Department of Electrical and Computer Engineering
North South University

Senior Design Project

Analyzing the Influence of Social Media on Students' Academic Performance Using Machine Learning and Deep Learning Approaches

Nida Shahid **1911981642**

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Faculty Advisor:

Dr. Mohammad Monirujjaman Khan

Associate Professor

ECE Department

Spring, 2023

LETTER OF TRANSMITTAL

June, 2023

To

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

Subject: **Submission of Capstone Project Report on "Analyzing the Influence of Social Media on Students' Academic Performance Using Machine Learning and Deep Learning Approaches"**

Dear Sir,

With due respect, we would like to submit our **Capstone Project Report** on **"Analyzing the Influence of Social Media on Students' Academic Performance Using Machine Learning and Deep Learning Approaches"** as a part of our BSc program. This project aims to analyze the impact social media has on students' academic performance by using Machine Learning and Deep Learning algorithms. This study utilized a private dataset collected through a thorough survey of university-level students in Bangladesh. We tried to the maximum competence to meet all the dimensions required from 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,

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Nida Shahid
ECE Department
North South University, Bangladesh

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Rita Rahman
ECE Department
North South University, Bangladesh

.....

Farhana Ahmed
ECE Department
North South University, Bangladesh

APPROVAL

Nida Shahid (ID#1911981642), Rita Rahman (ID#1911212642), and Farhana Ahmed (ID#1813289630) from the Electrical and Computer Engineering Department of North South University have worked on the Senior Design Project titled "**Analyzing the Influence of Social Media on Students' Academic Performance Using Machine Learning and Deep Learning Approaches**" under the supervision of Dr. Mohammad Monirujjaman Khan partial fulfillment of the requirement for the degree of Bachelors of Science in 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.

Chairman's Signature

…….

Dr. Rajesh Palit

Professor

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. Nida Shahid

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2. Rita Rahman

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3. Farhana Ahmed

ACKNOWLEDGEMENTS

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ABSTRACT

Analyzing the Influence of Social Media on Students' Academic Performance Using Machine Learning and Deep Learning Approaches

Social media (SM) are online media technologies that allow people to share and exchange information, ideologies, preferences, and other forms of expression. Since the 1990s, social media platforms have been utilized as an effective method of communication. People can more readily engage with one another and share ideas, information, and opinions because of the proliferation of social media platforms. The worldwide community is more connected than it has ever been before because of the rise of social media. Even in Bangladesh, social media users are increasing rapidly. Studies have shown that students' academic performance tends to worsen when they spend more time on social media. The reason for this is that they choose to engage in conversation with their friends on social networking sites rather than read a book during their downtime. Their social lives and mental health are also negatively impacted, in addition to their academic performance. On the other hand, utilizing social media does come with a few advantages to consider as well. Currently, social media is responsible for the creation of a great deal of both negative and positive aspects. Students are placing a greater emphasis on their use of social media than they are on their ability to read and write, which is leading to a significant loss of both time and academic performance. Consequently, the purpose of this study is to investigate the impact of students' use of social media on their academic performance by applying machine learning (ML) and deep learning (DL) algorithms. As there have already been many studies done in this field, our study focused on university students in Bangladesh. This study used a unique set of data. In this study, we develop this model by utilizing both traditional ML and DL techniques. These algorithms are referred to as Random Forest (RF), Decision Tree (DT), K-Nearest Neighbor (KNN), Gaussian Naïve Bayes (GNB), and Mini Batch Gradient Descent (MBGD). Accuracy is used as the evaluation metric of our models. Among them, Mini Batch Gradient Descent achieved the highest accuracy rate of 99.25% and Random Forest achieved an accuracy rate of 96.43%. This study, on the whole, came up with satisfactory results, successfully forecasting with an excellent level of accuracy.