

Literature Review Proposal on Reinforcement Learning in Recommender Systems

PENG Qiheng
Student ID 225040065

November 16, 2025

1 Project Title

Literature Review on Reinforcement Learning-based Recommender Systems:
From Fundamentals to Advanced Exploration

2 Background and Motivation

Traditional recommending methods like collaborative filtering and deep learning focus on immediate feedback but often ignore sequential interactions and long-term user satisfaction. Reinforcement learning addresses this by modeling recommendation as a sequential decision problem to optimize cumulative long-term rewards.

3 Project Objectives

This project will:

- (1) Conduct a comprehensive review of RL4RS literature, covering theories, algorithm classifications, framework components, and emerging topics.
- (2) Analyze the performance of RL algorithms in recommendation contexts, including deep exploration strategies.
- (3) Summarize industrial RL4RS frameworks.
- (4) Propose future research directions, such as exploration efficiency, multi-objective optimization, and explainability.