SCHOOL OF COMPUTING
Faculty of Engineering

Project Proposal Form MCST1043

Sem: 2 Session: 2024/25

SECTION A: Project Information.

Program Name:	**Masters of Science (Data Science)**
Subject Name:	**Project 1 (MCST1043)**
Student Name:	Wangzhengqiu
Metric Number:	MCS241010
Student Email & Phone:	Wangzhengqiu@graduate.utm.my
	60129227598
Project Title:	Enhancing E-commerce recommendations with sentiment analysis using MLA-EDTCNet and collaborative filtering
Supervisor 1:	
Supervisor 2 / Industry Advisor(if any):	

SECTION B: Project Proposal

Introduction:

Traditional collaborative filtering often struggles with data sparsity and ignores user sentiment. This study proposes a hybrid model combining CF with sentiment analysis using MLA-EDTCNet to better capture user preferences from reviews and improve e-commerce recommendations.

Problem Background:

E-commerce platforms generate massive amounts of user data, including ratings and textual reviews. While collaborative filtering (CF) uses rating data for recommendations, it often fails to capture the emotional and contextual information in user opinions. This leads to less accurate or generic suggestions, especially in sparse or cold-start scenarios.

User reviews contain valuable sentiment cues that reflect true preferences. However, many recommender systems do not effectively utilize this data. There is a need for models that can extract and incorporate sentiment information to enhance recommendation quality.

Combining CF with deep sentiment analysis models like MLA-EDTCNet offers a promising solution to this challenge.

Problem Statement:

Traditional collaborative filtering methods rely solely on user-item interactions and often struggle with sparsity and lack of contextual understanding. They ignore the rich sentiment information present in user reviews, which can reveal deeper preferences and opinions.

Current recommendation systems lack effective integration of textual sentiment into their models. This gap limits their ability to provide truly personalized suggestions. There is a need for a hybrid approach that combines collaborative filtering with advanced sentiment analysis techniques to improve recommendation accuracy and relevance.

Aim of the Project:

The aim of this project is to enhance the accuracy and personalization of e-commerce recommendations by integrating sentiment analysis of user reviews using MLA-EDTCNet with traditional collaborative filtering techniques.

Objectives of the Project:

1. To extract sentiment features from user reviews using MLA-EDTCNet.
2. To integrate sentiment information with collaborative filtering models for personalized recommendations.
3. To evaluate the effectiveness of the hybrid approach in improving recommendation accuracy and user satisfaction.
4. To compare the performance of the proposed model with traditional recommendation methods.

Scopes of the Project:

1. The project focuses on e-commerce platforms with user reviews and ratings data.
2. It will integrate sentiment analysis using MLA-EDTCNet into collaborative filtering models.
3. The scope is limited to textual reviews in English (or another language if data allows).
4. The project evaluates the performance of the hybrid recommendation system in terms of accuracy and personalization.
5. It does not cover real-time recommendation updates or cross-platform integration.

Expected Contribution of the Project:

1. Enhanced Recommendation Accuracy: The hybrid model combining sentiment analysis with collaborative filtering is expected to improve the relevance and precision of recommendations.
2. Novel Integration: By integrating MLA-EDTCNet with CF, this project introduces a novel approach to e-commerce recommender systems that leverages both structured and unstructured data.
3. Improved Personalization: The use of sentiment features will enable more personalized recommendations, reflecting users' true preferences beyond just ratings.
4. Benchmarking: The project provides a comparison between the proposed model and traditional recommendation methods, contributing to the body of knowledge on hybrid recommender systems.

Project Requirements:

Software:

Hardware:

Technology/Technique/
Methodology/Algorithm:

Type of Project (Focusing on Data Science):

[   ]   Data Preparation and Modeling

[√]   Data Analysis and Visualization

[   ]   Business Intelligence and Analytics

[   ]   Machine Learning and Prediction

[   ]   Data Science Application in Business Domain

Status of Project:

[√]   New

[   ]   Continued

If continued, what is the previous title? ....

SECTION C: Declaration

I declare that this project is proposed by:

[√]   Myself ....

[   ]   Supervisor/Industry Advisor (......................................
)

Student
Name: ....

....
Signature   **Date**

SECTION D: Supervisor Acknowledgement

The Supervisor(s) shall complete this section.

I/We agree to become the supervisor(s) for this student under aforesaid proposed title.

Name of Supervisor 1:   ....

....
Signature   **Date**

Name of Supervisor 2 (if
any):   ....

....
Signature   **Date**

SECTION E: Evaluation Panel Approval

The Evaluator(s) shall complete this section.

Result:

[   ] FULL APPROVAL   [   ] CONDITIONAL APPROVAL (Major)*

[   ] CONDITIONAL APPROVAL (Minor)   [   ] FAIL*

* Student has to submit new proposal form considering the evaluators' comments.

Comments:

Name of Evaluator 1:

Signature   Date

Name of Evaluator 2:

Signature   Date