Ausgabe: ZWP Zahnarzt Wirtschaft Praxis 11/20

Thema: Künstliche Intelligenz zur Bildanalyse in der Zahnmedizin

Autoren: Prof. Dr. Falk Schwendicke, Dr. Joachim Krois

Literatur

1. Becker AS, Marcon M, Ghafoor S, Wurnig MC, Frauenfelder T, Boss A: Deep learning in mammography: diagnostic accuracy of a multipurpose image analysis software in the detection of breast cancer. Invest Radiol 52, 434-440 (2017).
2. BfS: Röntgendiagnostik: Häufigkeit und Strahlenexposition. https://www.bfs.de/DE/themen/ion/anwendung-medizin/diagnostik/roentgen/haeufigkeit-exposition.html (2019).
3. Ekert T, Krois J, Meinhold L, Elhennawy K, Emara R, Golla T, Schwendicke F: Deep learning for the radiographic detection of apical lesions. J Endod (2019).
4. Golla TJ, Krois J, Schwendicke F: Convolutional neural networks for dental imaging: a systematic review. IADR General Session Abstract (2019).
5. Goodfellow I, Bengio Y, Courville A: Deep learning. Cambridge, MA: MIT Press (2016).
6. Gulshan V, Peng L, Coram M, Stumpe MC, Wu D, Narayanaswamy A, Venugopalan S, Widner K, Madams T, Cuadros J, Kim R, Raman R, Nelson PC, Mega JL, Webster DR: Development and validation of a deep learning algorithm for detection of diabetic retinopathy in retinal fundus photographs. JAMA 316, 2402–2410 (2016).
7. Ho CWL, Soon D, Caals K, Kapur J: Governance of automated image analysis and artificial intelligence analytics in healthcare. Clin Radiol 74, 329–337 (2019).
8. Hood L: Lessons learned as president of the Institute for Systems Biology (2000–2018). Genomics Proteomics & Bioinformatics 16 (2018).
9. Hood L, Flores M: A personal view on systems medicine and the emergence of proactive P4 medicine: predictive, preventive, personalized and participatory. N Biotechnol 29, 613–624 (2012).
10. Krois J, Ekert T, Meinhold L, Golla T, Kharbot B, Wittemeier A, Dorfer C, Schwendicke F: Deep learning for the radiographic detection of periodontal bone loss. Sci Rep 9, 8495 (2019).
11. Krois J, Gehrung S, Garcia-Cantu A, Golla T, Dreher M, Schwendicke F: Instance segmentation of tooth restorations on dental panoramic radiographs using convolutional neural networks. IADR General Session (2019).
12. KZBV: KZBV Jahrbuch 2017. Berlin (2017).
13. LeCun Y, Bengio Y, Hinton G: Deep learning. Nature 521, 436–444 (2015).
14. Lee JH, Kim DH, Jeong SN, Choi SH: Detection and diagnosis of dental caries using a deep learning-based convolutional neural network algorithm. J Dent 77, 106–111 (2018a).
15. Lee JH, Kim DH, Jeong SN, Choi SH: Diagnosis and prediction of periodontally compromised teeth using a deep learning-based convolutional neural network algorithm. J Periodontal Implant Sci 48, 114–123 (2018b).
16. Mazurowski M, Buda M, Saha A, Bashir M: Deep learning in radiology: an overview of the concepts and a survey of the state of the art. arXiv:1802.08717v1 (2018).
17. McCulloch WS, Pitts W: A logical calculus of the ideas immanent in nervous activity. The Bulletin of Mathematical biophysics 5, 115–133 (1943).
18. Paul R, Schabath M, Balagurunathan Y, Liu Y, Li Q, Gillies R, Hall LO, Goldgof DB: Explaining deep features using radiologist-defined semantic features and traditional quantitative features. Tomography 5, 192–200 (2019).
19. Tang A, Tam R, Cadrin-Chenevert A, Guest W, Chong J, Barfett J, Chepelev L, Cairns R, Mitchell JR, Cicero MD, Poudrette MG, Jaremko JL, Reinhold C, Gallix B, Gray B, Geis R: Canadian Association of

Radiologists White Paper on Artificial Intelligence in Radiology. Can Assoc Radiol J 69, 120–135 (2018).

20. Walsh T: Fuzzy gold standards: approaches to handling an imperfect reference standard. J Dent 74 (Suppl 1), S47–s49 (2018).

21. https://www.emc.com/analyst-report/digital-universe-healthcare-vertical-report-ar.pdf

22 Hornik Kurt: Approximation capabilities of multilayer feedforward networks; 1991

https://www.sciencedirect.com/science/article/pii/089360809190009T