

new dental technology 2023

New Dental Technology 2023: Transforming Smiles with Innovation

new dental technology 2023 is setting a remarkable pace in revolutionizing oral health care, making dental visits more efficient, comfortable, and precise. Whether you're someone who visits the dentist regularly or someone curious about the latest advancements, this year brings some fascinating breakthroughs that promise to enhance both patient experience and clinical outcomes. From cutting-edge imaging techniques to AI-powered diagnostics and minimally invasive treatments, the dental field is evolving faster than ever.

In this article, we'll explore the most notable innovations in new dental technology 2023, shedding light on how these advancements improve everything from routine cleanings to complex restorative procedures. If you're interested in how technology is reshaping dentistry, read on for an engaging and informative overview.

Digital Impressions and 3D Printing: A New Era in Precision Dentistry

One of the standout trends in new dental technology 2023 is the widespread adoption of digital impressions combined with 3D printing. Traditional dental molds, which often involved uncomfortable trays and putty, are rapidly being replaced by digital scanners that capture exact details of your teeth and gums.

Why Digital Impressions Matter

Digital impressions are faster, more accurate, and less invasive. Dentists use intraoral scanners to create precise 3D models, which can immediately be reviewed on a computer. This technology not only improves patient comfort but also reduces errors common with traditional impressions.

3D Printing's Role in Dentistry

Once the digital model is created, 3D printing comes into play. Whether it's fabricating crowns, bridges, dentures, or orthodontic aligners, 3D printing allows dental professionals to produce custom appliances with unprecedented speed and accuracy. In 2023, innovations in resin materials and printer technologies have made these prosthetics stronger and more aesthetically pleasing.

Artificial Intelligence and Machine Learning in Diagnostics

Artificial intelligence (AI) is no longer a futuristic concept in dentistry—it's very much part of new dental technology 2023. AI-powered tools are enhancing diagnostic capabilities, enabling dentists to detect issues earlier and tailor treatment plans more effectively.

AI-Enhanced Imaging Analysis

AI algorithms can analyze dental X-rays and 3D scans to identify cavities, gum disease, and even oral cancers with high accuracy. This reduces the chances of human error and helps in early intervention, which is critical for better treatment outcomes.

Personalized Treatment Planning

Beyond diagnosis, AI supports personalized care by predicting how a patient's oral health might progress and suggesting optimal treatment routes. This integration of machine learning helps dentists provide more targeted and efficient care, improving both patient satisfaction and long-term oral health.

Laser Dentistry: Minimally Invasive and Patient-Friendly

Laser technology continues to make waves in new dental technology 2023 by offering less invasive alternatives to traditional dental procedures. Lasers are now widely used in treatments ranging from gum disease therapy to cavity removal and teeth whitening.

Benefits of Laser Dentistry

- Reduced pain and discomfort during procedures
- Minimized bleeding and swelling
- Faster healing times
- Decreased need for anesthesia

These benefits translate into a more pleasant experience for patients, encouraging those who might otherwise avoid the dentist to seek timely care.

Popular Laser Applications in 2023

Dentists are increasingly utilizing lasers for soft tissue procedures such as gum reshaping and treatment of periodontal pockets. Hard tissue lasers are also advancing, allowing for precise removal of decayed tooth material without the vibration and noise of drills.

Teledentistry: Expanding Access and Convenience

Another exciting dimension of new dental technology 2023 is the growth of teledentistry. By leveraging digital communication tools, dentists can now consult with patients remotely, making oral healthcare more accessible, especially in underserved or rural areas.

How Teledentistry Works

Patients can share photos, videos, or even real-time video chats with dental professionals to discuss symptoms or post-treatment follow-ups. This reduces the need for in-office visits for minor issues or preliminary consultations.

Advantages for Patients and Providers

Teledentistry offers convenience and flexibility, saving time for both patients and dentists. It also facilitates quicker triage and prioritization of urgent cases. In 2023, integration with AI diagnostic tools further enhances the remote evaluation process.

Smart Toothbrushes and Connected Oral Care Devices

The rise of smart devices has extended into daily oral hygiene routines with new dental technology 2023 introducing more advanced connected toothbrushes and oral care gadgets.

Features of Smart Toothbrushes

- Real-time feedback on brushing technique
- Personalized coaching via smartphone apps
- Tracking brushing frequency and duration

- Reminders for flossing and dental checkups

These features encourage better oral hygiene habits and empower users to take control of their dental health proactively.

Emerging Innovations in Oral Health Monitoring

Beyond toothbrushes, new gadgets can monitor saliva pH, detect early signs of gum disease, or even analyze breath for indicators of systemic health issues. This holistic approach to oral care represents a significant leap forward in preventive dentistry.

Regenerative Dentistry and Biomaterials

One of the most thrilling frontiers in new dental technology 2023 involves regenerative techniques that aim to restore damaged tissues naturally rather than relying solely on artificial replacements.

Stem Cell Therapy and Tissue Engineering

Researchers are exploring how stem cells can be used to regenerate dental pulp, bone, and periodontal tissues. Although still primarily in experimental stages, clinical trials in 2023 show promising results that could change how dentists treat tooth decay and injury.

Advanced Biomaterials for Restorations

New biocompatible materials are being developed that better mimic natural tooth structure, promote healing, and resist bacterial colonization. These include bioactive ceramics and composites that not only restore function but also support long-term oral health.

Integrating Virtual Reality for Patient Comfort

Patient anxiety is a common barrier to dental care, and new dental technology 2023 is addressing this by incorporating virtual reality (VR) as a distraction and relaxation tool during procedures.

How VR Helps in Dentistry

By immersing patients in calming virtual environments, VR can reduce perceived pain and anxiety, making treatments more tolerable. Some dental offices are now offering VR headsets during cleanings, fillings, and even more complex procedures.

Future Potential of VR in Dental Education and Training

Beyond patient comfort, VR is also being used to train dental students and professionals with realistic simulations, enhancing skills and confidence before working on actual patients.

The landscape of new dental technology 2023 is truly exciting, blending innovation with patient-centered care to redefine what modern dentistry looks like. Whether it's through AI-driven diagnostics, laser treatments, or smart oral hygiene devices, these advancements are making dental care more precise, comfortable, and accessible for everyone. Staying informed about these trends can help you make better choices about your oral health and appreciate the evolving science behind your smile.

Frequently Asked Questions

What are the most popular new dental technologies introduced in 2023?

In 2023, popular new dental technologies include AI-powered diagnostic tools, 3D printing for dental prosthetics, digital smile design software, and laser dentistry advancements.

How is AI impacting dental care in 2023?

AI in 2023 is enhancing dental care by improving diagnostic accuracy, automating image analysis, personalizing treatment plans, and predicting oral health issues before they become severe.

What advancements have been made in 3D printing for dentistry in 2023?

3D printing advancements in 2023 allow for faster, more precise production of crowns, bridges, dentures, and orthodontic devices, reducing patient wait times and improving customization.

Are there any new pain-free dental technologies introduced in 2023?

Yes, 2023 has seen improvements in laser dentistry and computer-controlled local anesthetic delivery systems, which significantly reduce discomfort during dental procedures.

How has digital smile design evolved in 2023?

Digital smile design in 2023 has become more interactive and realistic with augmented reality (AR) integration, allowing patients to visualize their post-treatment smiles in real-time.

What role does teledentistry play with new dental technology in 2023?

Teledentistry in 2023 leverages enhanced virtual consultation platforms and AI-driven remote diagnostics, making dental care more accessible and efficient for patients.

Are there any new materials used in dental restorations in 2023?

In 2023, new biocompatible and durable composite materials have been developed for dental restorations, offering better aesthetics and longer-lasting results.

How is intraoral scanning technology improving in 2023?

Intraoral scanners in 2023 are faster, more accurate, and more comfortable for patients, enabling precise digital impressions that improve treatment planning and outcomes.

Additional Resources

New Dental Technology 2023: Innovations Shaping Modern Dentistry

new dental technology 2023 has rapidly evolved, marking a pivotal year in the advancement of oral healthcare. With continuous breakthroughs in digital dentistry, artificial intelligence, and biomaterials, the dental industry is witnessing transformative changes that enhance patient care, improve treatment outcomes, and streamline clinical workflows. This article delves into the latest technologies introduced in 2023, exploring their applications, benefits, and potential challenges within contemporary dental practice.

Overview of Emerging Trends in Dental Technology 2023

The dental field has historically been slow to adopt cutting-edge technology compared to other medical sectors. However, in 2023, the pace of innovation has accelerated significantly. This surge is largely driven by the integration of digital tools, AI-powered diagnostics, and advanced materials science. These

developments are not only enhancing precision and efficiency but also improving patient comfort and accessibility to complex dental procedures.

Among the most notable trends are the expansion of 3D printing for prosthetics and orthodontics, the rise of AI-based diagnostic systems, and the introduction of minimally invasive treatment devices. Additionally, teledentistry and remote monitoring have gained traction, especially as patient preferences shift towards convenience and safety post-pandemic.

Artificial Intelligence and Machine Learning in Dentistry

Artificial intelligence (AI) has become a cornerstone of new dental technology 2023. Leveraging machine learning algorithms, dental professionals can now analyze radiographs, intraoral scans, and patient records with unprecedented accuracy. These AI-powered systems assist in early detection of caries, periodontal disease, and even oral cancers, often outperforming traditional diagnostic methods.

For instance, several software platforms introduced this year utilize deep learning to interpret panoramic and bitewing X-rays, highlighting areas of concern and suggesting treatment plans. This not only reduces diagnostic errors but also accelerates the decision-making process. Moreover, AI enhances treatment personalization by integrating patient-specific data such as genetic predispositions and lifestyle factors.

However, the adoption of AI tools raises questions regarding data privacy, the need for clinician training, and the potential overreliance on automated systems. Despite these concerns, the consensus within the dental community is that AI represents a valuable adjunct rather than a replacement for clinical expertise.

Advancements in 3D Printing and Digital Impressions

3D printing technology has matured in 2023, becoming more accessible and affordable for dental practices worldwide. Unlike traditional methods relying on physical impressions and laboratory fabrication, digital impressions captured via intraoral scanners feed directly into 3D printers, producing crowns, bridges, aligners, and surgical guides with exceptional precision.

Key advantages of this technology include:

- Reduced turnaround times—from days to hours in some cases
- Customization tailored to the patient's unique anatomy
- Minimized material waste and enhanced sustainability

- Improved patient experience due to non-invasive scanning

Recent innovations have also expanded the range of printable biomaterials, including ceramics and biocompatible resins, which improve the durability and aesthetics of dental restorations. Some printers now incorporate multi-material capabilities, allowing the creation of complex prosthetics with varying hardness and translucency to better mimic natural teeth.

Despite these benefits, challenges remain such as the initial investment cost, the learning curve for clinicians and technicians, and regulatory hurdles related to material safety and long-term performance.

Minimally Invasive Devices and Laser Dentistry

Minimally invasive dentistry is a growing focus in 2023, propelled by new devices designed to preserve healthy tooth structure and reduce patient discomfort. Laser dentistry, in particular, has seen significant enhancements with the introduction of more precise, versatile, and affordable laser systems.

Modern dental lasers can perform a variety of procedures including cavity preparation, soft tissue surgery, and periodontal therapy with reduced bleeding, swelling, and healing time compared to traditional drills and scalpels. The 2023 models feature improved wavelength specificity and adjustable power settings, enabling tailored treatments across diverse clinical scenarios.

Furthermore, these devices support pain management by minimizing nerve irritation, often eliminating the need for anesthesia. This advancement not only improves patient satisfaction but also expands treatment options for anxious individuals or those with contraindications to conventional anesthesia.

Nevertheless, laser dentistry requires specialized training and adherence to safety protocols to avoid tissue damage. The cost of acquisition and maintenance also poses barriers for smaller practices.

Integration of Teledentistry and Remote Monitoring

The expansion of telehealth services in dentistry has been one of the most consequential developments in recent years, gaining further momentum in 2023. Teledentistry platforms now offer comprehensive remote consultations, treatment planning, and follow-up care, enhancing access especially in underserved or rural areas.

These platforms often integrate with mobile apps and wearable devices that monitor oral health indicators such as bruxism, gum inflammation, and oral hygiene habits. By transmitting real-time data, dentists can intervene proactively, reducing the need for emergency visits or invasive treatments.

Advantages of teledentistry include:

- Convenience and reduced travel time for patients
- Continuous monitoring leading to early problem detection
- Cost-effective management of routine care

However, limitations related to the inability to perform physical examinations and certain procedures remotely mean that teledentistry complements rather than replaces in-person visits.

Biomaterials and Regenerative Dentistry

Regenerative dentistry continues to evolve with new biomaterials introduced in 2023 that promote tissue regeneration and healing. Innovations in bioactive glass, collagen scaffolds, and stem cell therapies are enabling more natural restoration of dental tissues damaged by trauma or disease.

One promising area is dentin regeneration, where specialized materials stimulate the body's own repair mechanisms to rebuild tooth structure. These approaches aim to reduce reliance on synthetic fillings and implants, offering longer-lasting and biologically compatible solutions.

While still in experimental or early clinical stages, regenerative techniques signal a paradigm shift toward preserving natural dentition and enhancing patient outcomes.

Conclusion: The Impact and Future Outlook of New Dental Technology 2023

The landscape of dental care is undeniably reshaped by the innovations introduced in 2023. From AI-driven diagnostics to advanced 3D printing, minimally invasive lasers, and telehealth integration, these technologies collectively elevate the standards of precision, efficiency, and patient-centric care.

Dental professionals adopting these tools are positioned to deliver superior outcomes while addressing growing patient demands for comfort and accessibility. At the same time, challenges such as cost, training requirements, and regulatory compliance must be navigated thoughtfully.

As research continues and technologies mature, the trajectory for dental innovation promises even more

personalized, sustainable, and effective treatments. The developments of new dental technology 2023 are thus not just incremental improvements but foundational steps toward the future of oral healthcare.

New Dental Technology 2023

new dental technology 2023: Clinical Applications of Digital Dental Technology Radi Masri, Carl F. Driscoll, 2022-12-12 Clinical Applications of Digital Dental Technology Comprehensive overview of digital dentistry describing available technologies and when/how to use digital dentistry in practice Clinical Applications of Digital Dental Technology provides comprehensive yet practical references to a wide range of potential uses for digital technology in dental practice, discussing a wide range of digital technologies including their indications, contraindications, advantages, disadvantages, limitations, and applications. Overall, the book emphasizes how to use digital dentistry in daily practice across all specialties. With broad coverage of the subject, Clinical Applications of Digital Dental Technology discusses digital imaging, digital impressions, digital prosthodontics, digital implant planning and placement, and digital applications in endodontics, orthodontics, and oral surgery. Each chapter is written by experts in each topic and covers applications for prosthodontics, implant dentistry, oral surgery, endodontics, orthodontics, and other specialty areas. Clinical Applications of Digital Dental Technology also includes information on: Software, scanning, and manufacturing capabilities which have led to an unparalleled revolution leading to a major paradigm shift in all aspects of dentistry Digital radiography, virtual planning, computer-aided design and manufacturing, digital impressions, digitally fabricated dentures, and the "virtual patient" Available technologies, plus a critical evaluation of each one to detail how they are incorporated in daily practice across all specialties Developing technologies in the field with special attention paid to those expected to be on the market sometime in the near future Clinical Applications of Digital Dental Technology is an essential resource for general dentists, specialists, and students who wish to understand digital dentistry and efficiently and intelligently incorporate it into their practices. The text is also useful for laboratory technicians interested in recent digital advances in the dental field.

new dental technology 2023: Endodontics Beyond Basics: Navigating New Frontiers in Root Canal Therapy Dr Kailash Attur, 2022-03-13 Navigate the new frontiers of root canal therapy with this in-depth guide to advanced endodontic practices. From innovative techniques to the latest research, this book is essential for endodontists and dental professionals seeking to enhance their skills and knowledge.

new dental technology 2023: Advancements in Personalized Digital Oral Surgery, An Issue of Oral and Maxillofacial Surgery Clinics of North America Neha Sharma, Florian M. Thieringer, 2025-08-28 In this issue of Oral and Maxillofacial Surgery Clinics, guest editors Drs. Neha Sharma and Florian M. Thieringer bring their considerable expertise to the topic of Advancements in Personalized Digital Oral Surgery. Top experts in the field discuss technologies such as CAD/CAM, 3D printing, robotic surgery, virtual reality, and artificial intelligence, as well as clinical areas such as the temporomandibular joint, the orbit, implants, mandibular and maxillary reconstruction, and orthognathics. - Contains 11 relevant, practice-oriented topics including the role of digital technologies in personalized craniomaxillofacial surgical procedures; integrating virtual planning and 3D printing for craniofacial trauma management; digital transformation in facial cosmetic implant procedures; enhancing TMJ surgical outcomes with digital technologies; robotic surgery in craniomaxillofacial treatment; and more - Provides in-depth clinical reviews on advancements in personalized digital oral surgery, offering actionable insights for clinical practice - Presents the latest information on this timely, focused topic under the leadership of experienced editors in the field. Authors synthesize and distill the latest research and practice guidelines to

create clinically significant, topic-based reviews

new dental technology 2023: Periodontal Advancements: A Guide to the Latest in Gum Health Dr Ravi Kiran, 2021-06-25 Stay updated on the latest advancements in periodontal care with this comprehensive guide. Covering new treatments, technologies, and research in gum health, this book is an invaluable resource for dental practitioners and researchers.

new dental technology 2023: Hollywood Unions Kate Fortmueller, Luci Marzola, 2024-12-13 Who makes films and television shows? How do those people make a living in Hollywood? Hollywood Unions tells the stories of the unions and guilds that have organized and negotiate on behalf of motion picture and television labor: the DGA, IATSE, SAG-AFTRA, and WGA.

new dental technology 2023: Breaking Boundaries: Pioneering Sustainable Solutions Through Materials and Technology Mir Waqas Alam, 2025-01-24 This book explores sustainable innovation by delving into advanced materials science and technology. Each chapter reveals the transformative potential of sustainable solutions, from groundbreaking advancements in nanomaterials to eco-friendly manufacturing practices. This book offers a captivating glimpse into the potential future of sustainability, appealing to experienced researchers, budding innovators, and those with a general interest in the topic. Also, this book provides valuable insights into recent developments in materials science and technology, catering to academics, engineers, and policymakers. It aims to promote collaboration across many disciplines and encourage innovation to speed up the development of sustainable solutions that will have a long-lasting positive effect on future generations.

new dental technology 2023: Leveraging Digital Technology for Preventive Dentistry Asanza, Dachel Martínez, 2024-08-26 Even in the modern age, oral diseases have a substantial and negative impact on citizens all over the globe. Oral diseases affect nearly half of the global population and represent a significant economic and health burden. As a result, the promotion of oral health and disease prevention information has emerged as one of the most cost-effective strategies in limiting these maladies and treating them should they occur. Leveraging Digital Technology for Preventive Dentistry provides relevant theoretical frameworks and the latest empirical research findings in the area. It discusses the latest findings in digital technologies for health promotion and oral disease promotion, as well as the behavior of these health actions in the international context. Covering topics such as ethical and legal aspects, preventive dentistry, and biometric studies, this book is an excellent resource for librarians, dentists, dental students and educators, researchers, academicians, and more.

new dental technology 2023: Innovación Educativa en el ámbito de las TIC y las TAC Antonio G. Ravelo García, Santiago T. Pérez Suárez, 2025-03-27 Este libro recopila una selección de trabajos de autores que han aportado su experiencia y saber en diferentes temáticas clave de la innovación educativa. Los artículos aquí presentados abordan un total de 11 temas específicos. Si bien estos temas no se dividen formalmente en áreas temáticas en el índice del libro, pueden agruparse conceptualmente en torno a tres enfoques principales: Metodologías Activas y Participativas, STEM y Competencias Tecnológicas, y Tecnologías y Recursos Didácticos en Educación. Esta clasificación conceptual permite destacar la diversidad de enfoques y estrategias que integran las TIC y las TAC en los procesos de enseñanza y aprendizaje, destacando el papel del estudiante como protagonista activo de su desarrollo. Esta clasificación refleja la diversidad de enfoques y estrategias que permiten integrar las TIC y las TAC en los procesos de enseñanza y aprendizaje, destacando el papel del estudiante como protagonista activo de su desarrollo. Cada bloque aborda enfoques y estrategias que permiten integrar las TIC y las TAC en los procesos de enseñanza y aprendizaje, destacando el papel del estudiante como protagonista activo de su desarrollo. Las temáticas incluyen enfoques innovadores como el Aprendizaje Basado en Problemas, que fomenta el pensamiento crítico y la resolución colaborativa, y se enmarca dentro del bloque de Metodologías Activas y Participativas; el Aula Invertida, que transforma el tiempo de clase en un espacio para la aplicación práctica, también perteneciente a este bloque; y la Gamificación, que introduce elementos lúdicos para aumentar la motivación y el compromiso del alumnado, integrada dentro del bloque de Tecnologías y Recursos

Didácticos en Educación. Esta clasificación permite una mejor comprensión de las conexiones entre las diversas estrategias pedagógicas y tecnológicas presentadas. Además, se exploran iniciativas relacionadas con la Inteligencia Artificial en Educación, que abre nuevas posibilidades para la personalización del aprendizaje, y con el desarrollo de competencias STEM, esenciales para preparar a los estudiantes para un futuro marcado por la tecnología.

new dental technology 2023: *Reshaping Learning with Next Generation Educational Technologies* Braman, James, Brown, Alexis, Richards, Mary Jo, 2024-05-06 The traditional educational landscape often struggles to keep pace with the rapid advancements in technology and the evolving needs of both students and educators. This challenge has given rise to a crucial question; how can we effectively harness the full potential of next-generation educational technologies to shape a brighter future for education? A solution to this very question can be found within the pages of *Reshaping Learning with Next Generation Educational Technologies*. This book delves deep into the convergence of artificial intelligence (AI), disruptive technologies, and cutting-edge educational practices, revealing their transformative power. Through practical examples, visionary insights, and thought-provoking analyses, it provides a roadmap for educators, researchers, and professionals to navigate this changing educational landscape. It's a call to action, urging academia to seize the transformative potential of these groundbreaking technologies.

new dental technology 2023: *Advances in Sports Science and Technology* D. Prasanna Balaji, Pinar Dinç Kalayci, Seshadri S. Ramkumar, 2025-04-29 It focused on the strategies, challenges and choices in the renaissance of modern sports. It brought together scientists, sports persons, decision makers and executives from across the globe to share research approaches, methods and results. It analyzed ways for implementing adaptable and observable improvement which have direct impact on sports.

new dental technology 2023: *The 17th International Conference Interdisciplinarity in Engineering* Liviu Moldovan, Adrian Gligor, 2024-03-28 This book contains research papers that were accepted for presentation at the 17th International Conference on Interdisciplinarity in Engineering—INTER-ENG 2023, which was held on 5-6 October 2023, in the city of Târgu Mureș, Romania. The general scope of the conference “Towards transition for a more competitive European industry in a smart, safe and sustainable future” is proposing a new approach related to the development of a new generation of smart factories grounded on the manufacturing and assembly process digitalization. It is related to advance manufacturing technology, lean manufacturing, sustainable manufacturing, additive manufacturing, manufacturing tools and equipment. It is a leading international professional and scientific forum of great interest for engineers and scientists who can read in this book research works contributions and recent developments as well as current practices in advanced fields of engineering.

new dental technology 2023: *Artificial Intelligence in Dentistry* Kaan Orhan, Rohan Jagtap, 2024-01-10 This comprehensive book focuses on various aspects of artificial intelligence in dentistry, assisting dentists, specialists, and scientists in advancing their understanding, knowledge, training, and expertise in this field of artificial intelligence. Readers will learn about AI-supported pathways for the diagnosis and treatment of dental caries, periodontal bone loss, impacted teeth, periapical lesions, crown, and root fractures, working length determination, and detecting root and canal morphology, TMJ disorders, detection of obstructive sleep apnea, oral mucosal lesions, and many more. Prediction tasks include the estimation of retreatment needs and third molar eruption. Critical information on applications of AI in the field of Oral and Maxillofacial Radiology, Implants, Endodontics, Prosthodontics, Restorative dentistry, Oral surgery, Periodontics, and Orthodontics. Gain valuable insight into studies applying machine learning based on Machine Learning (ML), DeepLearning (DL), and Artificial Neural Networks (ANN). Explore the technical aspects and medical applications of AI in dentistry. Additionally, discover cutting-edge topics like 3D and bioprinting applications of AI and its integration into dental education. All the chapters provide thorough, evidence-based data on AI and its implications in oral health, bridging the gap between knowledge and practical application. The book explains the advantages, disadvantages, and

limitations of AI in dental health. Delve into the medico-legal aspects of AI to navigate this cutting-edge landscape responsibly. Learn about applications of Machine Learning and Artificial Intelligence in the Covid-19 Pandemic. Extensive information on deep learning in image processing, including various types of neural networks, image segmentation, enhancement, reconstruction, and registration. This book concludes with an exploration of AI's exciting potential and future perspectives in the dental field, paving the way for a new era of oral healthcare. Don't miss out on this unique resource for AI in Dentistry, which empowers you to stay at the forefront of innovation and embrace the AI revolution in Dentistry. Be prepared for the future of dentistry.

new dental technology 2023: Optimizing Intelligent Systems for Cross-Industry

Application Rajest, S. Suman, Moccia, Salvatore, Singh, Bhopendra, Regin, R., Jeganathan, Joseph, 2024-08-28 Intelligent systems, powered by artificial intelligence (AI) and machine learning, offer transformative benefits across diverse sectors, from healthcare and finance to manufacturing and agriculture. By refining these systems to be more adaptable, scalable, and informative, industries can solve complex business problems and streamline operations. Effective research into technical challenges across intelligent system application is necessary to prioritize their development and impact in industries, such as crop analysis, disease diagnosis, or traffic management. *Optimizing Intelligent Systems for Cross-Industry Application* explores the challenges and opportunities associated with intelligent technology integration in various sectors, including agriculture, medicine, healthcare, computer engineering, business management, and environmental research. It presents solutions for the effective use of intelligent systems within their respective industries. This book covers topics such as human resources, smart cities, and crop productivity, and is a useful resource for computer engineers, agriculturalists, business owners, healthcare professionals, environmentalists, researchers, scientists, and academicians.

new dental technology 2023: Augmented Reality Games II Vladimir Geroimenko, 2024-05-07

This is the second edition of the first ever research monograph that explores the exciting field of augmented reality games and their enabling technologies. The new edition has been thoroughly revised and updated, with 6 new chapters included. As well as investigating augmented reality games in education, the book covers the gamification of medicine, healthcare, and art. It has been written by a team of 43 researchers, practitioners, and artists from 12 countries, pioneering in developing and researching the new type of computer games. This book deals with a systematic analysis of educational augmented reality games, the gamification of elementary and secondary education, teachers' novel key skills and new teaching methods in the classroom, creating immersive and playful reading experiences, augmented reality games for health promotion in old age and for transforming dental and physical education and practice, the gamification of augmented reality art, pervasive games, and gaming in public spaces, among other topics. Intended as a starting point for exploring this new fascinating area of research and game development, it will be essential reading not only for researchers, practitioners, game developers, and artists, but also for students (graduates and undergraduates) and all those interested in the rapidly developing area of augmented reality games.

new dental technology 2023: Academic Integrity in the Age of Artificial Intelligence

Mahmud, Saadia, 2024-02-13 Powerful generative Artificial Intelligence (AI) has defined and transformed our modern era, and the fundamental conceptualization of academia stands at a crossroads. *Academic Integrity in the Age of Artificial Intelligence* delves deep into the seismic shifts and intricate challenges brought forth by the proliferation of AI technologies, exploring the intricacies between innovation and integrity. The rise of generative AI, exemplified by ChatGPT, has set a cascade of change across diverse sectors, including higher education, medicine, and the arts. This book dissects the multifaceted impact of AI on the academic landscape. With AI's ability to craft text and imagery mirroring human creativity, the lines between authentic scholarship and synthetic deception blur. The book examines the delicate balance between productivity and ethics while weaving a comprehensive tapestry of insights from various stakeholders. From academics grappling with the definition of AI-assisted breaches of academic integrity to policymakers reshaping the

future of higher education, this book engages a myriad of voices. It scrutinizes the nascent challenges in assessment design, the urgent need to update antiquated integrity policies, and the importance of research ethics in an AI-driven world. This book is ideal for educators, policymakers, students, and technologists through the complicated terrain of AI ethics.

new dental technology 2023: Handbook of Intelligent and Sustainable Smart Dentistry Ajay Kumar, Namrata Dogra, Sarita, Surbhi Bhatia, M S Sidhu, 2024-08-05 With the exponential growth of science and technology, the delivery of dental care has shifted from conventional methods to intelligent techniques. In addition to adapting intelligent techniques, sustainable dental practice is of the utmost importance. Eco-friendly dentistry, sustainable dentistry, or green dentistry are approaches that reduce the environmental impact of dental practice and help safeguard planetary and community well-being. This handbook provides the latest and most comprehensive evidence-based guidance on intelligent and sustainable approaches in dentistry. *Handbook of Intelligent and Sustainable Smart Dentistry: Nature and Bio-Inspired Approaches, Processes, Materials, and Manufacturing* highlights how Dentistry 4.0 has come to the rescue after COVID-19 and how it has helped in providing needed e-healthcare. This handbook bridges the gap between research and development in the field of smart dentistry for professionals and clinicians. Intelligent materials, equipment, instrumentation, and the latest behavior management techniques and how these techniques provide superior care and treatment to society are explored in detail. The scope of nature-inspired techniques and procession, along with green solutions, are also discussed in this one-of-a-kind handbook. This valuable handbook is a single-stop solution for practitioners, researchers, scholars, students, academicians, and clinicians interested in updating their knowledge on intelligent and sustainable dentistry. The handbook will bestow the readers with not only theoretical knowledge but will equip them with clinical skills as well.

new dental technology 2023: *Advancements in Neuroscience: Modern Tools and Techniques Fueling Thrilling Discoveries in the 21st Century* Aliasghar Tabatabaei Mohammadi, Erfan Ghanbarzadeh, Raziye Zamiri, Melika Kokabi Dana, Younes Keihani Far, Mohammad Ali Jafari Namak Avarani, Reza Asgari, Shabnam Keshtgar, Ali Sanaei, Melika Shamshiri, 2024-08-01 Chapters Chapter 1: Brain-Computer Interfaces and Neural Engineering Chapter 2: Neuroimaging Advances in Mapping the Brain Chapter 3: Genetics of Neuropsychiatric Disorders Chapter 4: Molecular Mechanisms of Learning and Memory Chapter 5: Neuroplasticity and Rehabilitation Chapter 6: Cognitive Enhancement and Neural Performance Chapter 7: Neuroscience and new technologies Chapter 8: The Developing Brain: Plasticity from Cradle to Grave Chapter 9: Understanding Human Behavior: Insights from Psychological Perspectives Chapter 10: The Intersection of Psychology and Educational Management: Strategies for Optimal Student Development

new dental technology 2023: Smart Trends in Computing and Communications Tomonobu Senjyu, Chakchai So-In, Amit Joshi, 2024-06-01 This book gathers high-quality papers presented at the Eighth International Conference on Smart Trends in Computing and Communications (SmartCom 2024), organized by Global Knowledge Research Foundation (GR Foundation) from 12 to 13 January 2024 in Pune, India. It covers the state-of-the-art and emerging topics in information, computer communications, and effective strategies for their use in engineering and managerial applications. It also explores and discusses the latest technological advances in, and future directions for, information and knowledge computing and its applications.

new dental technology 2023: E-Proceeding of Final Year Computing Project 2024 Faculty of Computing & Multimedia, UPTM, E-Proceeding of Final Year Computing Project 2024 is a dynamic collection of innovative and cutting-edge projects by final-year computing students. Showcasing expertise in fields such as artificial intelligence, data science, cybersecurity, and software engineering, this compilation highlights the students' ability to tackle real-world challenges through technology. Each project reflects rigorous academic effort, technical proficiency, and creative problem-solving, making this e-proceeding a valuable resource for students, educators, and industry professionals alike. A testament to the dedication and ingenuity of the next generation of computing experts, this publication paves the way for future advancements in the fast-evolving

world of technology.

new dental technology 2023: Explainable and Responsible Artificial Intelligence in Healthcare
Rishabha Malviya, Sonali Sundram, 2025-04-01 This book presents the fundamentals of explainable artificial intelligence (XAI) and responsible artificial intelligence (RAI), discussing their potential to enhance diagnosis, treatment, and patient outcomes. This book explores the transformative potential of explainable artificial intelligence (XAI) and responsible AI (RAI) in healthcare. It provides a roadmap for navigating the complexities of healthcare-based AI while prioritizing patient safety and well-being. The content is structured to highlight topics on smart health systems, neuroscience, diagnostic imaging, and telehealth. The book emphasizes personalized treatment and improved patient outcomes in various medical fields. In addition, this book discusses osteoporosis risk, neurological treatment, and bone metastases. Each chapter provides a distinct viewpoint on how XAI and RAI approaches can help healthcare practitioners increase diagnosis accuracy, optimize treatment plans, and improve patient outcomes. Readers will find the book: explains recent XAI and RAI breakthroughs in the healthcare system; discusses essential architecture with computational advances ranging from medical imaging to disease diagnosis; covers the latest developments and applications of XAI and RAI-based disease management applications; demonstrates how XAI and RAI can be utilized in healthcare and what problems the technology faces in the future. Audience The main audience for this book is targeted to scientists, healthcare professionals, biomedical industries, hospital management, engineers, and IT professionals interested in using AI to improve human health.

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