



Analysis of Social Media Addiction Among Students Using Data Analytics

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Abstract: Social media platforms, which offer communication, entertainment, and educational opportunities, have become an indispensable element of students' everyday lives. However, overuse has led to social media addiction, which has a detrimental impact on social interaction, productivity, mental health, and academic achievement. This study examines usage patterns, behavioral trends, screen time, academic impact, and emotional repercussions of social media addiction among teenagers using data analytics. Addiction levels and their impact on student performance are determined using statistical and machine learning methods. The study emphasizes how extended use of social media can lead to anxiety, poor sleep, decreased focus, and poor academic performance. The suggested analysis shows how data analytics may be used to identify addictive behavior and offers preventative strategies for kids to use social media in moderation.

Index Terms - Social Media Addiction, Data Analytics, Student Behavior, Machine Learning, Academic Performance, Mental Health, Big Data

I. INTRODUCTION

Students use social media platforms including Facebook, Instagram, WhatsApp, Snapchat, and TikTok for entertainment and communication. Despite the educational advantages of these platforms, overuse has led to major addiction-related problems. Students frequently use social media for several hours every day, which has an adverse effect on their mental health, focus, and academic performance. Data analytics offers effective methods for analyzing user activity, seeing trends in addiction, and forecasting how it may affect academic performance. This study employs data analytics techniques to examine social media addiction in students.

II. LITERATURE REVIEW

Prior research has primarily focused on certain aspects of driver behavior. CNN-based techniques have been widely used for sleepiness detection using eye state categorization; these techniques achieve moderate accuracy but lack contextual awareness. LSTM models have improved temporal analysis, but because they often rely on physiological inputs, their practical usefulness is restricted. Traditional OpenCV and Dlib methods enable real-time speed, but they do not account for emotional or behavioral complexity. In a similar vein, machine learning techniques like SVM and HOG-based algorithms might detect distraction but struggle in real-world environments with varying lighting. Recent advancements in deep learning-based emotion identification have shown promising results, even though these systems operate independently without being incorporated into a complete driver monitoring pipeline.

III. PROPOSED METHODOLOGY

The suggested methodology employs machine learning and data analytics to examine social media addiction in students. The study's methodical approach starts with data collecting and concludes with behavioral analysis and addiction prediction. Students' answers about their daily social media activity, screen time, sleep length, academic performance, emotional state, and concentration levels are gathered to create a survey-based dataset. Along with academic grades and mental health indicators, the dataset include qualities like the amount of time spent on Facebook, YouTube, Instagram, WhatsApp, and Snapchat.

IV. SYSTEM ARCHITECTURE

Several interconnected modules that effectively handle and evaluate student behavioral data make up the system architecture for examining social media addiction among kids. The architecture facilitates the gathering of user data, dataset processing, analytics, addiction level prediction, and visual report generation. The entire process is designed to give precise information about how social media use impacts mental health and academic achievement. The Data Collection Module, which starts the architecture, collects data from students via surveys, questionnaires, and digital activity logs. Daily screen time, social media usage frequency, preferred apps, sleep length, stress levels, academic scores, and attention levels are among the data gathered. Because proper data gathering is necessary for trustworthy analysis, this module serves as the system's foundation.

V. IMPLEMENTATION

The Python programming language is used to create the suggested system due to its ease of use, adaptability, and robust support for machine learning and data analytics applications. The data is processed, shown, and students' levels of social media addiction are predicted using a variety of Python libraries and analytical tools. The compilation of a survey-based dataset is the first step in the implementation process. Online forms and surveys are used to gather data from students on their daily use of social media, academic achievement, sleep habits, emotional states, and levels of study focus. Age, gender, the amount of time spent on social media, favorite platforms, study hours, stress levels, and academic scores are all included in the gathered dataset.

VI. RESULTS AND ANALYSIS

The analysis's findings unequivocally show that students' daily productivity, mental health, and academic performance are all significantly impacted by excessive social media use. To find addictive tendencies and behavioral trends among students, the gathered dataset was examined utilizing statistical approaches, machine learning algorithms, and visualization techniques. According to the report, a significant portion of students use social media sites including Facebook, Instagram, WhatsApp, Snapchat, and YouTube for many hours every day. Students who reported using social media for more over five to six hours a day demonstrated discernible declines in academic performance, study efficiency, and concentration. Additionally, excessive use led to stress, emotional instability, and sleep difficulties.

VII. DISCUSSION

The results of this study unequivocally show that social media addiction has grown to be a significant problem among students in contemporary educational settings. Social media platforms offer communication, entertainment, networking, and educational opportunities, but excessive and unrestrained use has a detrimental impact on students' academic performance, focus, mental health, and social interaction. According to the analysis, students who spend too much time on social media frequently struggle to concentrate while studying. Distractions from constant exposure to videos, online chats, entertainment content, and notifications lower learning effectiveness and productivity. Numerous students stated that they regularly check social media while studying, which disrupts focus and lowers academic achievement.

VIII. CONCLUSION

This study used data analytics and machine learning approaches to provide a thorough overview of students' addiction to social media. Understanding how excessive social media use impacts academic achievement, focus, mental health, sleep quality, and overall student productivity was the main goal of the study. The study successfully revealed significant addiction tendencies and their effects on academic performance by gathering and evaluating behavioral data from students. Data gathering, preprocessing, feature extraction, visualization, and machine learning-based prediction were all steps in the suggested approach. Relationships between screen

usage, stress levels, academic performance, and emotional states were found with the use of data analytics approaches. Students were categorized into Low Addiction, Moderate Addiction, and High Addiction groups using machine learning techniques such as Decision Tree, Random Forest, Logistic Regression, and Support Vector Machine.

IX. REFERENCES

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