

Mapping Data Mining Technique and Gamification Approach for Studying PostStroke Rehabilitation Training: A systematic literature review

ABSTRACT

Data mining has been widely used in healthcare to provide treatment and care recommendations based on a collective prediction of individual conditions. For rehabilitation, various data mining techniques have been applied to predict and recommend suitable recovery paths and training. Also, the gamification concept was applied to rehabilitation training to motivate the patient to follow the training until the end. Researchers have conducted considerable research to investigate the validity and effectiveness of those techniques on massive patient data on specific conditions and treatment contexts. However, it is still unclear how to effectively offer customized rehabilitation training to stroke patients using gamification and data mining approaches. Thus, to understand how researchers studied them, we examined 34 peer-reviewed articles published in computer science and medical proceedings and journals between 2012 and 2022. We systematically reviewed the data mining and gamification techniques researchers had applied for post-stroke rehabilitation and related prediction models resulting from the data mining processes. As a result of the analyses, three significant contributions are identified. This article 1) identifies trends in data mining and gamification used in personalized post-stroke rehabilitation training; 2) maps trends in the study of data mining and gamification in post-stroke rehabilitation; and 3) identifies underexplored studies for future work. There is a definite need to continue developing and researching intervention strategies related to rehabilitation to address recovery problems by providing accuracy and protection of healthcare, as well as incorporating components that promote patients' motivation and engagement.