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Thème

Reinforcement learning in recommendation systems

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Abstract:

Artificial Intelligence (AI) has witnessed remarkable advancements in recent years, catalyzing transformative changes across various domains. Within this landscape, recommendation systems have emerged as a cornerstone of AI, revolutionizing the way machines understand and predict user preferences.

This report introduces a novel approach to modeling recommendation systems using Deep Reinforcement Learning (DRL). Traditional recommendation systems, such as collaborative filtering and content-based filtering, face limitations like cold-start problems, sparse user-item interactions, and a lack of adaptability to evolving user preferences. To address these challenges, this study leverages foundational principles of DRL to develop an innovative User-Movie Embedding model, integrated into a reinforcement learning setup using an Actor-Critic approach.

The report details the offline environment, agent architecture, and training process, showcasing how the Actor-Critic algorithm, combined with the User-Movie Embedding model, can significantly enhance recommendation performance. Through comprehensive experiments and analysis, the study demonstrates the advantages of this approach in terms of adaptability and long-term user satisfaction.