A Hybrid Recommendation System Considering Visual-Textual Information Using Machine Learning Techniques

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02-284171-001

A thesis submitted in fulfillment of the requirements for the award of the degree of Doctor of Philosophy (Computer Science)

Department of Computer Science

BAHRIA UNIVERSITY, KARACHI.

August 2024

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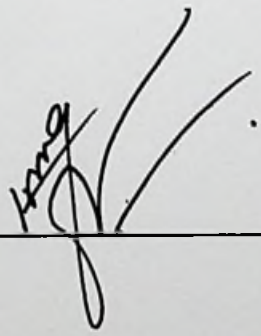
Principal Supervisor's Signature: 

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ACKNOWLEDGEMENT

I want to thank almighty ALLAH SAW for giving me the strength to pursue and complete the PhD journey. It is a great pleasure to mention all the people in my life who supported me to complete this thesis.

First and foremost, I would like to thank my supervisor, Dr. Humera Farooq, for her marvelous efforts. I am thankful to my father for supporting me emotionally, socially, and financially during my PhD. Without their constant support, this work probably would never have been done. I want to thank my siblings for their support and encouragement. Indeed, a strong support system can make this challenging task achievable.

My special thanks go to my course mates and colleagues, Hajra, Aneeqa, Tooba, and Mona, for helping me during the studies.

Additionally, I would like to express my deepest appreciation to my husband for his unwavering support and encouragement throughout this journey. His patience and understanding have been invaluable. I am also grateful to my daughter, whose presence has been a constant source of joy and motivation.

ABSTRACT

The increased variety of content in e-commerce and entertainment services creates a new research gap in the field of recommendation systems. Traditional recommendation systems are not capable of dealing with a variety of data because the nature of the data is unstructured and heterogeneous. In the past decade, due to the exponential growth of multimedia content in the video game industry, researchers investigated the importance of personalized video game recommendation techniques. It has been noticed that the previous methods have not investigated the importance of visual and textual semantic content for video game recommendations. The researchers have contributed to the field of multimedia item recommendations using low-level and aesthetic visual features. However, they suffer from less feature utilization and significant performance decay because they usually only consider traditional features such as product information and user information. One potential approach to alleviating such issues is to utilize item semantic information along with hybrid filtering techniques of recommendation systems. This study proposed a novel method named deep hybrid semantic multimedia recommendation systems (MMRSs) to deal with textual and visual semantic features for multimedia recommendation systems. The primary contribution of the presented work is to show improvement in the accuracy of the multimedia recommendations system by using both textual and visual semantic content. In the presented thesis, a semantic-based video game recommendation system utilizing deep learning methods for visual and textual content learning and user profile learning has been proposed. The proposed approach employs hybrid techniques to expand users' profiles. The user profile expansion is based on the semantic content of games' visual and textual modalities. We have used two datasets of video games which are Goggle-Play and Amazon for evaluation purposes. The evaluation results have shown that the proposed approach accuracy have been improved by up to 94% for Google-Play dataset and for the Amazon datasets we have received 78% as compared to the other state-of-the-art methods.

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