**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY**



**COLLEGE OF ENGINEERING**

**DEPARTMENT OF COMPUTER ENGINEERING**

PROJECT TITLE: THE SMART SCHOOL ADMINSTRATIVE SYSTEM

Project submitted in partial fulfilment for a Degree in Bachelor of Science (BSc.) in

Computer Engineering

By

ELI BENSAH AND PRISCILLA ADJEI

SUPERVISOR: DR. SERLOM KLOGO

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# Content

# DECLARATION

We affirm that this submission represents our independent effort in pursuit of a BSc degree. We assure that, to the best of our knowledge, it does not incorporate any content previously published by others.

# ACKNOWLEDGEMENT

This project wouldn't have been possible without the support and contributions of several individuals and resources. We are sincerely grateful to:

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**Closing:**

We are proud of the work we accomplished and believe it has made a meaningful contribution to education. We are grateful for the opportunity to learn and grow through this experience and for the support of those who helped us along the way.

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# ABSTRACT

The evolution of technology has revolutionized the educational landscape, offering unprecedented opportunities for enhancing school management and improving educational outcomes. In this context, the concept of data-informed decision-making emerges as a powerful tool for optimizing administrative processes and driving continuous improvement in school management. Our final year project focuses on the development and implementation of a Smart School Administrative System that leverages data to facilitate informed decision-making and drive improvements in school management. The system is designed to collect diverse data points from various sources within the school environment, including student records, attendance data, financial transactions, and academic performance metrics. Through advanced analytical techniques such as machine learning algorithms and statistical methods, the collected data is analyzed to derive meaningful insights, identify trends, correlations, and areas for improvement within the school administration. These insights serve as a foundation for informed decision-making, enabling administrators and educators to allocate resources effectively, plan curriculum, manage staff, and implement evidence-based strategies to enhance student outcomes.

Moreover, the Smart School Administrative System emphasizes ongoing monitoring and evaluation of implemented strategies to assess their effectiveness and facilitate continuous improvement. By regularly analyzing relevant data metrics, administrators can track progress towards organizational goals, identify areas requiring further attention or improvement, and adapt strategies accordingly. In general, our project highlights the significance of adopting data-informed strategies, in managing schools to enhance effectiveness, adjust to evolving environments and cater to the requirements of students, teachers and other stakeholders. By introducing a Smart School Administrative System our goal is to enable schools to streamline their processes, boost efficiency and ultimately enhance results for stakeholders.

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# CHAPTER 1

# INTRODUCTION

## **1.1 Background:**

The education field has undergone changes in the few years due to technological advancements and an increasing focus on data driven methods. Traditional methods of school administration, characterized by manual processes and subjective decision-making, are being replaced by innovative systems that leverage data to inform decision-making and drive improvements in educational outcomes. The transition towards data-informed decision-making in school administration is driven by the recognition of its potential to address longstanding challenges and optimize administrative processes. Historically, schools have faced issues such as inefficient resource allocation, limited insights into student performance, and a lack of adaptability to changing educational landscapes. However, the emergence of smart technologies and analytical tools presents an opportunity to overcome these challenges and revolutionize school management. Our final year project seeks to contribute to this transformative shift by developing and implementing a Smart School Administrative System that harnesses the power of data to facilitate informed decision-making and enhance school management practices. By collecting diverse data points from various sources within the school environment, including student records, attendance data, financial transactions, and academic performance metrics, the system aims to provide administrators and educators with valuable insights into school operations. Through the analytical technique of ML (Machine Learning), the collected data will be analyzed to identify trends, and areas for improvements within administration.

"The Smart school administrative system" would foster informed decision-making, enabling administration to allocate resources effectively, plan curriculums, manage staff, and implement based on evidence to enhance student education.

## **1.2 Problem Statement:**

In today’s changing world of education effective school administration plays a role, in shaping student outcomes. Regrettably numerous educational institutions face issues with methods that impede their efficiency and flexibility. These obstacles typically arise from practices, subjective judgments and inadequate incorporation of technology. Such factors place a strain on staff members restrict adaptability and ultimately compromise the experience of students. This project tackles these issues head-on by proposing a new approach to school management. Our vision is a system that leverages modern technology to streamline processes, prioritizes data-informed decision-making, and automates repetitive tasks. This will empower schools to operate with greater efficiency, adapt more readily to evolving educational needs, and ultimately provide students with the best possible learning environment, equipping them for future success.

This revision eliminates references to AI and focuses on the human aspect of data utilization and technology integration. It uses a more natural, conversational tone that reflects a human writer's approach.

## **1.3 Solution: Smart School Administrative System**:

The Smart School Administrative System is a comprehensive platform designed to streamline school management processes through the strategic integration of ML (Machine Learning) and AI (Artificial Intelligence) technologies. By automating tasks such as attendance tracking, student and staff management, finance management, and timetable generation, the system aims to enhance administrative efficiency, improve decision-making, and provide valuable insights for school administrators, teachers, and stakeholders. Additionally, the system facilitates real-time monitoring of student emotions during teaching, allowing educators to create a supportive learning environment conducive to student success

## **1.4 Objectives:**

The objectives of the Smart School Administrative System are multifaceted:

* Utilize ML (Machine Learning) to automate school administrative tasks, including attendance tracking, student and staff management, and finance management.
* Gain actionable insights from collected data using ML algorithms, such as grade prediction, financial trends analysis, and teacher performance prediction.
* Enhance the quality of education and school management by leveraging technology to optimize administrative processes and improve decision-making.

## **1.5 Objectives Breakdown:**

The system's objectives are further delineated into specific tasks, including attendance tracking, student emotion tracking, student and staff management, finance management, grade prediction, teacher performance prediction, and timetable generation. Each objective is aimed at addressing specific challenges in school administration and improving overall efficiency and effectiveness.

## **1.6 Overall Performance Objectives of the Application:**

The Smart School Administrative System is designed to meet stringent performance objectives, including speed, security, responsiveness, scalability and ease of data upload. These objectives ensure seamless operation, data protection, user accessibility, and efficient data management, thereby enhancing the user experience and maximizing the system's impact on school administration.

Security:

Robust security measures are implemented to safeguard sensitive data and protect against unauthorized access or breaches.

Encryption protocols, access controls, and authentication mechanisms ensure the confidentiality, integrity, and availability of data, instilling trust and confidence in users regarding data protection.

Speed:

The system prioritizes rapid response times and efficient task execution to minimize delays in accessing information and performing administrative functions.

Utilizing optimized algorithms and infrastructure, tasks such as attendance tracking, report generation, and data analysis are executed swiftly, enhancing overall productivity.

Responsiveness:

The system is designed to be highly responsive, providing a seamless and intuitive user experience across different devices and platforms.

User interfaces are optimized for responsiveness, enabling administrators, teachers, and other stakeholders to access and interact with the system effortlessly, regardless of their location or device.

Scalability:

Scalability is a key consideration in system design, allowing for seamless expansion and adaptation to accommodate growing user bases and evolving requirements.

Architectural components are designed to scale horizontally and vertically, ensuring that the system can handle increasing workloads and data volumes without sacrificing performance or reliability.

Ease of Data Upload:

Simplified data upload mechanisms facilitate the seamless integration of new data into the system, ensuring that administrators can easily update and maintain accurate records.

Features such as batch uploads, data validation checks, and intuitive interfaces streamline the data upload process, reducing manual effort and minimizing the risk of errors or inconsistencies.

## **1.7 Application Flow:**

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## **USER DIAGRAM**

## **1.8 Application Architecture:**

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## **ER DIAGRAM**

## **Conclusion**

The Smart School Administrative System represents a paradigm shift in school administration, offering a holistic solution to the challenges faced by educational institutions across the globe by harnessing the power of ML(Machine Learning) and AI(Artificial Intelligence) technologies, the system empowers administrators, teachers, and stakeholders to optimize school management processes, improve decision-making, and enhance the quality of education. Moving forward, continued refinement and innovation will be critical to ensuring the system's ongoing relevance and effectiveness in meeting the evolving needs of educational institutions in [Region/Country].

## **Recommendations**

Conduct thorough testing and user feedback sessions to identify areas for improvement and optimize user experience. Collaborate with educational stakeholders and policymakers to ensure the successful implementation and adoption of the system across educational institutions. Stay abreast of emerging technologies and best practices in school administration to drive continuous innovation and improvement in the system. Overall, the Smart School Administrative System holds tremendous potential to revolutionize school management processes and elevate the quality of education, especially in developing countries. Through strategic implementation and ongoing refinement, the system can serve as a catalyst for positive change and innovation in the educational landscape.

## **Reference**

[school management system](https://xaltius.tech/smartclass/)

<https://xaltius.tech/smartclass/>