Seyed Mohammadrasoul Naeimi

Zanjan University of Medical Sciences
Iran
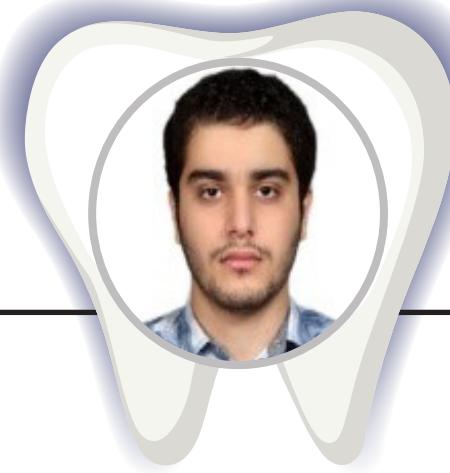
Artificial Intelligence in Adult and Pediatric Dentistry: A Narrative Review

Abstract:

Artificial intelligence (AI) has been recently introduced into clinical dentistry, and it has assisted professionals in analyzing medical data with unprecedented speed and an accuracy level comparable to humans. With the help of AI, meaningful information can be extracted from dental databases, especially dental radiographs, to devise machine learning (a subset of AI) models. This study focuses on models that can diagnose and assist with clinical conditions such as oral cancers, early childhood caries, deciduous teeth numbering, periodontal bone loss, cysts, peri-implantitis, osteoporosis, locating minor apical foramen, orthodontic landmark identification, temporomandibular joint disorders, and more. The aim of the authors was to outline by means of a review the state-of-the-art applications of AI technologies in several dental subfields and to discuss the efficacy of machine learning algorithms, especially convolutional neural networks (CNNs), among different types of patients, such as pediatric cases, that were neglected by previous reviews. They performed an electronic search in PubMed, Google Scholar, Scopus, and Medline to locate relevant articles. They concluded that even though clinicians encounter challenges in implementing AI technologies, such as data management, limited processing capabilities, and biased outcomes, they have observed positive results, such as decreased diagnosis costs and time, as well as early cancer detection. Thus, further research and development should be considered to address the existing complications.

Biography

Seyed Mohammadrasoul Naeimi has completed his BSc in electrical engineering at the age of 22 years from K.N.Toosi University of Technology and is currently a 5th year dental student at Zanjan University of Medical Sciences.