AI for Health

ITU-WHO Focus Group

2023/03/21

2nd TG DENTAL SYMPOSIUM

Mascot Lounge, Stratton Student Center, 84 Massachusetts Ave, Cambridge, MA 02139, USA

HTTPS://REMOTE.ITU.INT

World Health Organization

itu.int/go/fgai4h

Urgency contact
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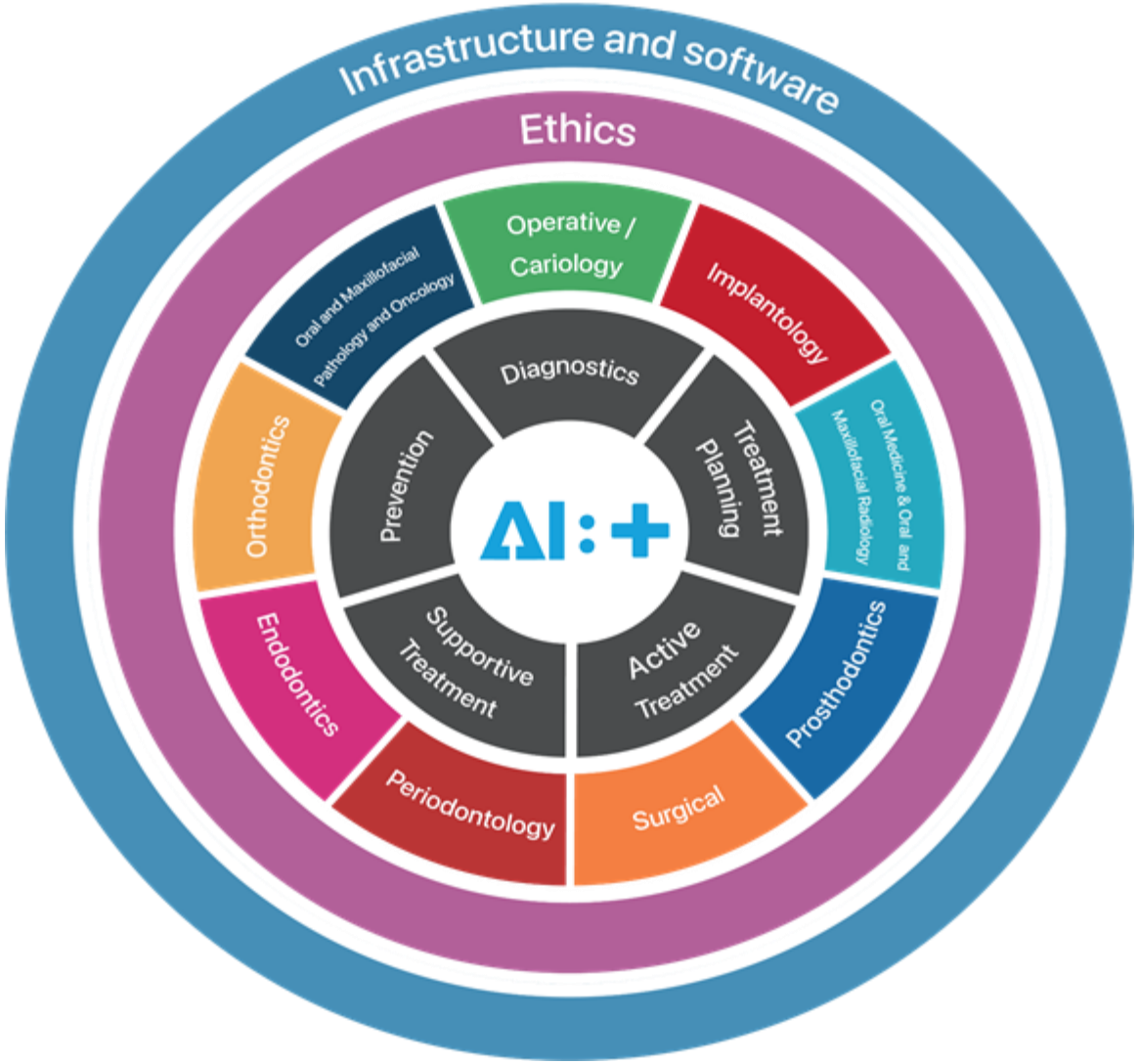
Who are we?

AI for Health
ITU-WHO Focus Group

Topic group: Dental Diagnostics and Digital Dentistry

A topic group is a community of stakeholders from the medical and AI communities with a shared interest in dentistry. The objectives of the topic group is manifold:

- to provide a forum for **open communication** among various stakeholders,
- to agree upon the **benchmarking tasks** of this topic and scoring metrics,
- to facilitate **the collection of high-quality labelled test data** from different sources,
- to clarify the input and output **format of the test data**,
- to define and set-up the **technical benchmarking infrastructure**



Who are we?

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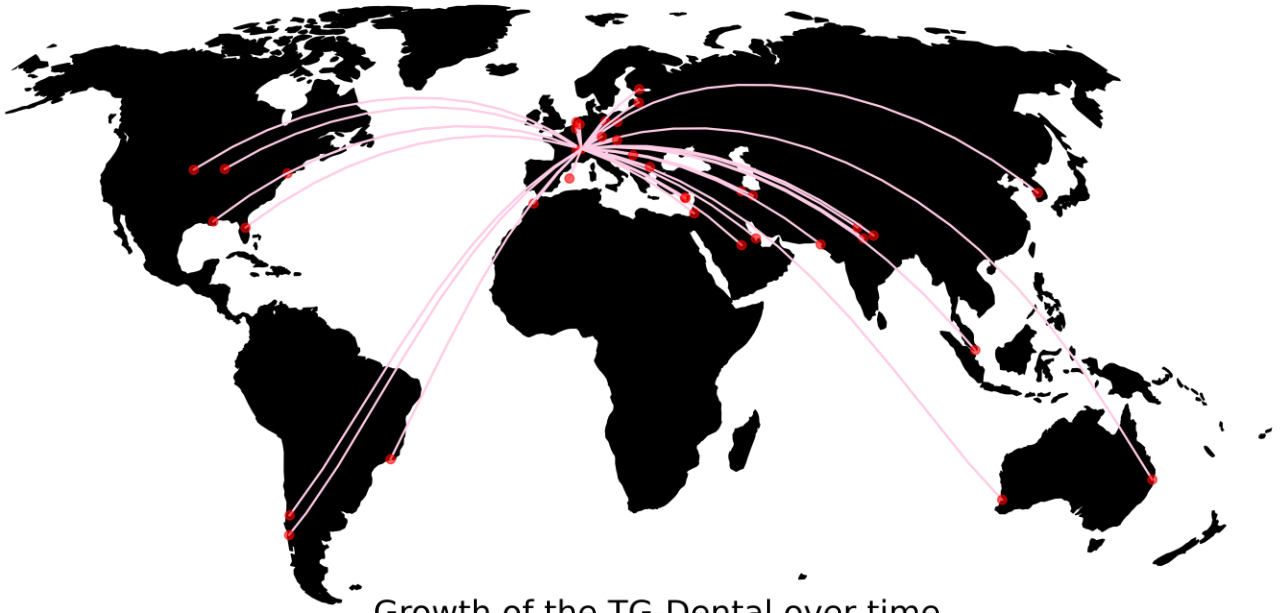
57 members / 23 countries / 6 continents



Topic group: Dental Diagnostics and Digital Dentistry

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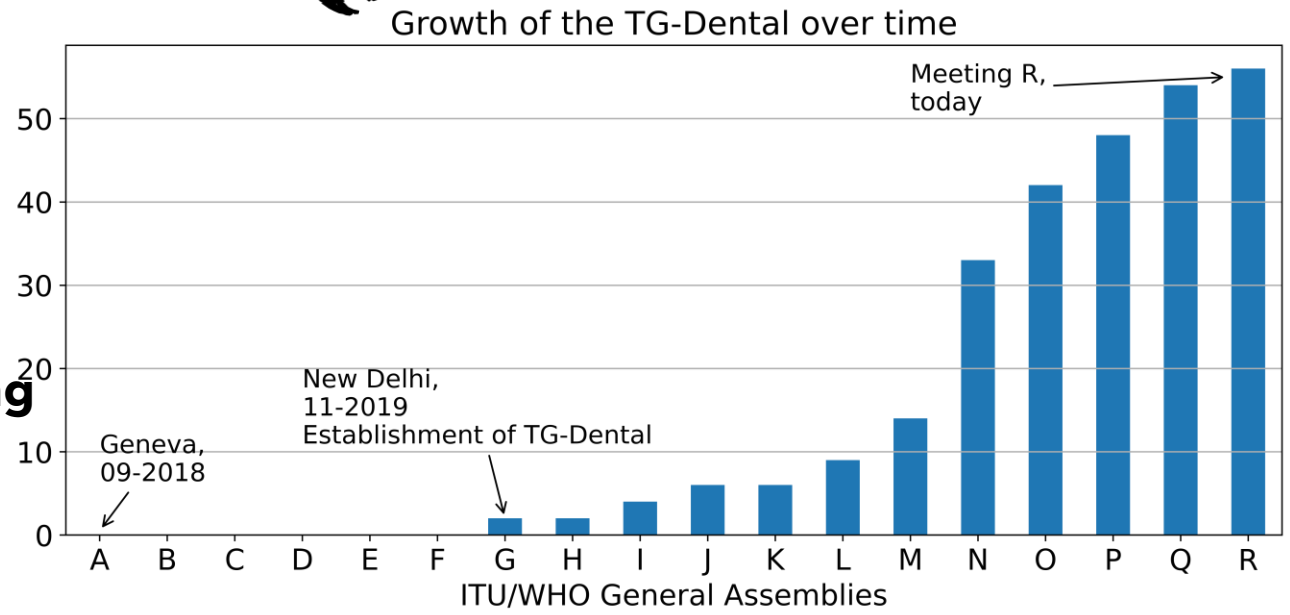

What are we doing?

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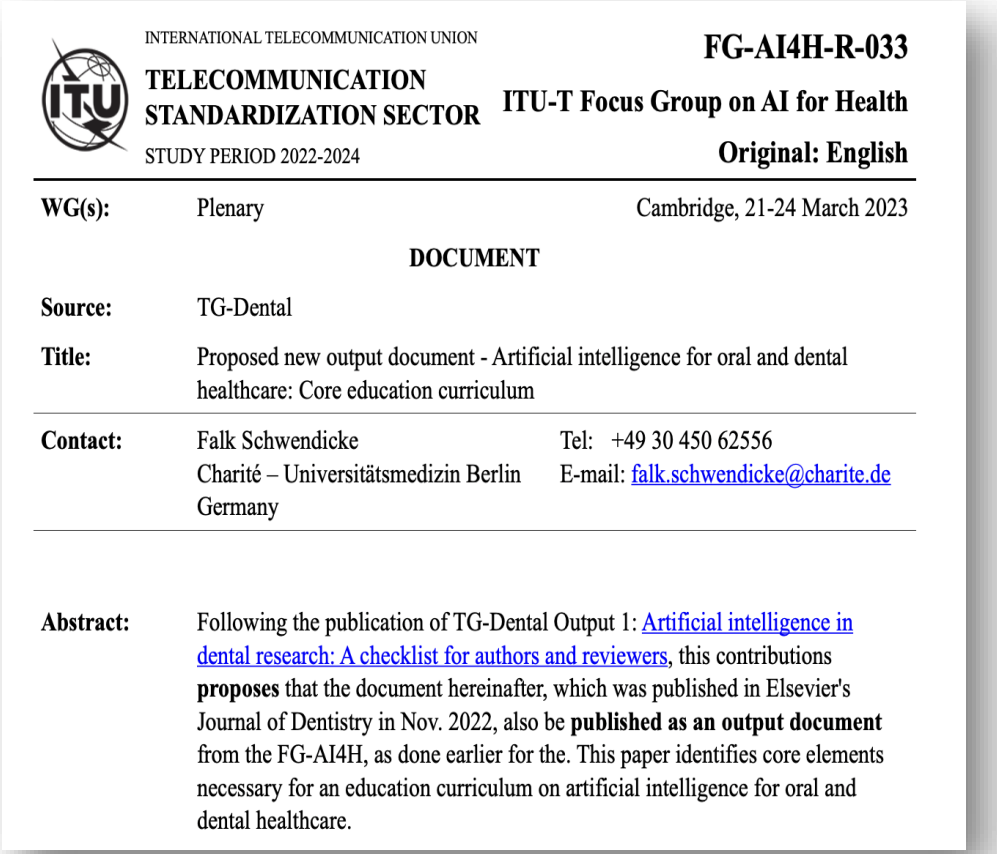
- Networking and exchange
- Research and publications
- Data annotations and proof of concepts
- Promotion of best practices and the development of standards for benchmarking



INTERNATIONAL TELECOMMUNICATION UNION

TELECOMMUNICATION STANDARDIZATION SECTOR

STUDY PERIOD 2022-2024

FG-AI4H-R-033

ITU-T Focus Group on AI for Health

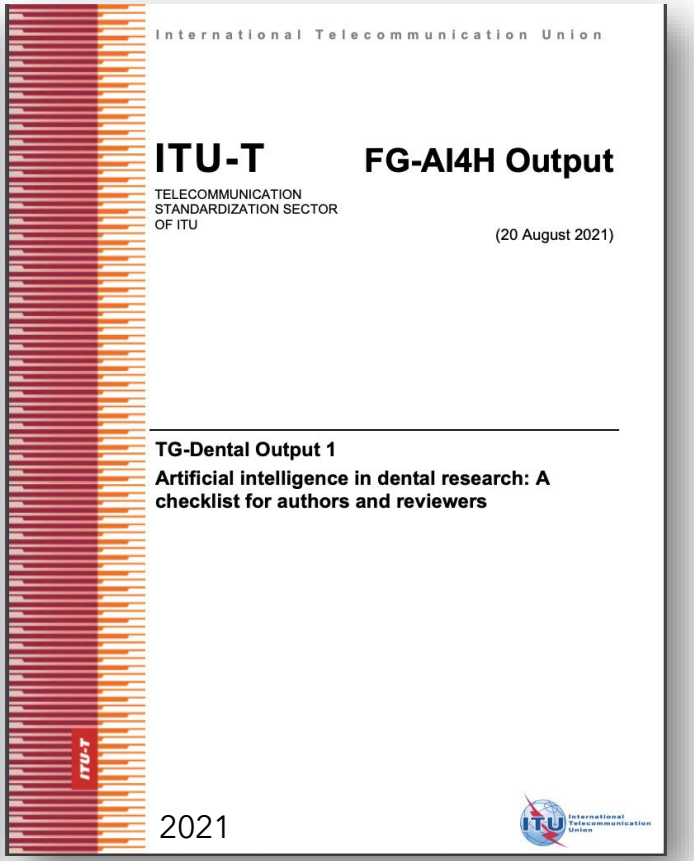
Original: English

WG(s):	Plenary	Cambridge, 21-24 March 2023

DOCUMENT

Source:	TG-Dental	
Title:	Proposed new output document - Artificial intelligence for oral and dental healthcare: Core education curriculum	
Contact:	Falk Schwendicke Charité – Universitätsmedizin Berlin Germany	Tel: +49 30 450 62556 E-mail: falk.schwendicke@charite.de

Abstract: Following the publication of TG-Dental Output 1: Artificial intelligence in dental research: A checklist for authors and reviewers, this contributions **proposes** that the document hereinafter, which was published in Elsevier's Journal of Dentistry in Nov. 2022, also be **published as an output document** from the FG-AI4H, as done earlier for the. This paper identifies core elements necessary for an education curriculum on artificial intelligence for oral and dental healthcare.



International Telecommunication Union

ITU-T

TELECOMMUNICATION STANDARDIZATION SECTOR OF ITU

FG-AI4H Output

(20 August 2021)

TG-Dental Output 1

Artificial intelligence in dental research: A checklist for authors and reviewers

2021

Get involved!

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ITU-WHO Focus Group

Contact

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  joachim.krois@gmail.com

slack

CfTGP (TG-Dental): R-010-A02

ITU/WHO Focus Group on artificial intelligence for health (FG-AI4H)

Call for Topic Group Participation: Dental Diagnostics and Digital Dentistry

The International Telecommunication Union (ITU)/World Health Organization (WHO) Focus Group on "Artificial Intelligence for Health" (FG-AI4H; https://itu.int/go/fgai4h) seeks engagement from members of the medical and artificial intelligence (AI) communities (including clinicians, technologists, entrepreneurs, potential benchmarking data providers, machine learning experts, software developers, researchers, regulators, policy-makers, companies/institutions, and field experts) with a vested interest in shaping the benchmarking process of dental diagnostics and digital dentistry.

1 About FG-AI4H

Over the past decade, considerable resources have been allocated to exploring the use of AI for health, which has revealed an immense potential. Yet, due to the complexity of AI models, it is difficult to understand their strengths, weaknesses, and limitations. If the technology is poorly designed or the underlying training data are biased or incomplete, errors or problematic results can occur. AI technology can only be used with complete confidence if it has been quality controlled through a rigorous evaluation in a standardized way. Towards developing this standard assessment framework of AI for health, the ITU has established FG-AI4H in partnership with the WHO.

Thus far, FG-AI4H has established several topic groups, including AI and cardiovascular disease risk prediction, child growth monitoring, dermatology, falls among the elderly, histopathology, neuro-cognitive diseases, ophthalmology (retinal imaging diagnostics), psychiatry, radiotherapy, snakebite and snake identification, symptom assessment, tuberculosis, volumetric chest computed tomography, and dental diagnostics and digital dentistry.

Each topic group agrees upon representative benchmarking tasks in a pragmatic, best-practice approach, which can later be scaled and expanded to similar tasks. Every benchmarking task should address a health problem of relevance (e.g. impacting a large and diverse part of the global population or challenging to treat) and for which AI technology would provide a tangible improvement relative to the current practice (e.g. better care, results, and/or cost/time effectiveness).

For a rigorous and sound evaluation, undisclosed test data sets must be available (or have to be collected) for each task. All data must be of high quality and compliant with ethical and legal standards. In addition, the data must originate from a variety of sources so that it can be determined whether an AI algorithm can generalize across different conditions, locations, or settings (e.g. across different people, hospitals, and/or measurement devices). The format/properties of the data serving as input to the AI and of the output expected from the AI, as well as the benchmarking metrics are agreed upon and specified by the topic group.

Finally, the AI-to-be-evaluated will be benchmarked with the undisclosed test data on FG-AI4H computing infrastructure. Here, the AI will process single samples of the undisclosed test data set and predict output variables, which will be compared with the "ground truth." The results of the benchmarking will be provided to the AI developers and will appear on a (potentially anonymized) leaderboard.

2 Topic group: Dental Diagnostics and Digital Dentistry

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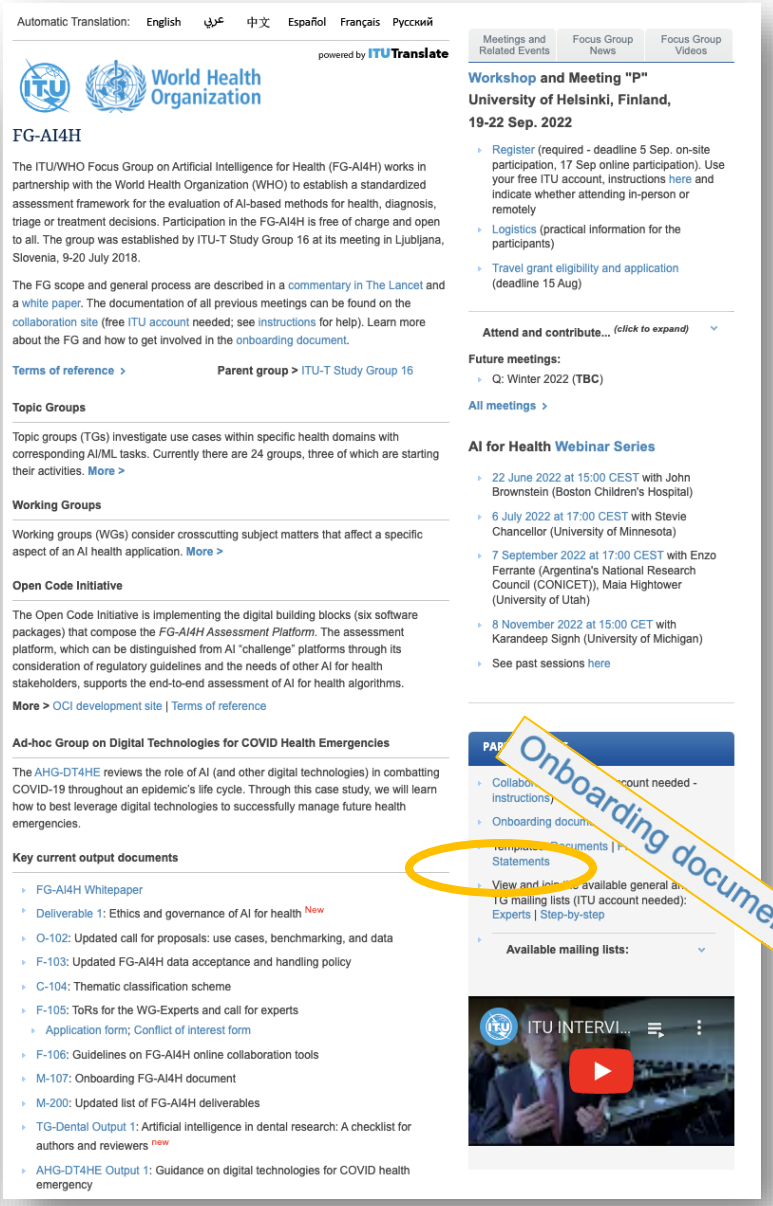

https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/default.as

Timetable (EDT)

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ITU-WHO Focus Group

MIT Mascot Lounge, Stratton Building	AI for Dentistry Symposium	
Time (EDT, UTC -4)	**Session/Speaker**	**Title**
08:00-08:30	*Entry & Registration*	
08:30-08:40	**Session I** - *10 mins*	**Opening session**
	Joachim Krois (dentalxr.ai)	Introduction
08:40-10:20	**Session II** - *100 mins*	
40 min	Falk Schwendicke (Charité&Dentalxr.ai) *Keynote Q&A*	AI in dentistry: What shall we focus on in research?
15 min	Johannes Tanne (Johannes Tanne Consulting)	Data sharing for AI in dentistry
7 min	Olga Tryfonos (ACTA, Netherlands)	How can we review the availability of scientific evidence of the commercially available artificial intelligence (AI) products?
8 min	Parul Khare (SDS Sharda University, India)	Machine learning for classification of oral epithelial dysplasia and diagnosis of squamous cell carcinoma - a progress report
15 min	Lubaina T. Arsiwala-Scheppach (Charité Universitätsmedizin Berlin)	Gaze pattern analysis and AI in dentistry
15 min	Fahad Umer (Aga Khan University Hospital)	AI research in a resource-capped work environment a case study of impediments and recommendations
10:20-11:05	**Session III (Part I)** - *45 mins*	
	Scott Doyle (University at Buffalo, State University of New York)	SUNYCell: A Collaborative Computational Pathology Project Framework
11:05-11:25	*Coffee break - 20 mins*	
11:25-12:40	**Session III (Part II)** - *75 mins*	
	Scott Doyle (University at Buffalo, State University of New York)	SUNYCell: A Collaborative Computational Pathology Project Framework
12:40-13:45	*Lunch break - 65 mins*	
13:45-15:30	**Session IV** - 75 mins	
15 min	Martha Büttner (Charité Universitätsmedizin Berlin)	Overcoming current challenges in dental deep learning
15 min	Rata Rokhshad (Department of Medicine, Boston University Medical Center)	AI in pediatric dentistry
15 min	Janet Brinz (LMU Munich)	AI based software for dentistry - a brief market overview
15 min	Yunpeng Li (University of Surrey, UK)	Crowdsourcing for AI-assisted dental disease detection
15 min	Balazs Feher (Harvard School of Dental Medicine)	Prediction of post-traumatic neuropathy following impacted mandibular third molar removal based on dental macroanatomy using machine learning
15 min	Manal Hamdan (Marquette University School of Dentistry)	The effect of a deep-learning tool on dentist's performance in detecting apical radiolucencies
15 min	Nielsen Pereira	How to determine the sample-size for machine learning in dental imaging
15:30-15:50	*Closing & Coffee*	

Q&A

- If time permits after each presentation
- Otherwise, panel discussion and/or during coffee breaks

How?

- [in person] Raise your hand
- [remote] Raise your virtual hand
- [all] Write down the question in the zoom chat and we try to accommodate

ITUTech

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