

The Editorial Notes

By the grace of Almighty Allah, we are pleased to present volume 2, issue 1 of the *Journal of Engineering and Technology*. The journal adheres to a rigorous blind peer-review process to ensure the quality and integrity of the published research. This issue brings together a diverse collection of scholarly contributions that reflect contemporary advancements across engineering, materials science, data analytics, and interdisciplinary technological applications. Furthermore, Digital Object Identifiers (DOIs) have been assigned to all articles to facilitate persistent accessibility and citation. The journal is indexed in OpenAIRE, and its contents are widely accessible through reputable academic platforms, including Google Scholar and ResearchGate.

The opening article provides a data-driven examination of consumer preferences and evolving market dynamics, drawing on transactional datasets from Standard Textile Group. The study highlights notable shifts in competitive positioning, with emerging brands demonstrating rapid expansion, while established market leaders experience relative decline—underscoring the volatility of consumer behavior and intensifying competitive pressures. The second article offers a comprehensive evaluation of ionic liquid (IL)-regenerated fibers, demonstrating superior mechanical properties, enhanced crystallinity, and functional tunability compared to conventional fibers such as viscose and Lyocell. Despite these advantages, the study critically addresses challenges related to processing complexity, solvent recovery, and economic feasibility, while also identifying promising directions for sustainable and circular fiber production.

In the third article, Prof. Hakikur Rahman proposes a conceptual framework for AI-driven adaptive learning systems in higher education, with particular emphasis on the context of Bangladesh. The work outlines key system components—including learner profiling, intelligent content delivery, and real-time feedback—aimed at addressing limitations of traditional pedagogical models and enhancing personalized learning experiences. The fourth paper introduces a deep learning-based approach for deepfake detection through frame-level video classification using a custom Convolutional Neural Network (CNN). Trained on a large-scale dataset incorporating Celeb-DF and FaceForensics++, the model demonstrates competitive performance when benchmarked against established architectures such as MobileNetV2, ResNet50, VGG19, and DenseNet121.

Subsequently, Mr. Musa and Haider explore advancements in next-generation photovoltaic technologies, emphasizing flexible, cost-effective alternatives to silicon-based systems. Their analysis highlights the importance of material engineering, dye sensitization, and charge transport optimization in improving power conversion efficiency and long-term device stability. The next article presents a frequency-domain analysis of pandemic dynamics, where a 365-day window framework is utilized to distinguish between controlled and critical phases of outbreak progression. The findings offer a quantitative basis for informing public health interventions and policy decisions. The authors in the next article investigate the application of neem extract as a natural dye, revealing its environmentally friendly characteristics alongside limitations in color fastness. While biodegradable and non-toxic, its restricted durability poses challenges for large-scale industrial adoption.

The subsequent review article examines the expanding role of marine-derived antioxidants across multiple industries, including pharmaceuticals, food preservation, cosmetics, and nutraceuticals. The authors emphasize the significance of sustainable extraction technologies and continued research into bioactive marine compounds for health and industrial applications. In the eighth article, Peyal and colleagues present a high-performing deep learning model based on EfficientNetB0 for detecting AI-generated images, achieving notable classification accuracy. The integration of the model into a user-friendly web interface further demonstrates its practical applicability in addressing challenges related to digital content authenticity. Another study explores the convergence of artificial intelligence, digital signal processing (DSP), and quantum computing within microwave engineering. The authors identify emerging opportunities for enhanced signal processing, improved imaging systems, and adaptive communication technologies, while also outlining key research gaps.

Hasan and Mahfuz contribute a critical review of textile recycling methodologies, emphasizing the influence of fabric composition, elastane content, and finishing agents on recycling efficiency. The study highlights the importance of standardized life cycle assessment (LCA) and techno-economic analysis (TEA) frameworks, along with innovations in solvent recovery and biocatalysis, to enable a transition toward a circular textile economy. Finally, Habiba investigates the incorporation of fine boric acid powder as a flame-retardant filler in epoxy resin composites. Through comprehensive characterization using SEM, TGA, and FTIR techniques, the study demonstrates significant improvements in thermal stability and flame resistance, indicating strong potential for high-temperature applications.

Collectively, the articles in this issue reflect the breadth and depth of current research, addressing critical challenges while advancing innovative solutions across disciplines. We hope this volume will serve as a valuable resource for researchers, practitioners, and policymakers, and will contribute meaningfully to ongoing scientific and technological progress.

Regards,

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