For Immediate Release

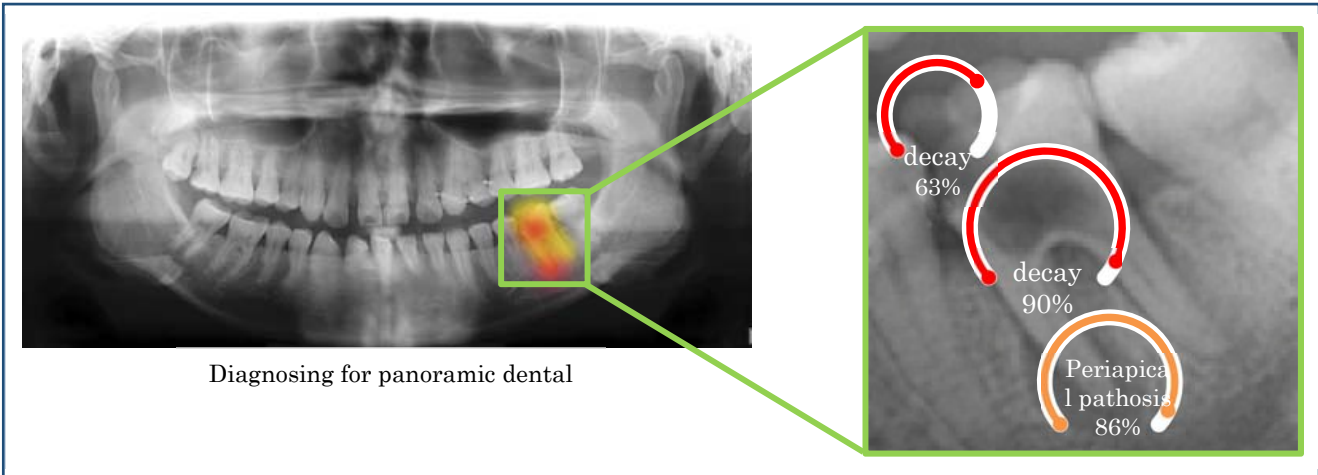Medihome Inc.　https://medihome.jp/en

Joint R&D between Aoikai Medical Corporation and Medihome Inc.

A First in the Industry: Development of a Diagnosis AI for Panoramic Dental X-rays

with diagnoses about 6.000 times faster than a human doctor

On June 1, 2018, Aoikai Medical Corporation and xhave collaborated in the research and development of Artificial Intelligence (AI)-powered diagnosing for panoramic dental radiography[1].

In March of 2018, Aoikai Medical Corporation and Medihome Inc initiated and conducted together a project of medical IT development. In this R&D, we have elaborated the basic functionalities of an AI diagnostics system (or "AI diagnosing") for panoramic dental radiographic images, making possible the detection of areas afflicted with tooth decay, periapical pathosis, dental calculus, cysts or furcation involvement. AI diagnosing has demonstrated that it can, depending on the pathology, pinpoint affected areas unnoticed by a doctor and with an accuracy superior to that of a human. Moreover, the time it needs to interpret a panoramic dental radiographic image averages 0.018 second by page, while a veteran doctor takes on average 120 seconds, thus proving itself to be able to establish a diagnosis 6,000 times faster.

1.　Overview of AI Diagnosing

By making the AI diagnostics system analyze a panoramic dental radiographic image, one can confidently pinpoint and mark the location and size of areas afflicted with tooth decay, periapical pathosis, dental calculus, cysts or furcation involvement (see image1 below).
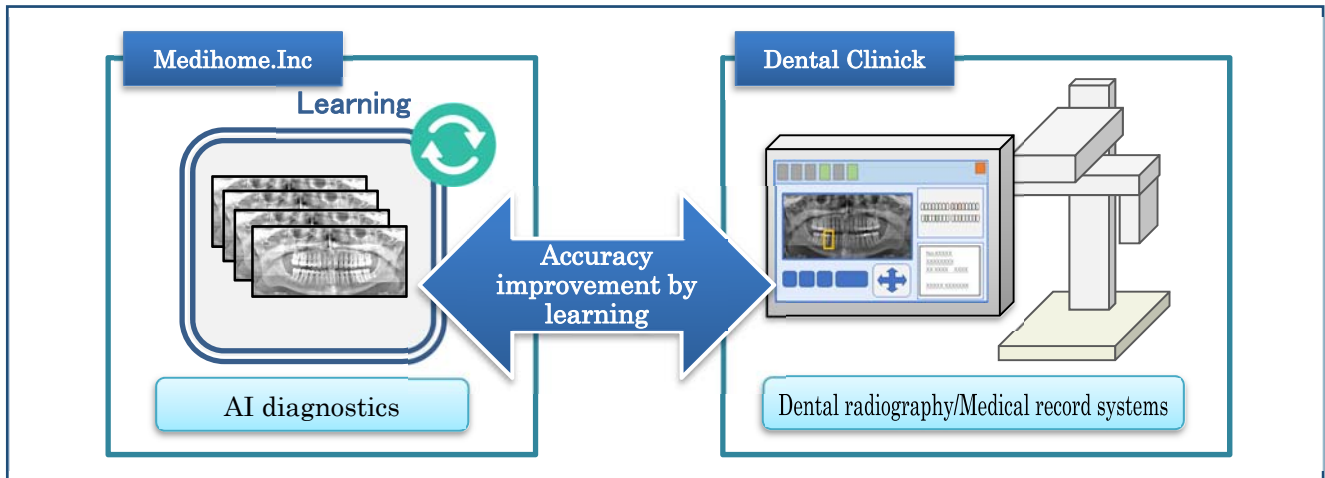

Diagnosing for panoramic dental

<Image1:Detect by AI diagnosing>

<Searchable pathologies>

'Tooth decay' 'Periapical pathosis' 'Dental calculus' 'Cysts' 'Furcation involvement'

<Data on which a diagnosis can be made>

Panoramic dental radiographic imaging

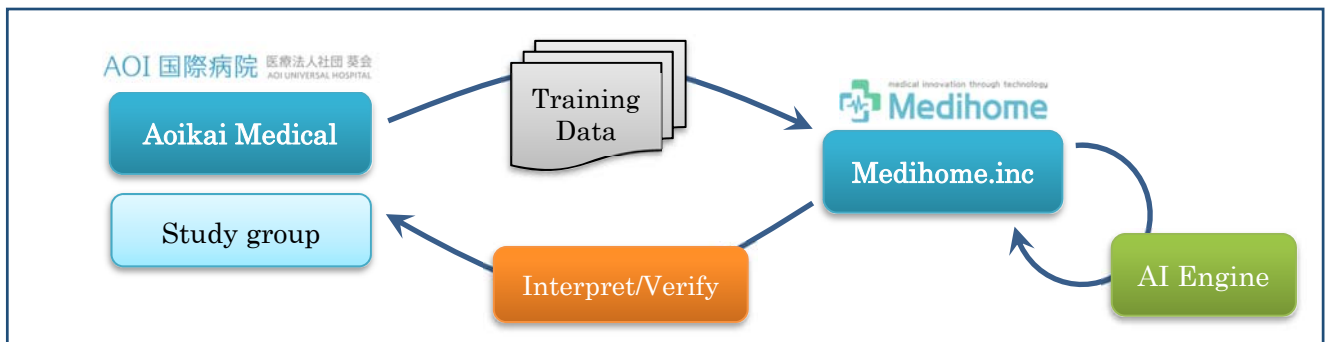[1]　This diagnostics AI system is currently being patented.

Using machine learning, the AI diagnostics system processes learning data about affected areas to improve its accuracy. We plan on coordinating it with dental radiography and medical record systems to further enhance the accuracy of its diagnoses.（Image2)

<Image2:System Image>

2. Joint Research Background

Various AI-related fields, among which high-performance computing and machine learning, have grown at an incredible speed in the last few years. While the introduction of AI in several medical fields is being studied, Aoikai Medical Corporation and Medihome Inc have focused their efforts on the analysis of panoramic dental radiographic imaging used in dental care. Panoramic dental radiographic images are taken on most patients at their initial dental examination and show the entirety of the oral cavity. However, since experience varies from dentist to dentist, the interpretation of such images also tends to vary. To be accurate, a diagnosis should be formulated by an interpretation based on a "standardization of healthcare" and on a double-check by AI. If we can develop an AI-based diagnostics system capable of providing support to dentists, the quality of treatments and dentists' productivity are sure to improve.

In this joint research, we use training data provided by Aoikai Medical Corporation and by a study group of dentists to interpret and verify panoramic dental radiographic images mainly from oral surgeons of the AOI International Hospital. The developing phase of the AI diagnostics system subsequently takes place at Medihome Inc. The training data we use for R&D is based on approximately 12,000 panoramic dental radiographic images showing about 25,000 affected areas.

<Image3:system of cooperation>

About Aoikai Medical Corporation

We cooperate with hospitals, elderly care facilities and educational institutions to consistently undertake care plans for medical care, rehabilitation, institutional care, day care and home care.

Aoikai Medical Corporation

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Business outline: Medical Group

http://www.aoikai.jp/,   http://www.aoikai.jp/aoiuniversalhospital/

葵会グループ AOIKAI GROUP

AOI 国際病院 医療法人社団 葵会 AOI UNIVERSAL HOSPITAL

About Medihome

Medihome Inc is specialized in the processing of medical images and works toward researching new technologies that will expand the medical industry's reach. They create never-before-seen services with an active, practical use of technologies, especially AI.

Medihome.Inc

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Business outline: Development AI and IT for medical

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medical innovation through technology

Medihome

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