

ABSTRACT

The master's thesis contains 104 pages, 8 figures, 24 tables, and a list of 21 references.

The object of research is the learning path recommendation system.

The subject of research is the construction of learning paths, focusing on the application of knowledge graphs in the construction of learning paths.

The purpose of the master's thesis is to develop a learning path recommendation system based on knowledge graph to solve several key problems in current online education and learning: Organization and recommendation of knowledge points; Dynamic adjustment of paths; Real-time response to learning feedback.

Tasks of a master's thesis include:

1. Analyze existing research on learning path recommendation systems and knowledge graphs.
2. Develop methods for constructing a dynamic knowledge graph based on learner data.
3. Design and implement personalized recommendation algorithms (e.g., PageRank, Dijkstra).
4. Develop a system architecture and implement the recommendation engine and user interface.
5. Conduct experiments to evaluate algorithm effectiveness and analyze the results for system improvement.

The research outcomes build a learning path recommendation model based on knowledge graphs, uncovering the relationships between knowledge points and the algorithm strategies for optimizing learning paths. These outcomes offer theoretical support and practical guidance for enhancing the quality of personalized recommendations.

The obtained results provide valuable insights for educational institutions and edtech companies to refine learning path designs and improve learning outcomes.

Additionally, the dynamic adjustment mechanism proposed in this study

effectively integrates user feedback and data optimization, offering an innovative direction for future personalized recommendation system designs.

Keywords: knowledge graph, personalized learning path, dynamic path adjustment, PageRank algorithm, Dijkstra algorithm.