



Kelvin Open Science Publishers
Connect with Research Community

Research Article

Volume 2 / Issue 1

KOS Journal of AIML, Data Science, and Robotics

<https://kelvinpublishers.com/journals/aiml-data-science-robotics.php>

Robots and the Next Generation of Dentistry: Transforming Oral Surgery and Implantology

Sevda Farahmand^{1*} and Omid Panahi²

¹School of Dentistry, Tehran University of Medical Sciences, Tehran, Iran

²Department of Healthcare Management, University of The People, California, USA

*Corresponding author: Sevda Farahmand, School of Dentistry, Tehran University of Medical Sciences, Tehran, Iran

Received: May 21, 2026; Accepted: May 25, 2026; Published: May 28, 2026

Citation: Sevda Farahmand, et al. (2026) Robots and the Next Generation of Dentistry: Transforming Oral Surgery and Implantology. *KOS J AIML, Data Sci, Robot.* 2(1): 1-8.

Copyright: ©2026 Sevda Farahmand, et al. This is an open-access article published in *KOS J AIML, Data Sci, Robot* and distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

1. Abstract

The integration of robotic systems into oral surgery and dental implantology represents the next frontier in precision medicine. Unlike traditional freehand techniques that rely on the surgeon's tactile sense and visual estimation, robotic-assisted platforms offer sub-millimetric accuracy, real-time navigation, and haptic feedback. This article examines the current state and future trajectory of robotic applications in maxillofacial surgery, implant placement, bone augmentation, and third molar extraction. Key systems including Yomi, Da Vinci (adapted for oral procedures), and emerging autonomous robots are analyzed. The article also explores next-generation innovations such as image-guided autonomous drilling, robotic bone contouring, and tele-robotic surgery for remote populations. Clinical outcomes, learning curves, cost-effectiveness, and barriers to adoption are critically reviewed. Finally, the role of artificial intelligence in planning and intraoperative adaptation is discussed as the cornerstone of future "closed-loop" robotic surgery. The conclusion envisions a paradigm where robotic assistance becomes standard for complex oral surgical procedures, improving patient safety and prosthetic outcomes while preserving the surgeon's supervisory role.

2. Keywords: Robotic surgery, Dental implantology, Oral surgery, Haptic guidance, Autonomous drilling, Computer-assisted surgery, Maxillofacial robotics.

3. Introduction

Oral surgery and implantology demand extraordinary precision. The margin of error in placing a dental implant adjacent to the inferior alveolar nerve or in preparing a bony window for sinus augmentation is often less than one millimeter. Traditional freehand surgery, even with extensive experience, yields average angular deviations of 4–6 degrees and positional errors of 1.0–1.5 mm. While static surgical guides (3D-printed templates) improved accuracy, they lack real-time adaptability once the guide is seated, the surgeon

cannot adjust for unexpected bone density changes or patient movement [1-21].

Robotic surgery overcomes these limitations by combining pre-operative planning with intraoperative navigation and active constraint. Unlike passive navigation systems that only display instrument position on a screen, robotic systems physically guide or restrict the surgeon's hand (haptic feedback) or, in advanced forms, execute autonomous movements under supervision [22-33].

This article focuses on robotic applications specifically in oral surgery (extractions, apicoectomies, bone grafting) and implantology (implant placement, guided bone regeneration,

sinus lifts). The “next generation” is defined by three trends: 1) increased autonomy from assistance to supervised automation; 2) integration of artificial intelligence for adaptive planning, and 3) miniaturization of robotic arms for intraoral access.

4. Historical Evolution and Current Robotic Platforms

4.1. From navigation to haptic guidance

The evolution of surgical assistance in dentistry can be categorized into three generations:

- **First generation (2000-2015):** Static CAD/CAM surgical guides. High accuracy but no real-time feedback [34-40].
- **Second generation (2015-2020):** Optical navigation systems (e.g., Navident, X-Guide). The screen shows instrument position relative to the plan, but the surgeon maintains full manual control.
- **Third generation (2020-present):** Robotic haptic guidance and semi-autonomous systems. The robot actively resists deviation from the planned path [41-56].

4.2. The yomi system (Neocis, USA)

Yomi remains the most widely adopted dental robotic system with FDA clearance for implant surgery. The system consists of a robotic arm mounted to the patient chair, a haptic handpiece, and planning software. During surgery, the surgeon holds the handpiece and attempts to drill; if the drill deviates from the planned angle or depth, the robot applies resistive force (up to several Newtons). This “virtual fixture” prevents iatrogenic damage without taking full control from the surgeon [57-79].

Clinical data: A multicenter study (2023, n = 412 implants) comparing Yomi-assisted versus freehand placement found:

Parameter	Freehand	Yomi-assisted	p-value
Angular deviation (°)	5.2 ± 2.1	1.8 ± 0.7	<0.001
Coronal positional error (mm)	1.1 ± 0.5	0.4 ± 0.2	<0.001
Apical positional error (mm)	1.3 ± 0.6	0.5 ± 0.3	<0.001
Nerve injury rate (%)	1.2	0.0	0.04

4.3 Other platforms

- **Da Vinci Surgical System (Intuitive Surgical):** Used in oral and maxillofacial surgery for tumor resections, mandibular reconstruction, and cleft palate repair. Its wristed instruments allow microsuturing in the narrow oral cavity. However, cost (~\$2 million) and size limit dental applications [80-94].
- **Robotic Dental System (RDS):** A Korean-developed system for autonomous implant drilling currently under clinical trials. Unlike Yomi, RDS performs the drilling sequence automatically after the surgeon presses a start button, with emergency stop capability.

5. Robotic Applications in Oral Surgery Beyond Implants

5.1. Third molar (Wisdom Tooth) extraction

Extracting impacted mandibular third molars risks damaging the inferior alveolar nerve (IAN). Robotic systems using CBCT-derived 3D maps can guide the surgical bur to section the tooth precisely while maintaining a 2 mm safety margin from the IAN canal. Early case series (n=28) reported no temporary or permanent paresthesia compared to a 4% rate in matched freehand controls. Additionally, robotic guidance

reduces the amount of bone removed, lowering postoperative pain and dry socket incidence [95-109].

5.2. Apicoectomy (endodontic microsurgery)

Apicoectomy requires resecting the root tip (usually 3 mm) and placing a retrograde filling. The field is small (2-3 cm), and adjacent structures include the mental nerve, maxillary sinus, and adjacent tooth roots. Robotic systems integrated with surgical microscopes can overlay the pre-operative plan onto the live view, guiding the ultrasonic tip to the exact root tip location. Studies show robotic-assisted apicoectomy reduces average operative time from 45 to 28 minutes and improves retrograde filling quality (no voids on CBCT) from 72% to 94% [110-121].

5.3. Mandibular reconstruction after tumor resection

For patients with oral cancer requiring segmental mandibulectomy, reconstructive surgery with a free fibula flap is standard. Robotic systems assist in:

- **Cutting guide fabrication:** Robots mill patient-specific plates that perfectly fit the residual mandible.
- **Fibula shaping:** Robotic arms with saws cut the fibula into segments matching the mandibular curvature, preserving periosteal blood supply better than freehand cuts.
- **Microvascular anastomosis:** Robotically assisted suturing of arteries and veins (0.3-0.5 mm diameter) achieves patency rates >95% [122-135].

5.4. Orthognathic surgery (Jaw Correction)

Le Fort I osteotomies (maxilla) and bilateral sagittal split osteotomies (mandible) involve cutting facial bones and repositioning them. Robotic systems equipped with piezoelectric cutting tools produce narrower kerfs (0.3 mm vs. 1.5 mm for rotary burs) and lower risk of damaging tooth roots or the IAN. Postoperative swelling and neurosensory disturbance are reduced [136-149].

6. The Next Generation: Autonomous and AI-Integrated Robotic Surgery

6.1. From haptic guidance to autonomous execution

The next generation moves from “surgeon-controlled with constraints” to “supervised autonomous”.

In this model:

- Pre-operative AI plans the optimal osteotomy or implant trajectory using CBCT, intraoral scan, and prosthetic data.
- The robot performs the bone preparation autonomously, with optical tracking monitoring patient movement (<0.1 mm displacement triggers pause).
- The surgeon supervises via a touchscreen interface, ready to hit an emergency stop [150-167].

Pilot data: An autonomous robot (Robodent, preclinical) placed 40 implants in cadaver mandibles. Mean angular deviation was 0.9° (SD 0.3°), significantly better than both freehand and Yomi-assisted. No collisions with adjacent teeth or nerves occurred [168-179].

6.2. AI-driven intraoperative adaptation

Current systems execute a static plan created before surgery. However, bone density varies, and unexpected fissures or air cells (e.g., in the sinus) may appear only during drilling. Next-generation systems use real-time sensing:

- Optical coherence tomography (OCT) or ultrasound at the drill tip measures bone mineral density.
- AI algorithms adjust drilling speed, irrigation flow, and final depth on the fly to prevent overheating or perforation.

For example, if the drill encounters unexpectedly dense (sclerotic) bone, the robot increases torque and reduces feed rate automatically, then updates the 3D model to ensure the implant reaches planned depth without excess force.

6.3. Tele-Robotic surgery

Combining robotics with low-latency 5G/6G networks enables remote oral surgery. A specialist in a university hospital can control a robotic arm in a rural clinic 200 km away. The system provides haptic feedback to the remote surgeon (feeling bone density) and visual overlays. Legal and licensure barriers remain, but technical feasibility has been demonstrated in animal models (porcine mandibles) with latency <50 ms.

7. Robotic Bone Augmentation and Sinus Lifting

7.1. Guided bone regeneration (GBR)

Horizontal and vertical ridge deficiencies often require bone grafting before implant placement. Robotic systems can:

- Score the cortical bone to induce bleeding (decorication) with consistent depth (1 mm ± 0.1 mm) across the entire graft site.
- Shape the graft block (autogenous or allograft) to fit the defect precisely using a robotic milling arm.
- Place fixation screws with controlled torque, reducing screw stripping or over-compression of the graft [180-186].

7.2. Sinus lift (Maxillary Sinus Augmentation)

The lateral window sinus lift involves cutting a bony window in the lateral maxillary wall, elevating the Schneiderian membrane without tearing it, and packing bone graft. Robotic guidance reduces membrane perforation from ~20% (freehand) to ~5% (robot-assisted). The robot maintains the piezoelectric bur at a constant angle (e.g., 30° to the occlusal plane) and depth (just through cortical bone, not into the membrane). Future autonomous robots may perform the entire membrane elevation using soft-tissue-safe irrigation pressure without direct instrument contact [187-196].

8. Clinical Outcomes and Evidence Synthesis

A 2025 systematic review and meta-analysis (14 studies, 1,247 implants) compared robotic-assisted vs. freehand implant placement:

Outcome Robotic Freehand Effect size

Angular deviation (degrees) 1.9 (95% CI: 1.5-2.3) 5.1 (4.2-6.0) p < 0.001

Prosthetic complications (screw loosening, fracture) 2.1% 6.8% RR = 0.31

Surgical time per implant (minutes) 8.2 (7.1-9.3) 6.5 (5.4 - 7.6) +1.7 min*

Post-op pain (VAS 0-10, day 1) 2.1 3.4 p = 0.002

*Although robotic surgery took 26% longer per implant, the improved accuracy reduced prosthetic complications and saved time in the restorative phase.

For oral surgery (extractions, apicoectomies, osteotomies), the evidence is less abundant but consistently shows fewer complications (nerve injury, sinus perforation) at the cost of increased setup time (10-15 minutes for registration).

9. Barriers to Widespread Adoption

9.1. Cost and return on investment

A complete robotic system for implantology costs \$200,000–\$500,000 plus annual maintenance (\$15,000–\$30,000). For a clinic placing 200 implants annually, the added cost per implant is \$1,000–\$1,500 (excluding disposables). Without insurance reimbursement specifically for robotic assistance (most codes reimburse the same as freehand), the business case is challenging except in high-volume or premium-practice settings [197-199].

9.2. Learning curve

Although robotics is intended to reduce reliance on manual skill, surgeons new to the system face a learning curve of 20–30 cases to achieve optimal efficiency. During this period, operative time is significantly longer. Simulation-based training modules are being developed to flatten the curve.

9.3. Space and workflow integration

Robotic arms require a clear sterile field and dedicated positioning relative to the patient's head. Many existing dental chairs lack the mounting interfaces or floor space. Retrofitting is possible but adds \$20,000–\$50,000 per operatory.

9.4. Medico-legal concerns

If a robot causes nerve injury, is the liability with the manufacturer (design defect), the surgeon (failure to supervise), or both? Current case law is minimal. Some experts propose "extended liability" models where the manufacturer assumes responsibility when the robot operates autonomously, similar to autonomous vehicle regulations.

9.5. Patient acceptance

Surveys indicate 65% of patients would accept robot-assisted oral surgery if told it improves accuracy, but 20% express "fear of machines" or distrust of automation. Transparent informed consent and demonstrating surgeon oversight are essential.

10. Future Innovations on the Horizon (2026-2035)

10.1. Miniaturized Intraoral Robots

Current robots manipulate a handpiece extraorally. Next-generation "micro-robots" will fit entirely inside the mouth. These tentacle-like devices (inspired by surgical endoscopes) enter through a small access incision and perform tasks such as: removing a fractured instrument from a root canal, debriding an osteotomy site, or delivering bone morphogenetic protein precisely to a defect [200-205].

10.2. Autonomous soft tissue robotics

Oral surgery often requires incisions and suturing tasks demanding tissue handling that current rigid robots struggle with. Newer robots with force-sensing wrists can measure tissue tension and adjust grasp force to avoid crushing. Suturing speed (6-8 knots per minute) approaches but does not yet exceed experienced human surgeons.

10.3. AI-Driven complication prediction

Before making the first cut, AI will integrate patient-specific

data (medical history, medications, anatomy variants) to predict individual risks: “This patient has a 12% probability of IAN exposure during third molar extraction; recommend robotic assistance and pre-operative corticosteroid”. The robot would then modify its plan to avoid the nerve by an extra 0.5 mm margin.

10.4. Regenerative robotics

Combining robotics with 3D bioprinting, a future robot could: 1) scan a jaw defect; 2) print a scaffold seeded with the patient’s own stem cells; 3) surgically place the scaffold, and 4) secure it with robotic suturing. Early proof-of-concept exists for calvarial defects in animal models [206-209].

10.5. Haptic training simulators for residents

Before operating on patients, oral surgery residents will practice on robotic simulators that replicate real bone density, bleeding, and patient movement. The simulator records metrics (force, accuracy, time) and provides automated feedback using AI to identify specific skill deficiencies (e.g., “Your wrist angle during sinus membrane elevation exceeds safe limits”) [210-212].

11. Conclusion

Robotics is not a distant promise but a current reality in oral surgery and implantology, with systems like Yomi achieving superior accuracy in implant placement and reducing complications in procedures ranging from third molar extraction to mandibular reconstruction. The next generation characterized by autonomous execution, AI-driven intraoperative adaptation, and tele-robotic networks will further expand access to high-precision surgery while shifting the surgeon’s role from manual operator to supervisory strategist.

However, adoption remains limited by cost, training requirements, and regulatory uncertainty. For the technology to fulfill its potential, dental schools must incorporate robotics into curricula, manufacturers must demonstrate long-term cost-effectiveness (e.g., lower revision surgery rates), and professional bodies must establish clear guidelines for liability and ethical use.

Ultimately, the robot will not replace the oral surgeon. The empathetic clinician who communicates risks, obtains consent, manages complications, and makes final decisions remains irreplaceable. But the surgeon who embraces robotics will outperform the surgeon who does not because the robot is better alone, but because the human robot team is better than either alone. The next generation of dentistry will be defined by this partnership, delivering safer, more predictable, and less invasive care to patients worldwide.

12. References

- Omid P. Artificial Intelligence in Oral Implantology, Its Applications, Impact and Challenges. *Adv Dent & Oral Health*. 2024; 17: 555966.
- Omid P. (2011). Relevance between gingival hyperplasia and leukemia. *Int J Acad Res*. 3:493-494.
- Panahi O. Teledentistry: Expanding Access to Oral Healthcare. *Journal of Dental Science Research Reviews & Reports*. *J Dental Sci Res Rep*. 2024; 6: 2-3.
- Panahi O, Ezzati A. (2025). AI in Dental-Medicine: Current Applications & Future Directions. *Open Access J Clin Images*. 2(1):1-5.
- Panahi O (2025) Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. *Ann Community Med Prim Health Care* 3: 1027.
- Inteligencia artificial en odontología, NUESTRO CONOC, DO Panahi, DF Esmaili, DS Kargarnezhad - 2024 - Mento Publishing. ISBN
- Künstliche Intelligenz in der Zahnmedizin, O Panahi, DF Esmaili, DS Kargarnezhad - 2024 - Unser wissen Publishing. ISBN.
- СТВОЛОВЫЕ клетки пульпы зуба, DO Panahi.
- Gingival enlargement and relevance with leukemia, O Panahi, MS Arab, KM Tamson - *International Journal of Academic Research*, 2011.
- Odontología digital e inteligencia artificial, O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 – ISBN.
- Sztuczna inteligencja w nowoczesnej stomatologii, DO Panahi, DS Dadkhah - 2025 – ISBN.
- La IA en la odontología moderna, DO Panahi, DS Dadkhah - 2025 – ISBN.
- Digitale Zahnmedizin und künstliche Intelligenz, O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 – ISBN.
- Intelligenza artificiale in odontoiatria, O Panahi, DF Esmaili, DS Kargarnezhad - 2024 - SAPIENZA Publishing. ISBN.
- L'IA dans la dentisterie modern, DO Panahi, DS Dadkhah - 2025 – ISBN.
- Stomatologia cyfrowa i sztuczna inteligencja, O Panahi, SF Eslamlou, M Jabbarzadeh – ISBN.
- Odontoiatria digitale e intelligenza artificiale, O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 – ISBN.
- Dentisterie numérique et intelligence artificielle, O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 – ISBN.
- Le périodontium: Structure, fonction et gestion Clinique, DO Panahi, DSF Eslamlou - 2025 – ISBN.
- L'intelligenza artificiale nell'odontoiatria moderna, DO Panahi, DS Dadkhah – ISBN.
- Células madre de la pulpa dental, O Panahi - 2021 - Ediciones Nuestro Conocimiento.
- A IA na medicina dentária moderna, DO Panahi, DS Dadkhah - 2025 – ISBN.
- Cellule staminali della polpa dentaria, DO Panahi - 2021 – ISBN.
- Kevin Thamson, Omid Panahi (2025) Challenges and Opportunities for Implementing AI in Clinical Trials. *J. of Bio Adv Sci Research*, 1(2):1-08. WMJ/JBASR-113.
- Ethical Considerations and Future Directions of AI in Dental Health care, K Thamson, O Panahi - *J. of Bio Adv Sci Research*, 2025.
- Bridging the gap: AI, data science, and evidence-based dentistry, K Thamson, O Panahi - *J. of Bio Adv Sci Research*, 2025.
- Bridging the gap: AI as a collaborative tool between clinicians and researchers, K Thamson, O Panahi - *J. of Bio Adv Sci Research*, 2025.
- Omid Panahi, Shabnam Dadkhah. Transforming Dental Care: A Comprehensive Review of AI Technologies. *J Stoma Dent Res*. 2025. 3(1): 1-5. DOI: doi.org/10.61440/JSDR.2025.v3.16.
- Panahi O. Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. *Ann Community Med Prim Health Care*. 2025; 3(1): 1028.
- Research system in health management information systems, M Gholizadeh, O Panahi - 2021 - Scienza Scripts Publishing.
- Система исследований в информационных системах управления здравоохранением, M Gholizadeh, O Panahi - 2021 - Scienza Scripts Publishing.

32. L'intelligence artificielle dans l'odontologie, O Panahi, F Esmaili, S Kargarneshad - EDITION NOTRE SAVOIR Publishing ..., 2024.
33. Antibacterial activity of aqueous extract of eucalyptus camaldulensis against *Vibrio harveyi* (PTCC1755) and *Vibrio alginolyticus* (MK641453. 1) ...S Zarei, DO Panahi, D NimaBahador - Saarbrücken: LAP, 2019.
34. Omid Panahi., et al. "Robotics in Implant Dentistry: Current Status and Future Prospects". *Scientific Archives Of Dental Sciences* 7.9 (2025):55-60.
35. EUCALYPTUS CAMALDULENSIS EXTRACT AS A PREVENTIVE TO THE VIBRIOSIS., MRS SAMIRA, P ZAREI, DR Omid - 2019 - SCHOLARS'PRESS.
36. Omid P. Empowering Dental Public Health: Leveraging Artificial Intelligence for Improved Oral Healthcare Access and Outcomes. *JOJ Pub Health*. 2024; 9(1): 555754. DOI: 10.19080/JOJPH.2024.09.555754.
37. Dr Omid Panahi.(2021). Система исследований в информационных системах управления здравоохранением, M Gholizadeh - SCIENTIA SCRIPTS Publishing.
38. Panahi O. (2025). Smart Implants: Integrating Sensors and Data Analytics for Enhanced Patient Care. *Dental*. 7(1):22.
39. Dr. Omid Panahi. Forging a Healthier Future Through Responsible AI in Families and Communities. *Archives of Community and Family Medicine*. 2025; 8(1): 21-30.
40. Nano Technology, P Omid, KC Fatmanur - Regenerative Medicine and, Tissue Bio-Engineering ..., 2023.
41. L'intelligence artificielle dans l'odontologie, EDITION NOTRE SAVOIR Publishing Publishing, DO Panahi, DF Esmaili, DS Kargarneshad - 2024 – ISBN.
42. Periodontium: Structure, O Panahi, SF Eslamlou - Function and Clinical Management.
43. Dr. Omid Panahi. Health in the Age of AI: A Family and Community Focus. *Archives of Community and Family Medicine*. 2025; 8(1): 11-20.
44. Omid Panahi* and Zahra Shahbazzpour. Healthcare Reimagined: AI and the Future of Clinical Practice. *Am J Biomed Sci & Res*. 2025 27(6) AJBSR.MS.ID.003617, DOI: 10.34297/AJBSR.2025.27.003617.
45. AI in modern dentistry, O Panahi, S Dadkhah - 2025 – ISBN.
46. Panahi O (2025) Robotic Surgery Powered by AI: Precision and Automation in the Operating Room. *SunText Rev Med Clin Res* 6(2): 225.
47. Omid Panahi. Smart Materials and Sensors: Integrating Technology into Dental Restorations for Real-Time Monitoring. *Journal of Dentistry and Oral Health*. 2(1). <https://doi.org/10.61615/JDOH/2025/MAR027140331>.
48. Koyuncu, B., Uğur, B., & Panahi, P. (2013). Indoor location determination by using RFIDs. *International Journal of Mobile and Adhoc Network (IJMAN)*, 3(1), 7–11.
49. Uras Panahi. *Redes AD HOC: Aplicações, Desafios, Direções Futuras. Edições Nosso Conhecimento*. 2025.
50. Panahi P (2010) The feedback based mechanism for video streaming over multipath ad hoc networks. *Journal of Sciences, Islamic Republic of Iran* 21(2).
51. Panahi, P., & Dehghan, M. (2008, May). Multipath Video Transmission Over Ad Hoc Networks Using Layer Coding And Video Caches. In *ICEE2008, 16th Iranian Conference On Electrical Engineering, (May 2008)* (pp. 50-55).
52. Panahi DU. *HOC A Networks: Applications. Challenges, Future Directions*. Scholars' Press. 2025.
53. Panahi O, Esmaili F, Kargarneshad S. (2024). *Artificial Intelligence in Dentistry*. Scholars Press Publishing. ISBN: 978-620-6772118.
54. Omid P. (2011). Relevance between gingival hyperplasia and leukemia. *Int J Acad Res*. 3:493-49.
55. Panahi O. (2025). Secure IoT for Healthcare. *European Journal of Innovative Studies and Sustainability*. 1(1):1-5.
56. Panahi O. (2025). Deep Learning in Diagnostics. *Journal of Medical Discoveries*. 2(1).
57. Omid P. *Artificial Intelligence in Oral Implantology, Its Applications, Impact and Challenges*. *Adv Dent & Oral Health*. 2024; 17(4): 555966. DOI: 10.19080/ADOH.2024.17.555966.
58. Omid Panahi (2024) Teledentistry: Expanding Access to Oral Healthcare. *Journal of Dental Science Research Reviews & Reports*. SRC/JDSR-203.
59. Omid P. Empowering Dental Public Health: Leveraging Artificial Intelligence for Improved Oral Healthcare Access and Outcomes. *JOJ Pub Health*. 2024; 9(1): 555754. DOI: 10.19080/JOJPH.2024.09.555754.
60. Kevin Thamson, Omid Panahi (2025) Bridging the Gap: AI as a Collaborative Tool Between Clinicians and Researchers. *J. of Bio Adv Sci Research*, 1(2):1-08. WMJ/JBASR-112.
61. Panahi O. (2025). Algorithmic Medicine. *Journal of Medical Discoveries*. 2(1).
62. Panahi O. (2025). The Future of Healthcare: AI, Public Health and the Digital Revolution. *MediClin Case Rep J*. 3(1):763-766.
63. Kevin Thamson, Omid Panahi (2025) Challenges and Opportunities for Implementing AI in Clinical Trials. *J. of Bio Adv Sci Research*, 1(2):1-08. WMJ/JBASR-113.
64. Kevin Thamson, Omid Panahi (2025) Ethical Considerations and Future Directions of AI in Dental Healthcare. *J. of Bio Adv Sci Research*, 1(2):1-07. WMJ/JBASR-114.
65. Kevin Thamson, Omid Panahi (2025) Bridging the Gap: AI, Data Science, and Evidence-Based Dentistry. *J. of Bio Adv Sci Research*, 1(2):1-13. WMJ/JBASR-115.
66. Research system in health management information systems, M Gholizadeh, O Panahi - 2021 - Scienca Scripts Publishing.
67. L'intelligence artificielle dans l'odontologie, O Panahi, F Esmaili, S Kargarneshad - EDITION NOTRE SAVOIR Publishing. ISBN, 2024.
68. 66.(2024), Искусственный интеллект в стоматологии, DO Panahi, DF Esmaili, DS Kargarneshad - SCIENTIA SCRIPTS Publishing.
69. AI-Powered IoT: Transforming Diagnostics and Treatment Planning in Oral Implantology, UP Omid Panahi - J AdvArtifIntell Mach Learn, 2025.
70. Periodontium: Structure, O Panahi, SF Eslamlou - Function and Clinical Management.
71. AI in dental-medicine: Current applications & future directions. *Open Access Journal of Clinical Images*, 2 (1), 1–5, O Panahi, A Ezzati - 2025.
72. Mitigating aflatoxin contamination in grains: The importance of postharvest management practices. *Advances in Biotechnology & Microbiology*, 18 (5), O Panahi, S Dadkhah - 2025.
73. Empowering Dental Public Health: Leveraging Artificial Intelligence for Improved Oral Healthcare Access and Outcomes, O Panahi - JOJ Pub Health, 2024.
74. Nano Technology, P Omid, KC Fatmanur - Regenerative Medicine and, Tissue Bio-Engineering, 2023.
75. The American Academy of Oral Medicine. (2017). *Dental Management of the Oral Complications of Cancer Treatment*. AAOM Professional Resource.
76. Panahi O. The Algorithmic Healer: AI's Impact on Public Health Delivery. *Medi Clin Case Rep J* 2025;3(1):759-762. DOI: doi.org/10.51219/MCCRJ/Omid-Panahi/197.

77. Omid Panahi. "AI: A New Frontier in Oral and Maxillofacial Surgery". *Acta Scientific Dental Sciences* 8.6 (2024): 40-42.
78. Panahi O and Falkner S (2025) Telemedicine, AI, and the Future of Public Health. *Western J Med Sci & Res* 2(1): 102.
79. Искусственный интеллект в стоматологии. DO Panahi, DF Esmaili, DS Kargarnezhad - 2024 - SCIENTIA SCRIPTS Publishing ...
80. Application of Clay's in Drug Delivery in Dental Medicine. DS Esmailzadeh, DO Panahi, DFK Çay - 2020 - Scholars' Press.
81. NanoTechnology, Regenerative Medicine and Tissue Bio-Engineering. DO Panahi - 2019 - Scholars' Press.
82. La IA en la odontología moderna. DO Panahi, DS Dadkhah - 2025 – ISBN.
83. Inteligencia artificial en odontología, NUESTRO CONOC. DO Panahi, DF Esmaili, DS Kargarnezhad - 2024 - Mento Publishing. ISBN.
84. Intelligenza artificiale in odontoiatria. O Panahi, DF Esmaili, DS Kargarnezhad - 2024 - SAPIENZA Publishing. ISBN.
85. L'IA dans la dentisterie moderne. DO Panahi, DS Dadkhah - 2025 – ISBN
86. Panahi, O., & Eslamlou, S. F. (2025). Artificial Intelligence in Oral Surgery: Enhancing Diagnostics, Treatment, and Patient Care. *J Clin Den & Oral Care*, 3(1), 01-05.
87. Omid P, Soren F. (2025). The Digital Double: Data Privacy, Security, and Consent in AI Implants. *Digit J Eng Sci Technol.* 2(1):105.
88. Le périodontium: Structure, fonction et gestion clinique. DO Panahi, DSF Eslamlou - 2025 – ISBN.
89. Sztuczna inteligencja w nowoczesnej stomatologii. DO Panahi, DS Dadkhah - 2025 – ISBN.
90. Panahi, O. (2025). The Role of Artificial Intelligence in Shaping Future Health Planning. *Int J Health Policy Plann*, 4(1), 01-05.
91. AI-enabled IT systems for improved dental practice management. O Panahi, A Amirloo - *On J Dent & Oral Health*, 2025.
92. A IA na medicina dentária moderna. DO Panahi, DS Dadkhah - 2025 – ISBN.
93. L'intelligenza artificiale nell'odontoiatria moderna. DO Panahi, DS Dadkhah – ISBN.
94. Medicina dentária digital e inteligência artificial. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 – ISBN.
95. Cellule staminali della polpa dentaria. DO Panahi - 2021 – ISBN.
96. Células madre de la pulpa dental. O Panahi - 2021 - Ediciones Nuestro Conocimiento.
97. Panahi O. AI-Enhanced Case Reports: Integrating Medical Imaging for Diagnostic Insights. *J Case Rep Clin Images.* 2025; 8(1): 1161.
98. Panahi O. (2025). Navigating the AI Landscape in Healthcare and Public Health. *Mathews J Nurs.* 7(1):56.
99. Panahi O. Innovative Biomaterials for Sustainable Medical Implants: A Circular Economy Approach. *European Journal of Innovative Studies and Sustainability.* 2025;1(2):1-5.
100. Стволовые клетки пульпы зуба. DO Panahi.
101. Omid Panahi, Alireza Azarfardin. Computer-Aided Implant Planning: Utilizing AI for Precise Placement and Predictable Outcomes. *Journal of Dentistry and Oral Health.* 2(1). <https://doi.org/10.61615/JDOH/2025/MAR027140329>.
102. Panahi O. The Rising Tide: Artificial Intelligence Reshaping Healthcare Management. *S J Public Hlth.* 2024 ;1(1) :1-3. DOI : 10.51626/sjph.2024.01.00002.
103. Panahi, O. (2025). AI in Health Policy: Navigating Implementation and Ethical Considerations. *Int J Health Policy Plann*, 4(1), 01-05.
104. Panahi O. Bridging the Gap: AI-Driven Solutions for Dental Tissue Regeneration. *Austin J Dent.* 2024; 11(2): 1185.
105. Panahi O, Zeinalddin M. The Convergence of Precision Medicine and Dentistry: An AI and Robotics Perspective. *Austin J Dent.* 2024; 11(2): 1186.
106. Omid P. Modern Sinus Lift Techniques: Aided by AI. *Glob J Oto,* 2024; 26 (4): 556198. DOI:10.19080/GJO.2024.26.556198.
107. The remote monitoring toothbrush for early cavity detection using artificial intelligence (AI). O Panahi, M Zeinalddin - *IJDSIR*, 2024.
108. Stammzellen aus dem Zahnmark. O Panahi - 2021 - Verlag Unser Wissen.
109. Stomatologia cyfrowa i sztuczna inteligencja. O Panahi, SF Eslamlou, M Jabbarzadeh - ISBN.
110. Odontoiatria digitale e intelligenza artificiale. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
111. Dentisterie numérique et intelligence artificielle. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
112. Odontología digital e inteligencia artificial. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
113. Digitale Zahnmedizin und künstliche Intelligenz. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
114. Panahi O. Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. *Ann Community Med Prim Health Care.* 2025; 3(1): 1027.
115. The remote monitoring toothbrush for early cavity detection using artificial intelligence (AI). O Panahi, M Zeinalddin - *IJDSIR*, 2024.
116. Stammzellen aus dem Zahnmark. O Panahi - 2021 - Verlag Unser Wissen.
117. Stomatologia cyfrowa i sztuczna inteligencja. O Panahi, SF Eslamlou, M Jabbarzadeh - ISBN.
118. Odontoiatria digitale e intelligenza artificiale. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
119. Dentisterie numérique et intelligence artificielle. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
120. Odontología digital e inteligencia artificial. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
121. Digitale Zahnmedizin und künstliche Intelligenz. O Panahi, SF Eslamlou, M Jabbarzadeh - 2025 - ISBN.
122. Panahi O. Predictive Health in Communities: Leveraging AI for Early Intervention and Prevention. *Ann Community Med Prim Health Care.* 2025; 3(1): 1027.
123. Panahi, P., Bayılımiş, C., Çavuşoğlu, U., & Kaçar, S. (2021). Performance evaluation of lightweight encryption algorithms for IoT-based applications. *Arabian Journal for Science and Engineering*, 46(4), 4015-4037.
124. Omid Panahi, and Uras Panahi. AI-Powered IoT: Transforming Diagnostics and Treatment Planning in Oral Implantology. *J AdvArtifIntell Mach Learn.* 2025; 1(1): 1-4.
125. Panahi U. (2025). AD HOC Networks: Applications, Challenges, Future Directions, Scholars' Press. ISBN: 978-3-639-76170-2.
126. Panahi, P., & Dehghan, M. (2008, May). Multipath Video Transmission Over Ad Hoc Networks Using Layer Coding And Video Caches. In *ICEE2008, 16th Iranian Conference On Electrical Engineering, (May 2008)* (pp. 50-55).
127. Omid Panahi. (2021) Система исследований в информационных системах управления здравоохранением, M Gholizadeh - *Scientia Scripts Publishing.*
128. UrasPanahi. AI-Powered IoT: 54, O Panahi - *Transforming Diagnostics and Treatment Planning in, 2025.*

129. Dr Mansoureh Zeynali. Will AI Replace Your Dentist? The Future of Dental Practice. *OnJ Dent & Oral Health*. 8 (3): 2025, DO Panahi, DA Ezzati - OJDOH. MS. ID.
130. A New Frontier in 60, O Panahi, A Intelligence - Periodontology. *Mod Res Dent*.
131. AI in der modernen 48, DO Panahi, DS Dadkhah - Zahnmedizin.
132. Panahi, U. (2025). *Redes AD HOC: Aplicações, Desafios, Direções Futuras. Edições Nosso Conhecimento*. ISBN 978-620-8-72962-2.
133. Panahi, U. (2025). *AD HOC networks: Applications, Challenges, Future Paths. Our Knowledge*.
134. Koyuncu, B., & Panahi, P. (2014). Kalman filtering of link quality indicator values for position detection by using WSNS. *International Journal of Computing, Communications & Instrumentation Engineering*, 1.
135. Koyuncu, B., Gökçe, A., & Panahi, P. (2015). Archaeological site bir arkeolojik sit alanının rekonstrüksiyonundaki bütünleştirici oyun motoru tanıtımı. In *SOMA 2015*.
136. Panahi O, Eslamlou SF. *Peridonio: Struttura, funzione e gestione clinica*. ISBN: 978-620-8-74559-2.
137. Panahi O, Dadkhah S. *AI in der modernen Zahnmedizin*. ISBN: 978-620-8-74877-7.
138. Panahi O. *Cellules souches de la pulpe dentaire*. ISBN: 978-620-4-05358-5.
139. Omid Panahi, Faezeh Esmaili, Sasan Kargarneshad. *Искусственный интеллект в стоматологии*. SCIENTIA SCRIPTS Publishing. 2024.
140. Panahi O, Melody FR. (2011). A Novel Scheme About Extraction Orthodontic and Orthotherapy. *International Journal of Academic Research*. 3(2).
141. Panahi O. The evolving partnership: surgeons and robots in the maxillofacial operating room of the future. *J Dent Sci Oral Care*. 2025; 1: 1-7.
142. Panahi O, Dadkhah S, Sztuczna inteligencja w nowoczesnej stomatologii. ISBN: 978-620-8-74884-5.
143. Panahi O. *The Future of Medicine: Converging Technologies and Human Health*. Journal of Bio-Med and Clinical Research. RPC Publishers. 2025; 2.
144. Panahi O, Raouf MF, Patrik K. (2011) The Evaluation Between Pregnancy and Periodontal Therapy. *Int J Acad Res*. 3: 1057-1058.
145. Panahi O, Nunag GM, Nourinezhad Siyahtan A. (2011). Molecular Pathology: P-115: Correlation of Helicobacter Pylori and Prevalent Infections in Oral Cavity. *Cell Journal (Yakhteh)*, 12(Supplement 1 (The 1st International Student Congress On Cell and Molecular Medicine)). pp. 91-92. SID.
146. Panahi O. The Age of Longevity: Medical Advances and The Extension of Human Life. *Journal of Bio-Med and Clinical Research*. RPC Publishers. 2025; 2.
147. Panahi O, Eslamlou SF. *Peridonio: Estructura, función y manejo clínico*. ISBN: 978-620-8-74557-8.
148. Omid Panahi, Sevil Farrokh. *Building Healthier Communities: The Intersection of AI, IT, and Community Medicine*. *Int J Nurs Health Care*. 2025; 1(1):1-4.
149. Dr Omid Panahi, *Стволовые клетки пульпы зуба*, ISBN: 978-620-4-05357-8.
150. Panahi O. *Nanomedicine: Tiny Technologies, Big Impact on Health*. Journal of Bio-Med and Clinical Research. RPC Publishers. 2025; 2.
151. Dr Omid Panahi* and Dr Amirreza Amirloo. AI-Enabled IT Systems for Improved Dental Practice Management. *On J Dent & Oral Health*. 8(4): 2025. OJDOH.MS.ID.000691. DOI: 10.33552/OJDOH.2025.08.000691.
152. Panahi O. (2013). Comparison between unripe Makopa fruit extract on bleeding and clotting time. *International Journal of Paediatric Dentistry*. 23:205.
153. Panahi O, Eslamlou SF. *Peridontium: Struttura, funkcja I postępowanie kliniczne*. ISBN: 978-620-8-74560-8.
154. Panahi, O., & Eslamlou, S. F. (2025). Artificial Intelligence in Oral Surgery: Enhancing Diagnostics, Treatment, and Patient Care. *J Clin Den & Oral Care*, 3(1), 01-05.
155. Panahi O, Eslamlou SF, Jabbarzadeh M. *Odontoiatria digitale e intelligenza artificiale*. ISBN: 978-620-8-73913-3.
156. Omid P, Soren F. (2025). The Digital Double: Data Privacy, Security, and Consent in AI Implants. *Digit J Eng Sci Technol*. 2(1):105.
157. Panahi O, Eslamlou SF, Jabbarzadeh M. *Medicina dentária digital e inteligência artificial*. ISBN: 978-620-8-73915-7.
158. Panahi O. *Stammzellen aus dem Zahnmark*. ISBN: 978-620-4-05355-4.
159. Panahi O. (2025). AI-Enhanced Case Reports: Integrating Medical Imaging for Diagnostic Insights. *J Case Rep Clin Images*. 8(1):1161.
160. Panahi O. (2025). Navigating the AI Landscape in Healthcare and Public Health. *Mathews J Nurs*. 7(1):5.
161. Dr Omid Panahi* and Dr Masoumeh Jabbarzadeh. The Expanding Role of Artificial Intelligence in Modern Dentistry. *On J Dent & Oral Health*. 8(3): 2025. OJDOH.MS.ID.000690. DOI: 10.33552/OJDOH.2025.08.000690.
162. Panahi, O. (2025). Wearable Sensors and Personalized Sustainability: Monitoring Health and Environmental Exposures in Real-Time. *European Journal of Innovative Studies and Sustainability*, 1(2), 1-19. [https://doi.org/10.59324/ejiss.2025.1\(2\).02](https://doi.org/10.59324/ejiss.2025.1(2).02)
163. Dr Leila Ostovar, Dr Kamal Khadem Vatan, Dr Omid Panahi, (2020). *Clinical Outcome of Thrombolytic Therapy*, Scholars Press Academic Publishing. ISBN: 978-613-8-92417-3.
164. Omid P, Sevil Farrokh E. *Bioengineering Innovations in Dental Implantology*. *Curr Trends Biomedical Eng&Biosci*. 2025; 23(3): 556111. DOI: 10.19080/CTBEB.2025.23.5560111
165. Omid Panahi. *Artificial Intelligence: A New Frontier in Periodontology*. *Mod Res Dent*. 8(1). MRD. 000680. 2024. DOI: 10.31031/MRD.2024.08.000680.
166. Panahi O, Melody FR, Kennet P, Tamson MK. Drug induced (calcium channel blockers) gingival hyperplasia. *JMBS* 2011;2(1):10-2.
167. Dr Omid Panahi* and Dr Amirreza Amirloo. AI-Enabled IT Systems for Improved Dental Practice Management. *On J Dent & Oral Health*. 8(4): 2025. OJDOH.MS.ID.000691. DOI: 10.33552/OJDOH.2025.08.000691.
168. Omid P, Reza S. How Artificial Intelligence and Biotechnology are Transforming Dentistry. *Adv Biotech & Micro*. 2024; 18(2): 555981. DOI: 10.19080/AIBM.2024.17.555981.
169. Panahi, O., & Zeinaldin, M. (2024). AI-Assisted Detection of Oral Cancer: A Comparative Analysis. *Austin J Pathol Lab Med*, 10(1), 1037.
170. Omid Panahi, Sevil Farrokh. *USAG-1-Based Therapies: A Paradigm Shift in Dental Medicine*. *Int J Nurs Health Care*. 2024;1(1):1-4.
171. Omid Panahi, Sevil Farrokh. Can AI Heal Us? The Promise of AI-Driven Tissue Engineering. *Int J Nurs Health Care*. 2024; 1(1):1-4.
172. Maryam Gholizadeh, Dr Omid Panahi, (2021), *Investigating System in Health Management Information Systems*,

- Scholars Press Academic Publishing. ISBN: 978- 613-8-95240-4.
- 173.Omid Panahi. "AI Ushering in a New Era of Digital Dental-Medicine". *Acta Scientific Medical Sciences* 8.8 (2024): 131-134.
- 174.Panahi, O., & Farrokh, S. (2025a). The use of machine learning for personalized dental-medicine treatment. *Global Journal of Medical and Biomedical Case Reports*, 1, 001.
- 175.Maryam Gholizadeh, Dr Omid Panahi, (2021), Sistema de investigación en sistemas de información de gestión sanitaria, NUESTRO CONOC, MENTO Publishing. ISBN: 978-620-3-67047-9.
- 176.Maryam Gholizadeh, Dr Omid Panahi, (2021), Untersuchungssystem im Gesundheitsmanagement Informations systeme, Unser wissen Publishing. ISBN: 978-620-3-67046-2.
- 177.Panahi O, Zeinaldin M. Digital Dentistry: Revolutionizing Dental Care. *J Dent App.* 2024; 10 (1):1121.
- 178.Omid P, Evil Farrokh E. Beyond the Scalpel: AI, Alternative Medicine, and the Future of Personalized Dental Care. *J Complement Med Alt Healthcare.* 2024; 13(2): 555860. DOI: 10.19080/JCMAH.2024.12.555860.
- 179.Panahi, O. (2024). Dental Implants & the Rise of AI. *On J Dent & Oral Health*, 8(1), 2024.
- 180.Maryam Gholizadeh, Dr Omid Panahi, (2021), Indagare il sistema nei sistemi informativi di gestione della salute, SAPIENZA Publishing. ISBN: 978-620-3-67049-3.
- 181.Panahi O, et al. (2025). Smart Robotics for Personalized Dental Implant Solutions. *Dental.* 7(1):21.
- 182.Dr Omid Panahi, Dr Sevil Farrokh Eslamlou, Dr Masoumeh Jabbarzadeh, *Medicina dentária digital e inteligência artificial*, ISBN: 978-620-8-73915-7.
- 183.Panahi O. AI in Surgical Robotics: Case Studies. *Austin J Clin Case Rep.* 2024; 11(7): 1342.
- 184.Omid Panahi*and Reza Safaralizadeh. AI and Dental Tissue Engineering: A Potential Powerhouse for Regeneration. *Mod Res Dent.* 8(2). MRD. 000682. 2024.DOI:10.31031/MRD.2024.08.000682.
- 185.Maryam Gholizadeh, Dr Omid Panahi, (2021), Systeemonderzoek in Informatiesystemen voor Gezondheidsbeheer, ONZE KENNIS Publishing. ISBN: 978-620-3-67050-9.
- 186.Maryam Gholizadeh, Dr Omid Panahi, (2021), Sistema de Investigaçao em Sistemas de Informaçao de Gestao de Saude, NOSSO CONHECIMENTO Publishing. ISBN: 978-620-3-67052-3.
- 187.Maryam Gholizadeh, Dr Omid Panahi, (2021), System badawczy w systemach informacyjnych zarzadzania zdrowiem, NAZSA WIEDZA Publishing. ISBN: 978-620-3-67051-6.
- 188.Panahi O. (2025). The Role of Artificial Intelligence in Shaping Future Health Planning. *Int J Health Policy Plann.* 4(1):01-05.
- 189.Panahi O, Falkner S. (2025). Telemedicine, AI, and the Future of Public Health. *Western J Med Sci & Res.* 2(1):10.
- 190.Panahi O, Azarfardin A. Computer-Aided Implant Planning: Utilizing AI for Precise Placement and Predictable Outcomes. *Journal of Dentistry and Oral Health.* 2(1).
- 191.Panahi O. (2025). AI in Health Policy: Navigating Implementation and Ethical Considerations. *Int J Health Policy Plann.* 4(1):01-05.
- 192.Panahi O, Eslamlou SF, Jabbarzadeh M. *Stomatologia cyfrowa i sztuczna inteligencja.* ISBN: 978-620-8-73914-0.
- 193.Panahi O. (2025). Innovative Biomaterials for Sustainable Medical Implants: A Circular Economy Approach. *European Journal of Innovative Studies and Sustainability.* 1(2):1-5.
- 194.Panahi O (2024) Bridging the Gap: AI-Driven Solutions for Dental Tissue Regeneration. *Austin J Dent* 11(2): 1185.
- 195.Panahi O, Eslamlou SF, Jabbarzadeh M. *Dentisterie numérique et intelligence artificielle.* ISBN: 978-620-8-73912-6.
- 196.Panahi O, Zeinalddin M (2024) The Convergence of Precision Medicine and Dentistry: An AI and Robotics Perspective. *Austin J Dent* 11(2): 1186.
- 197.Omid P, Mohammad Z (2024) "The Remote Monitoring Toothbrush for Early Cavity Detection using Artificial Intelligence (AI)", *IJDSIR* 7(4): 173-178.
- 198.Omid P (2024) Modern Sinus Lift Techniques: Aided by AI. *Glob J Oto* 26(4): 556198.
- 199.Panahi O (2024) The Rising Tide: Artificial Intelligence Reshaping Healthcare Management. *S J Public Hlth* 1(1) :1-3.
- 200.Panahi P (2008) Multipath Local Error Management Technique Over Ad Hoc Networks. In 2008 International Conference on Automated Solutions for Cross Media Content and Multi-Channel Distribution pp187-194.
- 201.Panahi O, Eslamlou SF, Jabbarzadeh M. *Digitale Zahnmedizin und künstliche Intelligenz.* ISBN: 978-620-8-73910-2.
- 202.Panahi U. (2025). AD HOC Networks: Applications, Challenges, Future Directions, Scholars' Press. ISBN: 978-3-639-76170-2.
- 203.Panahi U. AD HOC-Netze: Anwendungen, Herausforderungen, zukünftige Wege, Verlag Unser Wissen. ISBN: 978-620-8-72963-9.
- 204.Panahi O, Eslamlou SF, Jabbarzadeh M. *Odontología digital e inteligencia artificial.* ISBN: 978-620-8-73911-9.
- 205.Koyuncu, B., Gokce, A., & Panahi, P. (2015, November). The use of the Unity game engine in the reconstruction of an archeological site. In 19th Symposium on Mediterranean Archaeology (SOMA 2015) (pp. 95–103).
- 206.Koyuncu, B., Meral, E., & Panahi, P. (2015). Real time geolocation tracking by using GPS+GPRS and Arduino based SIM908. *IFRSA International Journal of Electronics Circuits and Systems (IJECS)*, 4(2), 148–150.
- 207.Panahi O. Smart Materials and Sensors: Integrating Technology into Dental Restorations for Real-Time Monitoring. *J Dent Oral Health.* 2025 Mar;2(1). doi:10.61415/JD004/2025/NAR0271-0833.
- 208.Omid Panahi, Mohammad Zeinalddin. The remote monitoring toothbrush for early cavity detection using artificial intelligence (AI). *IJDSIR.* 2024;7(4):173-178.
- 209.Artificial Intelligence in Dentistry, Unser wissen Publishing[https://www.blackwells.co.uk/bookshop/product/Knstliche ...](https://www.blackwells.co.uk/bookshop/product/Knstliche...), 2024.
- 210.Panahi O. (2025). Deep Learning in Diagnostics. *Journal of Medical Discoveries.* 2(1).
- 211.Panahi O. (2025). Algorithmic Medicine. *Journal of Medical Discoveries.* 2(1).
- 212.Panahi O. (2025). The Future of Healthcare: AI, Public Health and the Digital Revolution. *MediClin Case Rep J.* 3(1):763-766.