

Editorial Notes

By the grace of Almighty Allah, we are delighted to present the inaugural issue of the Journal of Engineering and Technology (JET), Volume 01, Issue 01, 2024, of International Standard University. This issue represents our steadfast commitment to advancing knowledge in the broader aspects of science and technology, especially in computer science, and textile engineering. This achievement is made possible through the invaluable support of ISU's Board of Trustees and the dedicated contributions of our authors and reviewers. JET is established as a platform for diverse research that addresses the evolving challenges and opportunities within Bangladesh and beyond, covering fields such as computer science, electrical engineering, and textile engineering. We are dedicated to fostering high-quality, original research and insightful reviews that enhance academic discourse in these disciplines. Our goal is to create an engaging, accessible, and impactful publication that reflects the latest developments in these fields. We warmly invite your contributions to promote knowledge-sharing and collaborative scholarship.

This volume presents diverse insights across computer science and textile engineering. Notably, **the first article** examines the limitations of Long Short-Term Memory (LSTM) networks in stock market prediction. Using data from the Dhaka Stock Exchange (DSE), the study evaluates LSTM's effectiveness in forecasting daily stock price trends. The findings reveal that relying exclusively on LSTM does not yield accurate market predictions, highlighting the need for enhanced or alternative approaches in stock trend forecasting. **The second article** showcases significant progress in recognizing handwritten Bangla joint letters. This study emphasizes the effectiveness of deep learning techniques in enhancing optical character recognition (OCR) for the Bangla language, demonstrating promising improvements in accuracy and efficiency for Bangla script identification. **The third article** delves into the application of various machine learning classification algorithms enhanced with explainable Artificial intelligence (AI) to improve diagnostic clarity. By incorporating explainable AI methods, K-fold cross-validation, and Lime explanation, the study presents a system that provides transparent and reliable diagnostic insights. This approach aims to serve as a valuable tool for medical professionals, offering a streamlined, accurate, and intelligent solution for heart disease diagnosis.

The next article focuses on uncovering patterns in survey data that reveal diverse aspects of individuals' lives, such as demographics, learning behaviors, mental health, and social connections. By employing a Random Forest Classifier within a pipeline framework, the model achieves an impressive accuracy rate of 85%. To further enhance model performance, the authors utilize hyperparameter tuning with Grid Search Cross-Validation, optimizing the classifier's effectiveness in identifying these complex patterns. In the fifth article, the authors evaluate key metrics such

as accuracy, precision, recall, intersection over union (IoU), and dice coefficient to assess the performance of the SegNet architecture. Their findings reveal that SegNet achieves an accuracy of 91.93%, an IoU of 90.32%, a dice coefficient of 71.68%, a precision of 83.54%, and a recall of 91.59%. By implementing advanced techniques like voting and averaging, the study offers a robust solution for image segmentation tasks, addressing overfitting and improving reliability. This model notably enhances precision in skin lesion segmentation, contributing significantly to skin cancer detection and supporting more effective treatment options.

In the sixth article, Miah et al. examine the impact of various wash effects—including enzymes, stones, and bleach—on fabric properties. Their findings indicate that applying these treatments in combination significantly reduce the tensile and tearing strength of the fabric, regardless of the composition percentages. This research provides valuable insights for textile engineering, highlighting the trade-offs between achieving desired wash effects and maintaining fabric durability. **The seventh article** suggests that Bangladesh holds a competitive advantage over other major competing countries in the western world for the top ten ready-made garment (RMG) products. The findings indicate that Bangladesh's RMG sector has a stronger presence and is more influential in the EU market compared to the USA market, highlighting potential for targeted growth and strategic focus in European trade relations. **In the subsequent article**, the authors investigated the effects of bleaching on fabric weight and whiteness. They observed that fabric weight gradually decreases over time, while whiteness increases with higher concentrations of hydrogen peroxide (H_2O_2). The study also reveals that lower bleaching temperatures result in a lower whiteness index but minimize fabric weight loss. This research provides valuable insights into optimizing bleaching conditions for desired fabric properties, balancing whiteness with fabric preservation.

The ninth article highlights that while knit denim offers promising opportunities for market expansion, there are notable limitations that require further innovation. The authors emphasize the need for advancements to fully realize the potential of knit denim in the textile industry. This research lays the groundwork for future studies aimed at exploring the broader implications of integrating knit denim into various textile products, encouraging further exploration and development in this area. **The next article** reveals the identification of seven types of secondary metabolites and bioactive compounds, with notable concentrations of flavonoids, steroids, and terpenoids. The analysis indicates that sodium (148.538 mg/dl) and chloride (16.504 mg/dl) are the predominant elements in the samples. Antibacterial tests were performed against gram-positive (*Staphylococcus aureus*) and gram-negative (*Escherichia coli*) bacteria at concentrations of 10, 20, 30, and 40 μ g/ml. Results show that at a 40% concentration of acetone extracts from *Haliclona oculata*, the inhibition zone for *Escherichia coli* was 21 mm, while for *Staphylococcus aureus*, it was 16 mm. This finding indicates that *Escherichia coli* exhibits a greater potential inhibition zone compared to *Staphylococcus aureus* at the same concentration,

highlighting the antibacterial efficacy of the extracts. **In the final article**, the author introduces a multiphysics modeling technique and compares it with standard literature values. The study analyzes various anode materials in terms of charge/discharge capacity, cycle life performance, surface morphology, and AC impedance. Notably, Waste Plum Trunk (WPT) demonstrates lower impedance in electrochemical impedance tests and achieves a current density of 0.080 mA/cm², surpassing other anode materials. Furthermore, WPT shows enhanced mobility for lithium ion (Li⁺) diffusion. Overall, this research significantly contributes to the development of simultaneous computer modeling of physical systems and electrical engineering in Li-ion batteries, identifying suitable anode materials for both commercial and industrial applications.

According to our editorial policy, all submitted papers undergo a rigorous double-blind review process prior to publication. The editorial board is committed to upholding the highest standards, and we encourage authors to ensure language proficiency, structural integrity, and intellectual excellence before submission. We extend our sincere appreciation to the authors and reviewers for their invaluable contributions. Additionally, we express our gratitude to the members of the editorial board for their efforts in addressing challenges and refining the submitted manuscripts.

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Regards

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