

**INTELLIGENT RECOMMENDATION OF
CONTENT FOR ENHANCING USER
EXPERIENCE IN E-LEARNING SYSTEMS**

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Dissertation submitted in partial fulfillment of the requirements for the
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DECLARATION

I declare that this is my own work and this Dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or Institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text. I retain the right to use this content in whole or part in future works (such as articles or books).

Signature:

Date: 22/06/2024

The above candidate has carried out research for the MSc in Computer Science Dissertation under my supervision. I confirm that the declaration made above by the student is true and correct.

Name of Supervisor: Prof. Shantha Fernando

Signature of the Supervisor:

Date: 27/06/2024

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ABSTRACT

The rise of E-learning systems has created a requirement to monitor and evaluate student performance while delivering interactive content, ultimately improving student learning. This research project focuses on studying the use of various data mining algorithms to extract user interactions from E-learning systems and identify patterns for recommending personalized content. The study will explore manipulating content through translations and formatting across different media to maintain high student interest. Additionally, it highlights the benefits of personalized learning, increased satisfaction, and early intervention in extracting student behavior. Moreover, it emphasizes best practices for formatting E-learning management system content such as using headings, shorter paragraphs, images for illustration, and maintaining a consistent style throughout. Ultimately this research concludes a model that helps to create an intelligent E-learning system, that leverages data mining algorithms and machine learning techniques to generate personalized content recommendations based on user performance ratings to improve engagement and learning outcomes. In the initial training and testing of the model, it was given around 73.99% accuracy in training and 63.16% accuracy in testing. After retraining the model, it was given an 85.58% accuracy in training and 78.90% accuracy in testing. Finally, the content will be arranged using the SCORM standard. Then the machine learning model is used to deal with intelligent E-learning systems, which enables the system to identify and analyze student behaviors in order to recommend content accordingly.

Keywords: User Behavior Interaction, Content Recommendation, Aggregate response, SCORM

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LIST OF ABBREVIATIONS

Abbreviation	Description
ADL	Advanced Distributed Learning
API	Application Programming Interface
JSON	JavaScript Object Notation
KNN	K-Nearest Neighbor
LMS	Learning Management Systems
LTI	Learning Tools Interoperability
MOOCs	Massive Open Online Courses
SCORM	Sharable Content Object Reference Model
WBT	Web Based Training

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