

INTEGRATED DIGITAL DENTISTRY:

THE FUTURE OF DATA, DEVICES, AND SOFTWARE

PROF. DR. IRENA SAILER

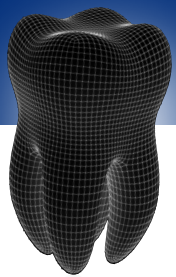
UNIVERSITY OF GENEVA



Maxilla/
Tx Phases

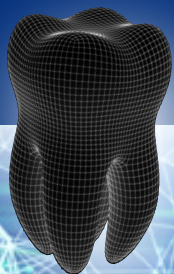
Digital Wax-up/Mock-up -Provisionalisation- Workflow





Today's Digitalisation





Tomorrow's Digitalisation



73% Screen texture is simply dummy text of the printing
dummy text of the printing

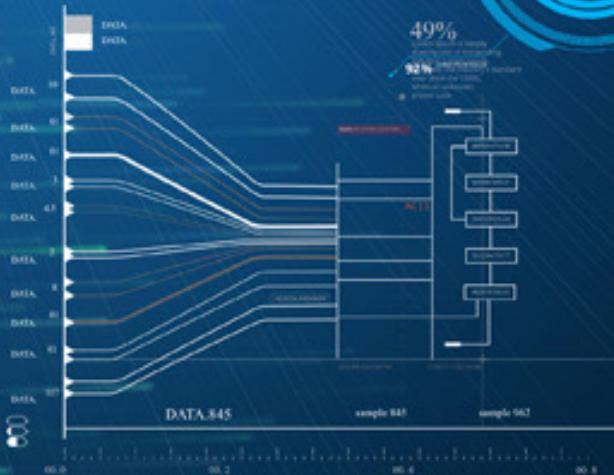


HUD
PLACEHOLDER 01

73%

INFOGRAPHIC

81%



Augmented Reality

Virtual Teeth Tracking



Input video

Model of initial situation

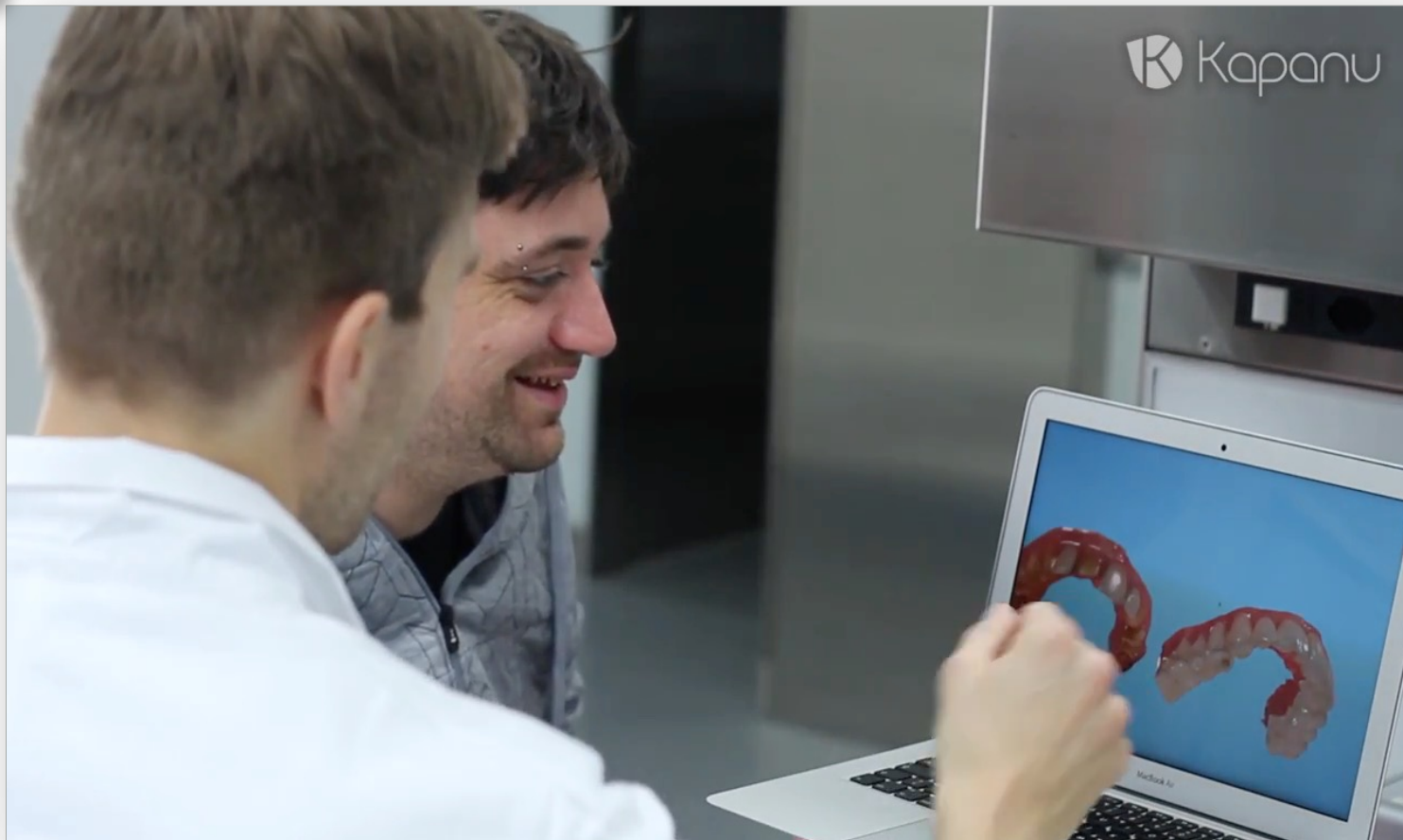
Virtual Mockup



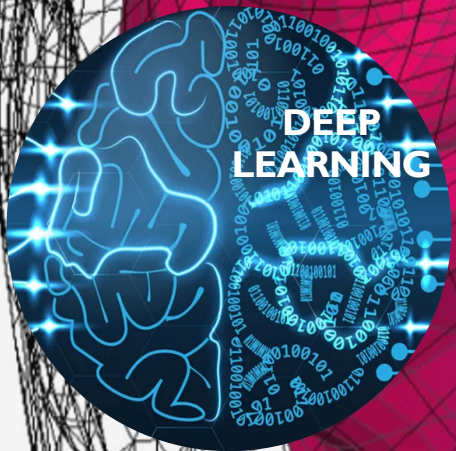
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Visualizer

Augmented Reality



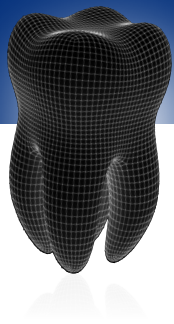
FUNDAMENTALS OF AI



DATA-DRIVEN
ALGORITHMS

PROCESSING
POWER

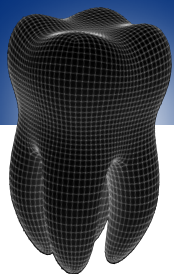
BIG DATA



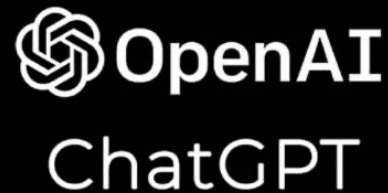
Tomorrow's Digitalisation

Possible applications for AI in dentistry

- 1. Diagnosis and treatment planning:** AI analyses medical images to assist with diagnosis and treatment planning.
- 2. Dental analytics:** AI analyses data to identify patterns and predict patient outcomes.
- 3. Virtual dental assistants:** AI-powered chatbots and voice assistants provide basic dental care advice and answer questions.
- 4. Predictive maintenance:** AI monitors dental equipment to identify potential maintenance issues.
- 5. Oral cancer detection:** AI analyses images to detect signs of oral cancer at an early stage.
- 6. Patient engagement:** AI creates personalized patient engagement plans to improve adherence to treatment and overall health.
- 7. Education and training:** AI simulates dental procedures for students and trainees.



Tomorrow's Digitalisation



could you please tell me the possible applications for AI in dentistry



Yes, there are several possible applications for AI in dentistry. Here are a few examples:



1. **Diagnosis and treatment planning:** AI can help dentists in making accurate and faster diagnosis by analyzing medical images like X-rays, CT scans, and MRIs. It can also help dentists to develop a personalized treatment plan based on the patient's specific needs and medical history.
2. **Dental analytics:** AI can analyze data from electronic health records and patient feedback to identify patterns and predict patient outcomes. This information can be used to improve treatment outcomes and patient satisfaction.
3. **Virtual dental assistants:** AI-powered chatbots and voice assistants can help patients with basic dental care questions and provide advice on oral health.
4. **Predictive maintenance:** AI can monitor dental equipment like dental chairs and x-ray machines and alert dentists to any potential maintenance issues before they become major problems.
5. **Oral cancer detection:** AI can analyze images of the mouth and tongue to detect signs of oral cancer at an early stage, improving the chances of successful treatment.
6. **Patient engagement:** AI can be used to create personalized patient engagement plans to improve patient adherence to treatment and overall health.
7. **Education and training:** AI can be used to simulate dental procedures, allowing students and trainees to practice on virtual patients.



Regenerate response

Summary of Machine Learning Research in Dentistry

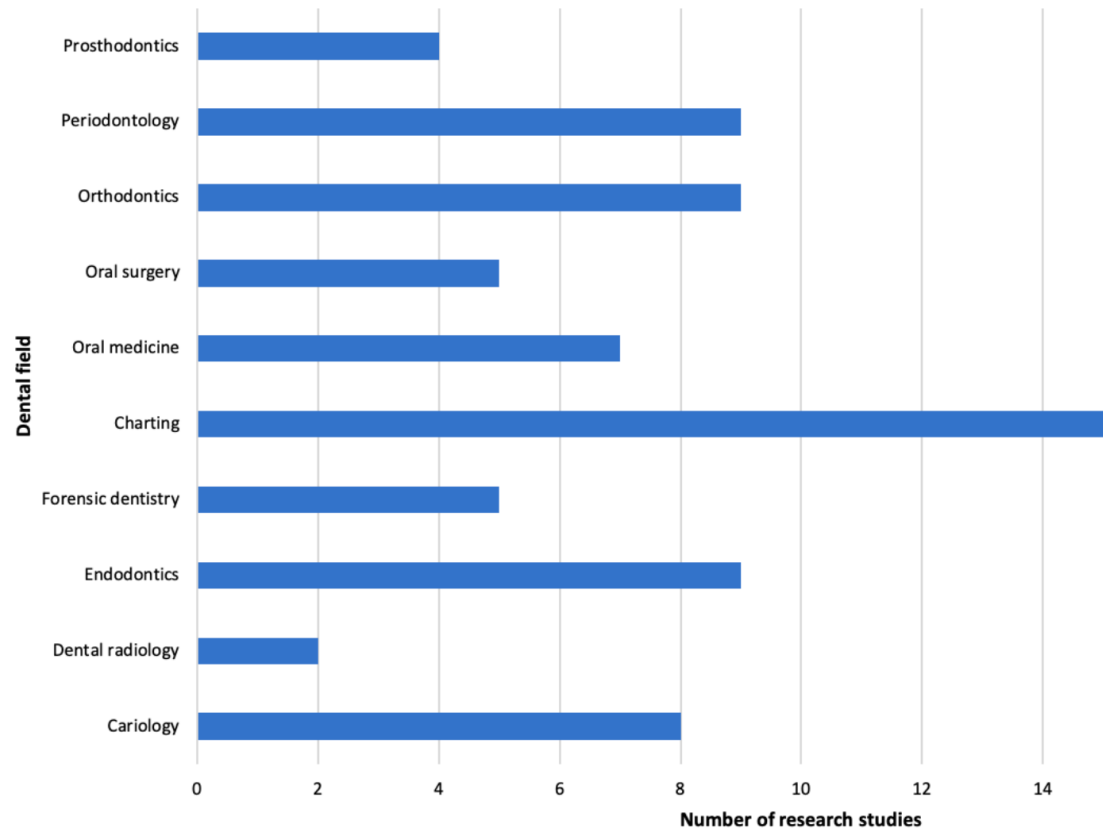
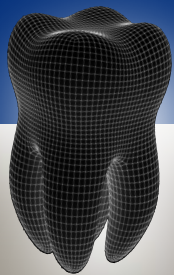
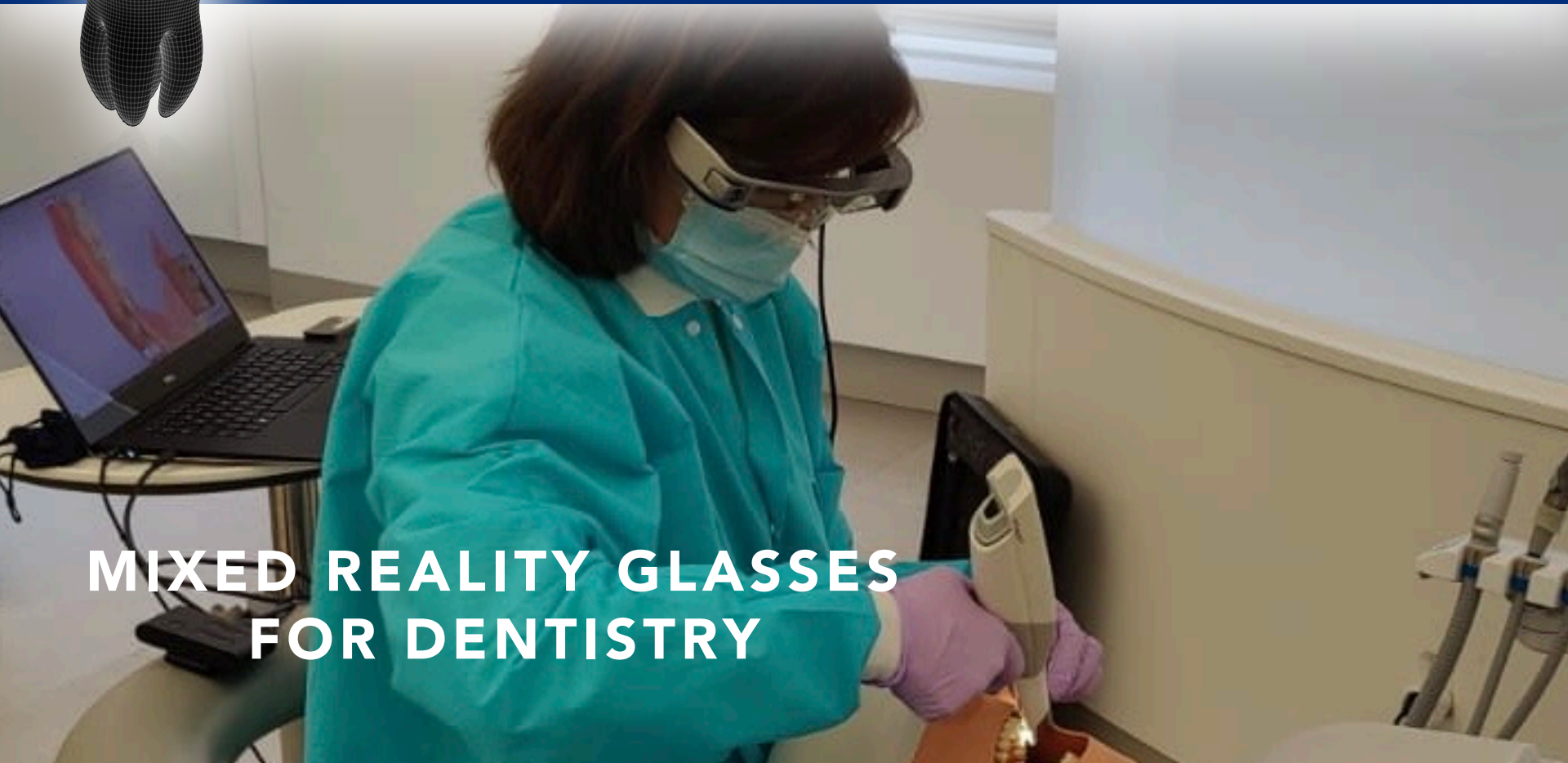


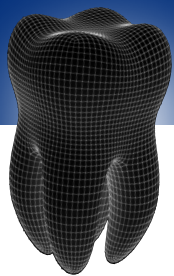
Fig. 3 Summary of ML research in dentistry.



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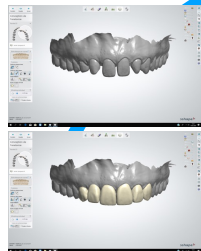
**MIXED REALITY GLASSES
FOR DENTISTRY**



Tomorrow's Digitalisation

Treatment
planning

Virtual Patient tools



Communication
using **Augmented Reality**



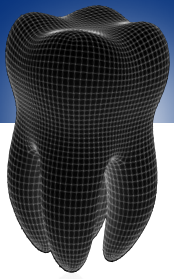
Treatment execution,
new treatment concepts
CAD/CAM



Artificial Intelligence
supported diagnostics &
treatment planning



Visualisation during
treatment with
Mixed Reality Glasses



The Future of Dentistry

Will dentists be replaced by robots one day?

Unlikely.

AI and robots can assist dentists in various tasks **BUT** they are not capable of providing the same level of empathy, critical thinking, and decision-making that human dentists can offer.

Dentistry involves a high level of complexity and variability that requires human expertise and judgment.

AI and robotics can improve the efficiency and accuracy of dental care, **NEVERTHELESS** dentists will still be needed to provide the personal touch and individualized care that patients require.

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DE MÉDECINE DENTAIRE

Thank you!

