anticipate your paper as one part of the entire proceedings, and not as an independent document. Please do not revise any of the current designations.

III. The AI-enabled Framework

The proposed AI-Assisted Matchday Optimization Framework is a multi-layered decision-support system designed to structure the architecture, as visualized in the graph below, and consists of four core components:

Data Aggregation Layer**:** This base layer absorbs and standardizes different streams of data. It combines both structured performance variables (e.g., physical load, tactical positioning, technical actions) and unstructured context data (e.g., opponent tactics, weather conditions, travel fatigue). The layer generates a comprehensive, integrated portrait of the match preparedness of every player.

AI Analytics Engine**:** This layer is at the centre of the core and utilizes machine learning models, such as ensemble approaches and predictive analytics, to process the aggregated data. It delivers information like predicted performance impact to a particular opponent, individualised risk of injury briefs, and tactical appropriateness ratings. The engine is what converts raw data into actionable evidence-based indicators**.**

Recommendation and Optimization Layer: This layer involves multi-criteria decision analysis (MCDA) to trade off conflicting objectives, e.g., the maximum expected performance versus the minimum injury risk or the maximum fatigue in players. It produces ranked player selection suggestions in various tactical formations, enabling coaches to provide constraints and preferences depending on their strategy.

Explanation Interface: This essential layer relies on explainable artificial intelligence (XAI) to expose the reasoning underlying the AI. It also presents concise, user-friendly visual representations of why a gamer is suggested or red-flagged. The interface is collaborative, allowing coaches to override, modify, or inquire about recommendations, so that the system enhances but never replaces human expertise.

IV. Results

The results indicate that the proposed AI-based player selection framework introduces substantial, promising improvements to the traditional intuition-based player selection framework. According to the professional evaluation, a reasonable amount of consistency and decreased subjectivity in the matchday decision-making can be achieved by incorporating the performance information,

situational conditions, and predictive analytics [1]. This model combines technical, physical indicators, and tactics in order to facilitate a broader analysis of player preparedness, meeting the existing means of inspection of football performance.

The participants underlined that the optimal value of the framework would be viewed as a decision-support tool instead of a decision-maker on its own. The coaches considered AI-generated suggestions as auxiliary information, and they did not threaten professional judgment and could not be substituted [2]. Such a mutual human-artificial interaction is consistent with the best practice of committed analytics, where the contribution of human authors is imperative in contextualizing information-based production.

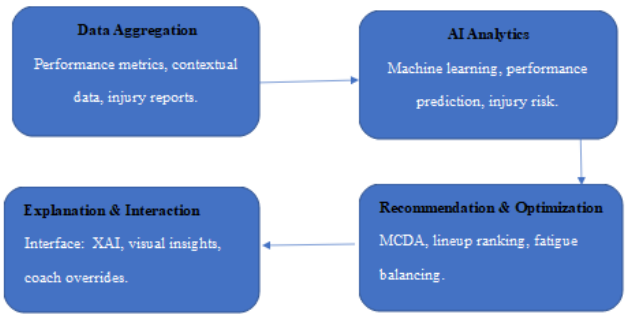
In the discussion, the obstacles appearing in real life are also demonstrated. The quality of the data, the integration, and the analytical literacy of the staff were also reported to be vital in a successful implementation. Such beneficial results of AI-assisted selection can be reduced without the internal preparations and the proper training [5]. The relevance of explicable AI mechanisms is also preconditioned by such ethical concerns as transparency and accountability, because it is necessary to make the process of selection explainable and conform to professional responsibility.

V. CONCLUSIONS

The current paper has provided an in-depth explanation of a Master's graduation project, the aim of which is to transfer AI-based player selection to professional football. The study illustrates how AI may be applied to help find solutions and facilitate effective, transparent, and consistent decision-making without necessarily following the human experience through the creation of the AI-Assisted Matchday Optimization framework. As football keeps evolving, making it more difficult and more competition-based, the prospect of AI appearing in operational decision-making is an attractive strategic move. The theoretical frameworks, like AIMO, can be used to indicate how AI can be used ethically and provide high-performance printouts, corporate responsibility, and competitiveness. Future research may add to and further this paper by conducting empirical evaluation and experimentation across various leagues to establish a corpus of evidence on AI-based decisions in sports.

TABLE I. SUMMARY OF KEY LITERATURE

Paper Source	**Methods used**	**Data Used**	**Key Results/Contributions**	**Critical Gap / Relevance to This Study**
Rico-González et al. (2023)	Systematic Review	Literature on ML in football	ML models (ensemble, DL) show high predictive power for performance & injury; highlights need for context-aware models.	Focus is largely on predictive analytics in elite leagues; less on prescriptive decision-support for selection.
Carling et al. (2007)	Handbook / Conceptual Analysis	Match analysis data	Establishes the multidimensional (technical, physical, tactical) and context-dependent nature of football performance.	Provides the foundational what to measure, but not the how to integrate it algorithmically into a selection process.
Enaganti & Pappas (2025)	Machine Learning (Random Forest, simulation)	NFL draft player attributes, team needs	Demonstrates ML can optimize selection (draft) by balancing multiple criteria, improving over traditional methods.	Validates the MCDA approach but in a non-dynamic context; confirms the utility of ML for multi-objective sports decisions.
Zhang & Li (2021)	Conceptual / Application Analysis	General AI sports applications	Surveys AI advantages in sports but notes technical imperfections, fairness concerns, and integration challenges.	Highlights the practical and ethical hurdles that must be addressed for successful implementation, beyond just technical feasibility.
Ghorbani Asiabar et al. (2025)	Systematic Review, Qualitative Analysis	AI injury prediction studies	Identifies ethical risks (bias, privacy) and advocates for XAI and strict data protocols in sports medicine.	Directly informs the ethical architecture and transparency requirements of the proposed framework.
Kim et al. (2025)	Systematic Scoping Review	25 studies on AI ethics in sport	Categorizes core ethical issues: fairness/bias, transparency, privacy, accountability. Calls for tailored frameworks.	Provides a comprehensive ethical checklist that must be integrated into the system design from the outset.
Ks (2020)	Exploratory Study	AI applications in football	Finds AI beneficial for competitiveness but underutilized; notes technological immaturity and unexplored limitations.	Supports the need for practical, context-aware frameworks that bridge the adoption gap in developing football markets.



The AI-enabled Matchday Optimization FrameworkF

REFERENCES

[1] Carling, C., Handbook of Soccer Match Analysis: A Systematic Approach to Improving Performance. Verlag: Routledge, 2007.

[2] Saunders, M. N. K., Lewis, P., and Thornhill, A., "Research Methods for Business Students. 8th Edition, Pearson, New York," www.scirp.org, 2019.

[3] Memmert, D., & Rein, R., "Match analysis, Big Data and tactics: current trends in elite soccer," German Journal of Exercise and Sport Research, vol. 48, pp. 65–67, 2018.

[4] Rico-González, M., Pino-Ortega, J., Méndez, A., Clemente, F., and Baca, A., "Machine learning application in soccer: A systematic review," Biology of Sport, vol. 40, no. 1, 2023.

[5] Enaganti, A., & Pappas, G., "Optimizing NFL draft selections with machine learning classification," AI, vol. 6, no. 9, p. 221, 2025.

[6] Zhang, J., & Li, D., "The application of artificial intelligence technology in sports competition," Journal of Physics: Conference Series, vol. 1992, no. 4, p. 042006, 2021.

[7] Ghorbani Asiabar, M., Ghorbani Asiabar, M., & Ghorbani Asiabar, A., "Ethical implications of artificial intelligence in predicting sports injuries and protecting athlete privacy," Preprints, 2025.

[8] Kim, J., Kim, J., Kang, H., & Youn, B., "Ethical implications of artificial intelligence in sport: A systematic scoping review," Journal of Sport and Health Science, vol. 14, p. 101047, 2025.

[9] Ks, M., "Applications of Artificial Intelligence in the Game of Football: The Global Perspective," Journal of Arts, Science & Commerce, vol. 11, no. 2, 2020.

[10] Bunker, R. P., & Thabtah, F., "A machine learning framework for sport result prediction," Applied Computing and Informatics, vol. 15, no. 1, pp. 27-33, 2019