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Bridging Knowledge and Action: The Vision of *Conclusions in Engineering* (Editorial)

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I. A MISSION TO DISTILL EVIDENCE INTO PRACTICE

It is with great enthusiasm that I introduce the inaugural issue of *Conclusions in Engineering*. Our mission for this new journal is clear: to provide a dedicated platform for rigorous, engineering-relevant conclusions drawn from original research, systematic reviews, and meta-analyses. In an era of exponential growth in scientific publications, with over 3.3 million research articles published worldwide in 2022, engineering professionals face the challenge of information overload. Now more than ever, we need trusted sources that distill complex research into actionable insights. *Conclusions in Engineering* aspires to be that source, translating dense data and analyses into clear takeaways that engineers can directly apply in practice.

A. The Significance of this First Issue

This first issue marks a significant milestone not just for our journal, but for the engineering community navigating an evolving landscape of knowledge. As new discoveries and technologies emerge at a dizzying pace, the risk is that vital findings get lost in the noise. Engineers and policymakers must sift through mountains of data to inform decisions, a task both daunting and time-consuming. Our response is this journal, born out of the recognition that concise, well-founded conclusions are invaluable for guiding decision-making. By curating studies that emphasize clear outcomes and practical implications, we hope to combat information fatigue and foster confidence in the guidance we provide. Each article in this issue has been selected for its strong focus on outcomes and its relevance to real-world engineering problems, underscoring the journal's role as a beacon of clarity in a busy information age.

B. Scope and Vision

Conclusions in Engineering is a multidisciplinary journal, and our scope spans the breadth of engineering sciences – from classical fields to emerging interdisciplinary domains. We are committed to inclusivity, innovation, and collaboration across disciplines. You will find in this inaugural issue a microcosm of that breadth: contributions from mechanical, civil, chemical, computer, and even mathematical engineering perspectives, with authors representing institutions across the globe. This diversity reflects our dedication to breaking down silos and encouraging the cross-pollination of ideas. Whether it's an advanced computational method or a novel material for sustainability, if it drives engineering forward, it has a home here. We also emphasize inclusivity in

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the broadest sense: welcoming voices from established experts and young researchers alike, and encouraging a global dialogue that bridges geographic and cultural boundaries. By uniting these varied insights under one publication, Conclusions in Engineering aims to spur innovation and creative solutions that might not emerge within isolated fields.

II. HIGHLIGHTS OF THE INAUGURAL ISSUE

In this premiere issue, we are proud to present eight exemplary articles that embody the journal's mission of rigorous analysis leading to practical conclusions:

- Numerical Investigation of Maxwell Hybrid Nanofluid Flow with Polystyrene Oil as Base Fluid[1]; In this article, Bilal et al.[1] explore a hybrid nanofluid system under the influence of a magnetic field. Using a non-Newtonian Maxwell fluid model loaded with graphene oxide and silver nanoparticles in a polystyrene oil base, they simulate flow and heat transfer over a stretching surface (a scenario relevant to industrial cooling and coating processes). The conclusions from this study are enlightening: increased magnetic field strength and porous media resistance tend to slow the fluid flow but raise its temperature, while the inclusion of silver nanoparticles (versus only graphene oxide) significantly enhances heat transfer efficiency. These results translate into actionable guidance for engineers interested in thermal management and materials processing, for example, in how to tune nanoparticle additives or magnetic field parameters to achieve desired cooling performance. By transforming a complex simulation into clear comparative outcomes, this article perfectly illustrates our aim to convert advanced research into concrete engineering knowledge.

- A Novel Resampling Technique for Imbalanced Classification in Software Defect Prediction by a re-sampling method with filtering[2]; Bashir and Mosadag[2] tackle the pervasive problem of imbalanced data in software engineering. Imbalanced datasets (where some types of software defects are rare compared to others) can lead to biased predictive models. In this article, the authors introduce a new resampling technique, combined with a noise-filtering method, to improve the performance of defect prediction algorithms. This technical innovation is presented alongside comprehensive validation. The rigorous experiments yield a clear conclusion: the proposed method significantly enhances prediction accuracy on imbalanced software defect data, thus improving the reliability of software quality assessments. For practitioners and researchers in software engineering and **AI**, this contribution offers a concrete, tested solution, a prime example of research that directly translates into better engineering practice.

- Theoretical Analysis of Power-Law Nanofluid across Extended Sheet with ThermalConcentration Slip and Soret/Dufour Effect[3], Haider et al.[3] delve into a complex problem in fluid dynamics and heat transfer, offering a thorough theoretical analysis with implications for advanced engineering systems. This paper examines the flow of a non-Newtonian (power-law) nanofluid over an extended surface, incorporating sophisticated effects such as thermal and concentration slip at the boundary and coupled heat/mass transfer phenomena (Soret and Dufour effects). While highly technical, the study yields clear insights: for instance, how varying slip conditions or diffusion effects influence the temperature and concentration distributions in the fluid. These findings are more than theoretical minutiae - they provide guiding principles for engineers working on cooling technologies, chemical processing, or materials manufacturing where such non-Newtonian nanofluids might be used. By simulating and distilling the behaviot of a complex system, the authors give us conclusions that can inform the design and optimization of equipment (like heat exchangers or reactors) handling these fluids. This represents the journal's commitment to scholarly rigor that remains relevant to practical engineering challenges.

- Synthesis and Characterization of TiO $_2 - MWCNTs$ Nanocomposite: A Novel Route for the Efficient Degradation of N,N-Dimethylformamide[4], In this interdisciplinary piece, Naz et al.[4] merge nanotechnology and environmental engineering to address an industrial pollution challenge. The authors synthesize a novel nanocomposite combining titanium dioxide and multi-walled carbon nanotubes, and test its effectiveness as a photocatalyst to degrade N , N -Dimethylformamide (DMF), a common organic solvent waste. Their results are striking: the $TiO_2 - MWCNT$ composite achieved roughly 80% degradation of DMF in just 90 minutes under light exposure. The study's conclusion highlights the promise of this nanocomposite as an efficient, rapid means of breaking down a harmful

chemical. By presenting a clear performance outcome (rapid pollutant degradation) along with material characterization, this article provides actionable knowledge to chemical engineers and environmental technologists looking for advanced solutions in wastewater treatment. It underscores our journal's dedication to innovation with direct impact - here, showcasing a new material that could improve environmental cleanup processes.

- Oscillatory Behavior of Solution of Hilfer Fractional Differential Equation[5]; This theoretical work, by Aqsa Balqees et al.[5], delves into advanced fractional calculus to determine when solutions to a certain Hilfer fractional differential equation will oscillate. Using inequality principles and the Bihari lemma, the authors establish new conditions that predict both oscillatory and asymptotic (steady) behaviors of the systempub.iconclusions.com. An illustrative example confirms their results. Notably, this is the first time such an impulsive fractional system (involving a Hilfer derivative) has been analyzed for oscillation. The real-world relevance lies in the many engineering systems that can be modeled by fractional dynamics - from viscoelastic materials to control systems with memory. By providing clear criteria for stability vs. oscillation, the paper arms engineers with actionable knowledge to ensure systems modeled with fractional equations remain stable, exemplifying our mission to turn mathematical theory into practical guidance.

- Novel Insights into Oscillation of Impulsive Fractional Differential Equations with Caputo Derivative[6]; Fatima et al.[6] introduced another rigorous exploration of oscillation in fractional-order systems, here focusing on the more commonly used Caputo fractional derivative in impulsive differential equations. The authors derive sufficient conditions under which solutions will oscillate or tend towards equilibrium, again employing the Bihari inequality techniquepub.iconclusions.com. An example is provided to illustrate these conditions. This study breaks new ground as the first analysis of its kind for Caputo-based impulsive equations. The findings have real-world significance wherever fractional calculus is applied to engineering problems (such as signal processing or control in complex media) - engineers now have concrete criteria to predict system behavior. By translating abstract mathematics into "design rules" for stability, the work aligns with the journal's mission of delivering conclusions that practicing engineers can directly apply to avoid undesired oscillations in innovative systems.

- Acrylic Copolymer Stabilizer for Cost Optimization of Earthy Road Construction[7], Hamza et al.[7] present an innovative materials engineering solution with immediate practical impact for civil infrastructure. This study evaluates the use of an acrylic copolymer as a soil stabilizer in road construction, aiming to create low-cost improvements in road base materials. Through a suite of laboratory tests on soil-gravel mixtures, the authors demonstrate that adding a specific acrylic polymer dramatically increases soil compaction and strength (with improvements in key metrics like bearing capacity by up to 180% in their experiments), thereby extending the interval between maintenance cycles. The conclusion is powerful: polymer stabilization can make rural roads stronger and more cost-efficient to maintain. For civil engineers and policymakers focused on sustainable infrastructure, this article distills complex geotechnical data into an actionable conclusion - use of polymer stabilizers as a viable strategy for cost-effective road improvement. It exemplifies how Conclusions in Engineering will highlight research that improves real-world outcomes, in this case enabling safer, longer-lasting roads with economical methods

- A Comparative Analysis for the Performance of LFW and ORL Databases in Facial Recognition[8]; In this insightful study, Mosadag et al.[8] compare two widely used face image datasets (LFW and ORL) to determine which is best suited for different facial recognition scenarios. By analyzing performance, accuracy, and computational demands across various recognition algorithms, the authors provide actionable guidance on choosing the right database for a given application. Their conclusion - that the optimal choice depends on the use-case, with ORL excelling in controlled settings and LFW in real-world conditions - offers immediate value to engineers and computer scientists developing face recognition systems. This kind of work distills a complex comparative evaluation into a clear recommendation, exactly the translation of complex data into practical insight that our journal champions.

- Synthesis, Characterization and Photocatalytic Application of Grassy Free-Standing TiO_2 Nanotubes (Gfs-TiNTs)[9]; In this materials science contribution, Muniba et al.[9] present a novel TiO_2

nanostructure - a free-standing, "grassy" membrane of titania nanotubes - fabricated via a two-step anodization process. They show that these GfsTiNTs have an extremely high surface area and advantageous morphology for photocatalysis. In tests degrading a toxic organic dye (Eriochrome Black T), the nanotube membrane achieved about 40% pollutant breakdown in just 80 minutes under UV lightpub.iconclusions.com. The conclusion is that free-standing TiO_2 nanotube arrays, due to their enhanced light absorption and charge transport, can serve as efficient photocatalysts for water purification, converting harmful chemicals into harmless products. This outcome is directly actionable: environmental engineers can consider implementing such nanotube membranes in wastewater treatment systems to tackle industrial dyes and contaminants. The work embodies actionable engineering conclusions by providing a tangible new material and demonstrating its real-world utility in sustainable environmental management..

Collectively, the articles in this first issue exemplify what Conclusions in Engineering stands for. Each contribution has undergone rigorous peer review and was selected not only for scientific merit but also for its relevance to real-world engineering problems and its clarity in communicating outcomes. From improving facial recognition software and predicting software reliability, to building more durable roads and cleaning up industrial pollutants, to optimizing heat transfer fluids and enhancing our theoretical toolkit, these works span a remarkable range of topics. Yet, they are unified by a common thread: each turns detailed research into meaningful conclusions that drive engineering forward.

III. A CALL TO THE COMMUNITY

As we celebrate this inaugural issue, I want to extend an open invitation to researchers, engineers, and policymakers across all domains of engineering. Conclusions in Engineering is your platform. We encourage you to contribute your most impactful findings, whether they are groundbreaking original experiments, comprehensive reviews that distill a field of study, or meta-analyses that clarify long-debated questions. We also welcome thoughtful discussions and even healthy debate in the form of commentaries or letters to the editor, as part of our commitment to a vibrant scholarly dialogue. Above all, we urge all contributors and readers to uphold the highest standards of scientific integrity. Our editorial team and reviewers will work tirelessly to ensure that what we publish is accurate, transparent, and reproducible. In return, we ask that authors approach their submissions with rigor and honesty, and that readers engage critically yet constructively. By fostering an environment of ethical research and open exchange, we hope to build trust in the conclusions published here.

IV. LOOKING AHEAD - OUR VISION

We embark on this journey with optimism and a profound sense of purpose. In the coming years, we aspire for Conclusions in Engineering to become more than just a repository of articles – we envision it as a driving force shaping engineering discourse. By consistently publishing high-quality, conclusion-focused research, we aim to influence how engineers consume literature: prioritizing understanding over volume, and clarity over complexity. We hope this journal will serve as a bridge between research and practice, where theoretical breakthroughs quickly inform practical solutions, and challenges observed in the field stimulate new lines of academic inquiry. Ultimately, the measure of our success will be the impact on outcomes that matter. Whether it's more efficient technologies, safer and more sustainable infrastructure, smarter data-driven tools, or innovations in healthcare engineering that improve patient outcomes, our end goal is to see the conclusions shared in this journal translate into tangible benefits for society. In doing so, Conclusions in Engineering will fulfill its mission of guiding and improving engineering practice worldwide.

V. VISION FOR THE FUTURE: BRIDGING RESEARCH AND PRACTICE

As we launch Conclusions in Engineering, our vision reaches beyond simply sharing scientific knowledge. We aim to be the pivotal bridge between cutting-edge research and real-world engineering practice. Our ambition is to reshape how engineering insights are communicated—prioritizing clear, evidence-based conclusions that professionals can directly apply in their work. We foresee a future where our journal becomes essential reading for engineers, researchers, and policymakers alike, trusted as a definitive source of actionable knowledge. By translating rigorous scientific findings into practical guidelines, we aim to streamline the path from discovery to implementation, driving innovation across diverse engineering fields. Ultimately, we measure our success by the tangible impacts our published research has on society. Whether it's enhancing healthcare through improved diagnostics, constructing resilient infrastructure, optimizing sustainable technologies, or advancing environmental stewardship, our com-

mitment is unwavering: to improve lives by ensuring engineering practice is firmly rooted in evidence-based conclusions. Together with our global community, we look forward to a future where theory consistently informs practice, solutions emerge from interdisciplinary collaboration, and engineering continues to propel humanity toward a safer, healthier, and more sustainable world.

In closing, I would like to thank all the authors, reviewers, and editorial staff who have contributed to this inaugural issue. Launching a new journal is a considerable undertaking, and your dedication and expertise have been critical in bringing our vision to life. I also thank you, the readers, for joining us at the start of what we believe will be an exciting and impactful journey. Together, let us champion a future where quality of insight triumphs over quantity of information, and where engineering knowledge is shared in the service of progress and humanity.

Sincerely,

Omer Musa, PhD
Editor-in-Chief
Conclusions in Engineering

DECLARATION OF COMPETING INTEREST

The authors have no conflicts to disclose.

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