ID 102

Enhancing Personalization of Fitness Tracking Systems with The Help of Data Analytics

LIK De Silva[1#], GAD Ganepola[2], and BVKI Vidanage[3]

[1,2]Department of Information Technology, Faculty of Computing, General Sir John Kotelawala Defence University
[3]Department of Computer Science, Faculty of Computing, General Sir John Kotelawala Defence University

[#]39-bis-0010@kdu.ac.lk

Abstract

This review explores the application of data analytics to enhance personalization in fitness tracking systems, a growing need within the expanding domain of wearable and mobile health technology. Although fitness trackers have made significant strides in capturing data on daily activity and health metrics, most remain limited to basic descriptive insights, which restrict their potential for adaptive user engagement. By categorizing existing research through the PRISMA approach, this paper investigates how advanced analytics—descriptive, predictive, and prescriptive can contribute to personalized fitness guidance. While descriptive analytics offers foundational insights into daily metrics, predictive analytics enables anticipatory adjustments in fitness regimens, and prescriptive analytics provides actionable recommendations. The study identifies several promising opportunities and highlights challenges, such as privacy, algorithmic biases, and the need for robust real-time data processing. The findings of the study suggest that integrating predictive and prescriptive models could advance the field by delivering a deeper, more tailored user experience in fitness tracking, ultimately supporting sustained fitness improvement and adherence.

Keywords: *Fitness tracking systems, Personalization, Descriptive analytics, Predictive analytics, Prescriptive analytics*