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Editorial

AI and Orthodontics

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John McCarthy an American Computer scientist coined the term "Artificial Intelligence" which when defined is a field of science concerned with building computers and machines that can reason, learn and act in such a way, that would normally require human intelligence or that involves data whose scale exceeds what humans can analyse. Artificial intelligence computer systems are used extensively in medical and dental sciences.

During last 15 years the field of AI has shown a lot of potential as it can be employed to solve a variety of tasks in diagnostic and clinical orthodontics.

AI has been making significant strides in orthodontics, improving diagnostics, treatment planning, and patient care. Here are some key areas where AI is being utilized:

1. **Diagnostic Imaging**: AI algorithms can analyze X-rays, CBCT scans, and other imaging modalities to identify dental and skeletal issues. For instance, AI can detect misalignments, assess bone structure, and identify potential issues that may not be immediately apparent to the human eye.
2. **Treatment Planning**: AI can assist in creating personalized treatment plans by analyzing data from a patient's imaging and historical treatment outcomes. It can simulate different treatment scenarios, predict outcomes, and help in selecting the most effective course of action.
3. **Custom Braces and Aligners**: AI is used to design custom braces and aligners based on detailed 3D scans of a patient's teeth. This technology can optimize the fit and function of orthodontic appliances, improving comfort and efficacy.
4. **Predictive Analytics**: By analyzing large datasets, AI can predict treatment times and outcomes with greater accuracy. This can help in setting realistic expectations and in tracking progress throughout the treatment process.
5. **Patient Monitoring**: AI can be employed in remote monitoring systems to track patients' adherence to treatment plans. For example, smart aligners with embedded sensors can send data on how well the patient is following the prescribed treatment.
6. **Virtual Consultations and Communication**: AI-powered chatbots and virtual assistants can facilitate communication between orthodontists and patients, providing information, answering questions, and managing appointment scheduling.
7. **Automated Workflow**: AI can streamline administrative tasks, such as patient record management and appointment scheduling, freeing up time for orthodontists to focus more on patient care.
8. **Enhanced Learning and Research**: AI helps in analyzing research data and clinical outcomes, contributing to the development of new techniques and

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improving existing ones.

Overall, AI enhances the precision, efficiency, and effectiveness of orthodontic treatments, benefiting both practitioners and patients.

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