CONTEXT-AWARE RECOMMENDATION SYSTEM IN E-COMMERCE USING A DOMAIN SPECIFIC CHATBOT

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A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCES (M.SC) DEGREE IN COMPUTER SCIENCE, DEPARTMENT OF COMPUTER AND INFORMATION SCIENCES, COLLEGE OF SCIENCE AND TECHNOLOGY, COVENANT UNIVERSITY, OTA.

AUGUST, 2022

ACCEPTANCE

This is to attest that this dissertation is accepted in partial fulfilment of the requirements for the award of the degree of Master of Sciences in Computer Science in the Department of Computer and Information Sciences, College of Science and Technology, Covenant University, Ota, Nigeria.

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Prof. Akan B. Williams
(Dean, School of Postgraduate Studies) **Signature and Date**

DECLARATION

I hereby declare that Martins, Isaac Ikenna with matriculation number 20PCG02181, carried out this research entitled “Context-Aware Recommendation System In E-Commerce, Using A Domain-Specific Chatbot”. It was carried out under the supervision of Dr. Ibukun Afolabi. Concepts of this research project are results of the research carried out by Martins, Isaac Ikenna and ideas of other researchers have been fully recognized.

MARTINS, ISAAC IKENNA

Signature and Date

CERTIFICATION

We certify that this dissertation titled "**CONTEXT-AWARE RECOMMENDATION SYSTEM IN E-COMMERCE USING A DOMAIN SPECIFIC CHATBOT**" is an original research carried out by **MARTINS, ISAAC IKENNA (20PCG02181**) in the Department of Computer and Information Sciences, College of Science and Technology, Covenant University, Ota, Ogun State, Nigeria under the supervision of Dr. Ibukun Afolabi. We have examined and found this work acceptable as part of the requirements for the award of Master of Science (M.Sc.) in Computer Science.

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DEDICATION

I dedicate this project to God Almighty for His sufficient grace, wisdom and knowledge given to me throughout my Master's Degree Programme.

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ARM	Association Rule Mining
CBF	Content-Based Filtering
CF	Collaborative Filtering
CSV	Comma-Separated Values
GUI	Graphic User Interface
JSON	Javascript Object Notation
LSTM	Long Short Term Memory
MAE	Mean Absolute Error
NLTK	Natural Language Tool Kit
RMSE	Root Mean Square Error
SVD	Singular Value Decomposition
TF-IDF	Term Frequencey – Inverse Document Frequency

ABSTRACT

Recommendation systems are used in almost every e-commerce platform. With the amount of information increasing every day with almost unlimited products available, users tend to find it difficult to make a decision on these products.

This research aims to develop a context-aware recommendation system that communicates to the user through a domain specific chatbot. The chatbot converses in three languages, English, Yoruba and Igbo. In this research, language is brought in as context to address existing gaps in literature related to e-commerce recommendation system.

The developed system contains three main components they include, collaborative filtering, content based recommendation system and a chatbot. The collaborative and content-based recommendation systems uses user ratings and genre as the input to the cosine similarity and tf-idf functions. The chatbot was trained using a Keras sequential API, which created a deep neural network, and an interface was designed using python library tkinter and customtkinter. The chatbot uses a json file that contains the intents, and the recommendation systems use a modified 100k movielens dataset that contains Hollywood and Nollywood movies.

The developed system is able to contribute to existing body of knowledge by generating an indigenous language corpus that can be used and modified by future researchs related to conversational system particularly in ecommerce recommendation. This research, will enable ecommerce platforms improve customer satisfaction, which would lead to improved revenue. In the aspect of trust, users will be able to have conversation with the system through the chatbot, which can increase trust between the users and the platform.

Keywords: Recommendation systems; Electronic-commerce; Chatbot; Collaborative Filtering; Content-Based; Context-Aware.