Department of Electrical and Computer Engineering

North South University

Senior Design Project

AI-Powered Smart E-commerce Web Application with Blockchain Integration

Submitted by:

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Faculty Advisor:

Dr. Mohammad Monirujjaman Khan

ECE Department

Summer, 2023

LETTER OF TRANSMITTAL

23 December 2023

To

Dr. Rajesh Palit
Chairman,
Department of Electrical and Computer Engineering
North South University, Dhaka

Subject: **Submission of Capstone Project Report on "AI-Powered Smart E-commerce Web Application with Blockchain Integration".**

Dear Sir,

With due respect, we would like to submit our **Capstone Project Report** on **"AI-Powered Smart E-commerce Web Application with Blockchain Integration"** as a part of our BSc program. The report deals with a smart e-commerce web application that has a transparent and safe payment system using blockchain technology and AI integration for chatbots and product recommendations. We gained a lot of value from this project because it enabled us to implement what we learned in the actual world. We made every effort to be as competent as possible in order to meet all of the requirements for this report.

We will be highly obliged if you kindly receive this report and provide your valuable judgment. It would be our immense pleasure if you find this report useful and informative to have an apparent perspective on the issue.

Sincerely Yours,

.....
Md. Shamim Ferdous
ECE Department
North South University, Bangladesh

.....
Salman Yousuf
ECE Department
North South University, Bangladesh

.....
Tasrifa Hossain
ECE Department
North South University, Bangladesh

APPROVAL

The Senior Design Project entitled **"AI-Powered Smart E-commerce Web Application with Blockchain Integration"** by Md. Shamim Ferdous (ID#2013080042), Salman Yousuf (ID#2012927042) and Tasrifa Hossain (ID#1731779042) from Electrical and Computer Engineering Department of North South University, under the supervision of Dr. Mohammad Monirujjaman Khan us approved in partial fulfillment of the requirement for the Degree of Bachelors of Science in Computer Science and Engineering and has been accepted as satisfactory.

Supervisor's Signature

…….

Dr. Mohammad Monirujjaman Khan

Associate Professor

Department of Electrical and Computer Engineering

North South University

Dhaka, Bangladesh.

Department Chair's Signature

…….

Dr. Rajesh Palit

Professor & Chair

Department of Electrical and Computer Engineering

North South University

Dhaka, Bangladesh.

DECLARATION

This is to declare that this project is our original work. No part of this work has been submitted elsewhere partially or fully for the award of any other degree or diploma. All project-related information will remain confidential and shall not be disclosed without the formal consent of the project supervisor. Relevant previous works presented in this report have been properly acknowledged and cited. The plagiarism policy, as stated by the supervisor, has been maintained.

Students' names & Signatures

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1. Md. Shamim Ferdous

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2. Salman Yousuf

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3. Tasrifa Hossain

ACKNOWLEDGEMENTS

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ABSTRACT

AI-Powered Smart E-commerce Web Application with Blockchain Integration

This report introduces an AI-Powered Smart eCommerce Web Application seamlessly integrated with Blockchain technology. The project aims to enhance the security, personalization, and efficiency of online shopping through the integration of advanced technologies. It is in its completed state, which now has a multilingual AI chatbot, a machine product recommendation engine, and blockchain integration with a mainstream payment processor. The project follows a methodology that includes the use of Python, Django, PostgreSQL, NodeJs for Backend and JavaScript, ReactJS, NextJs for Frontend development. The results include a smart e-commerce platform with superior autonomous customer service, personalized and efficient user experience and safe and transparent payment processing. The web application received an overall grade of "A" from GTmetrix with the largest content paint time of 277 milliseconds. Google's PageSpeed Insight gave the application a score of 97% for performance and 79% for accessibility. The product recommendation engine has obtained an accuracy of 0.9926. Integration of the blockchain ensured the immutability of the transaction records. The AI chatbot was able to reply to customer queries in English, Bengali, and Romanized Bengali. This project positively impacts society and the economy by creating job opportunities and contributing to the growth of the e-commerce industry.