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EDITORIAL

THE FUTURE OF BIOMEDICAL ENGINEERING AND MEDICINE IN THE ERA OF ARTIFICIAL INTELLIGENCE

Sezer Ulukaya

Trakya University, Department of Electrical and Electronics Engineering, Edirne, TÜRKİYE

With the increasing computational capacity and the artificial intelligence revolution, solutions to many complex problems have begun to be sought from an interdisciplinary perspective in medical and biomedical engineering in recent years. Thanks to the ability of artificial intelligence to analyze large amounts of multi-dimensional data faster than humans, it has become possible to both save time and reveal deep relationships that cannot be seen with the naked eye. Producing medical solutions in the biomedical field using artificial intelligence tools that are developing at a dizzying pace will save doctors time, increase digitalization in healthcare, and provide doctors with concise and in-depth analysis information by analyzing big health data with computerized decision support systems. The opportunities offered by artificial intelligence in the field of medicine seem to be the scene of groundbreaking developments. In the field of preventive cardiology, voice and retinal fundus data analysis for cardiovascular risk stratification may be new biomarker candidates (1). Based on the responses of the large language model to the commands created by the researcher, artificial intelligence will be able to analyze patient history and anamnesis in the fields of radiology, pathology, surgery, and oncology, and create a personalized care plan in the field of precision medicine (2). According to the international guideline proposed by a multidisciplinary team, in addition to the opportunities offered by artificial intelligence, risks such as protecting data privacy, explaining the model, determining responsibility in case of erroneous decisions, and biased attitudes come to the fore (3). Successful results have been obtained in predicting the survival time of cancer patients using artificial intelligence based on facial images, and it has been evaluated that it may be used in personalized treatment planning (4). As a result of the pioneering impact of artificial intelligence on drug design, a new class of antibiotics effective against resistant bacteria has been discovered (5). With digital twins, surgical procedures can be simulated and personalized treatment processes can be optimized through virtual copies of individuals (6). Although artificial intelligence has disadvantages such as the need for a lot of data, biased attitude, explainability, and privacy, it will be able to solve many complex problems by contributing to the multidisciplinary perspective in biomedical and medical fields, save time for physicians, and contribute to resource savings by planning personalized treatments for patients.

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