AI Dentistry: From Innovation to Clinical Reality

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Recent advances in deep learning have driven a paradigm shift across industries, and dentistry is no exception. This presentation reviews the latest trends in artificial intelligence applied to digital dentistry, with a focus on real-world clinical applications.

AI-powered diagnosis of dental radiographs and clinical decision support systems are improving diagnostic accuracy and efficiency. Automated 3D anatomical modeling from CBCT data and fully automated registration with intraoral scan data are streamlining implant surgery and complex maxillofacial and oral procedures. AI-driven prosthetic design is advancing dental lab automation and fabrication workflows, with AI-based CAD/CAM applications now making one-hour prosthetic delivery a clinical reality.

A notable area is AI software tailored for All-on-X full-arch prosthetic cases. From preoperative planning and implant position optimization to AI-assisted provisional restoration design for immediate loading, an innovative end-to-end digital workflow is being established — improving treatment predictability, reducing patient visits, and enhancing satisfaction for both clinicians and patients.

AI is evolving beyond an auxiliary tool into a partner deeply embedded in clinical decision-making, and will soon encompass diagnosis, treatment planning, prosthetic design, and surgical navigation as a unified solution. In this era of AI transformation, dental professionals must actively integrate AI literacy and digital workflows into daily practice, while reinforcing the irreplaceable qualities of clinical judgment and patient-centered care to lead the future of AI-driven dentistry.

Profile

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