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Transforming Ophthalmology: The Impact of Artificial Intelligence and Machine Learning

Abstract:

Artificial intelligence (AI) and machine learning (ML) are revolutionizing ophthalmology by enhancing diagnostic accuracy, treatment personalization, and patient management. These technologies facilitate the analysis of complex data sets from imaging modalities such as OCT, fundus photography, and visual field testing, enabling early detection of conditions like diabetic retinopathy, glaucoma, and age-related macular degeneration. AI algorithms can automate image interpretation, significantly reducing the burden on clinicians and improving efficiency in clinical workflows. Additionally, ML models assist in predicting disease progression and tailoring interventions based on individual patient profiles. The integration of AI and ML in ophthalmology not only optimizes clinical decision-making but also holds the potential to expand access to eye care, particularly in underserved populations. This abstract reviews the current applications, challenges, and future prospects of AI and ML in ophthalmology, underscoring their transformative potential in improving visual health outcomes

Biography

Kishore Balasubramanian has more than 21 years of academic experience in imparting Engineering Education. He had his Bachelor's Degree from Bharathiar University, India, Master's Degree and Ph.D from Anna University, India. His research interests include Medical Image Processing and Soft Computing Techniques.He has authored books in Analog Electronics and AI for medical diagnosis and book chapters. He has published 70 papers in International and National journals (Springer, Elsevier, Taylor and Francis, Wiley, Sage etc.). He has been granted 6 Indian patents and has published 3 patents. He has been nominated as a "Bentham Ambassador" – Bentham Science Publications for year 2022-23, 2023-24 and active reviewer award from Betham Publishers. He is serving as an Academic Editor in PLOS ONE journal, Trails (BMC Springer), MODA(Wiley), Societal Impacts(Elsevier), European Journal of Artificial Intelligence and Machine Learning, Exploration (Wiley).Presently he is working as an Associate Professor in the Department of EEE and Heading Career Planning and Guidance Cell at Dr. Mahalingam College of Engineering & Technology, India.