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Editorial Note

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Paul Ssemaluulu Mukasa
Editor-in-Chief
ORCID: https://orcid.org/0000-0002-4863-6310

This is the Inaugural issue of the African Journal of Computing, Data Science and Informatics (AJCDI), which aims to cover research efforts in the fields of Computer Science, Data Science, and Informatics. The journal seeks to establish a new integration of these three different disciplines to create a continuous multi-disciplinary dialogue. This issue captures various perspectives from across the African continent on topics related to Computer Science, Data Science, and Informatics. Numerous manuscripts were submitted for consideration for publication in this inaugural issue; however, the journal could not accommodate all submissions due to factors such as readiness and relevance. As is standard, the journal adheres to a double-blind peer review process and an open peer review process, resulting in the selection of five standout manuscripts for publication in this issue.

The first paper employs a stochastic modeling approach, combining Autoregressive Integrated Moving Average (ARIMA) and Generalized Autoregressive Conditional Heteroscedasticity (GARCH) models to capture the mean and variance characteristics of crude oil prices. The study concludes that crude oil prices in Nigeria exhibit significant volatility, implying that policymakers should consider hedging strategies and diversification of revenue sources to mitigate the impact of price shocks. Furthermore, this research proposes that the results can inform

decision-making and risk management strategies in the oil sector, enabling more effective budgeting and economic planning.

The second study investigates the application of machine learning techniques to predict shuttle bus travel time within Nnamdi Azikiwe University, Awka, Nigeria. Using a dataset collected over a one year period, including route distance, traffic level, weather condition, and passenger count.

The study revealed that feature importance analysis, route distance and traffic level as the most influential predictors.

The study concludes that tree-based models like XGBoost offer robust and scalable solutions for optimizing campus shuttle operations, and future studies should consider integrating real-time traffic data and finer temporal resolution to enhance predictive performance further.

The third paper examines the relationship between artificial intelligence (used as a proxy for innovation), information and communication technology (ICT), and the growth rate of real GDP in selected countries using panel data estimation. The study used data from the period 2000 to 2021.

The empirical evidence showed that innovation, information technology exports, high-technology exports, and research and development (R&D) spending have a strong positive influence on the growth rate of real GDP.

The study concluded that high-technology exports as a percentage of manufacturing exports have a significant negative impact, while internet usage shows a negative but statistically insignificant effect on real GDP growth in the selected countries.

The fourth paper aimed to examine the impact of engagement metrics and targeted interventions, as well as explore the role of demographic variables in predictive modeling within online learning environments. This study employed a simple random sampling method, collecting data from 200 students enrolled in an online learning environment.

The findings highlight the importance of engagement metrics in predicting academic success and the effectiveness of personalized interventions such as feedback and tutoring. Integrating personalized interventions can further support at-risk students, creating a more inclusive and effective educational experience.

The study concluded that there is need for continuous development of AI models to better serve diverse student populations and improve educational outcomes.

Lastly, the fifth paper explores the integration of artificial intelligence (AI) and automation in Ghana's healthcare, manufacturing, and banking and finance sectors post-COVID-19. It examines the specific AI models employed, evaluates their impacts, and explores their role in mitigating pandemic disruptions while enhancing operational efficiency, service delivery, and economic resilience.

In manufacturing, predictive maintenance and autonomous systems boosted productivity and reduced downtimes, though smaller firms struggled with expertise and resource constraints. The banking and finance sector exhibited resilience, leveraging AI-powered chatbots to enhance customer service and productivity, despite limitations in handling complex inquiries. Overall, 91.4% of businesses reported sales declines, with trade, manufacturing, and imports facing severe disruptions, leading to an economic loss of 115.2 million Ghana Cedis.The study concluded that AI has transformative potential as a catalyst for economic resilience in post-pandemic Ghana. It highlights actionable strategies to address skill gaps, ethical challenges, and access disparities, ensuring sustainable AI integration for national growth.