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Editorial

Artificial intelligence in bioengineering: pioneering advances in medical robotics, imaging, and personalized therapeutics

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We are pleased to present this special issue, *Artificial Intelligence in Bioengineering: Pioneering Advances in Medical Robotics, Imaging, and Personalized Therapeutics*, a collection of pioneering research at the intersection of artificial intelligence (AI) and bioengineering. This issue highlights transformative advancements in medical robotics, imaging technologies, and personalized therapeutics, which are shaping the future of healthcare.

AI-driven innovations are advancing precision medicine and enabling novel diagnostic and therapeutic approaches. For example, Sheikh and Jirvankar's study [1] explores the application of AI in nanoparticle design for precision oncology, offering a new frontier for cancer treatment. Similarly, the research by Hamad, Khoshnaw, and Shahzad [2] employs elasticity and sensitivity techniques to model HIV infectious diseases, emphasizing the utility of AI in complex disease modeling.

In the realm of computational biology, Sridhar [3] integrates bifurcation analysis with optimal control strategies to address molecular networks, demonstrating the interdisciplinary nature of AI applications. Additionally, advancements in medical robotics are illustrated by Camacho Carlos et al. [4], who developed a 2D CNN-LSTM approach for human activity recognition, showcasing the power of sequential image processing in medical rehabilitation and robotics.

In addition, the role of AI in enhancing diagnostic capabilities is further exemplified by Hajare, Rewatkar, and Reddy's study [5], which proposes an explainable AI (XAI) framework for the early prediction of acute coronary syndrome, underscoring the importance of transparency and interpretability in AI-based diagnostics.

In summary, these contributions embody the core themes of this special issue, from the development of innovative computational strategies to the application of AI in personalized medicine and ethical considerations. The collaborative efforts of our authors not only address current challenges but also pave the way for future advancements in bioengineering. Furthermore, by

expanding the horizon of AI's application, Su et al. [6] provide an in-depth review of the potential of fuzzy sets in cyborg enhancement. Their work highlights how fuzzy logic can drive significant advancements in integrating human-machine interfaces, paving the way for novel approaches in prosthetics and neural augmentation. Moreover, Cheng et al. [7] emphasize the critical role of computer-aided diagnostic and treatment technologies in breast cancer care, underscoring the broader public health implications of AI adoption in medical practices.

As guest editors, we express our sincere gratitude to the authors, reviewers, and editorial team for their dedication to this special issue. We hope this collection inspires further exploration and fosters interdisciplinary collaboration in this rapidly evolving field.

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