Development of an open platform for AI-assisted diagnosis in endoscopic examinations

~To offer applications of Computer-Aided Diagnosis (CAD) in Gastrointestinal Endoscopy~

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Utilize ICT-AI to enhance the efficiency of customers’ work and satisfaction

Endoscopy Intelligent System

Cleaning and Disinfection
Insertion
Diagnosis
Therapy

Inspection Preparation

Insertion

Advanced Manipulation
Active Energy Control
Image Navigation
Voice Control
AR/VR
AI Based SI & Protocol Tracking

Advanced Imaging

OLYMPUS AI Server in Surgery

OLYMPUS AI Server in Surgery

Intelligent Sensing for Inspection

Evidence-based Machine Inspection
Evidence-based Machine Inspection
Inspection Evidence and Effectiveness Data Analysis
Multi-modal Inspection Data Analysis
Digital Imaging Sensing
Support for Human Inspection
Endoscopic Inspection Workflow

- **Endoscopy Reprocessing**
  - ICT improves efficiency & quality in cleaning & disinfection

- **Inspection Preparation**
  - ICT reduces stress/loads in preparation

- **Insertion**
  - AI supports insertion through navigation*

- **Diagnosis**
  - AI assists diagnosis by providing more information*

- **Therapy**
  - ICT supports efficient & effective treatment

- **Reporting**
  - ICT realizes semi-automated reporting

*Technology not yet approved under the Act on Pharmaceuticals and Medical Devices
Endoscopic Inspection Workflow

- Reduced Inspection Preparation Requirements utilizing ICT Technology
- Insertion Support Navigation Utilizing AI Technology
- Diagnosis Support Information Provision Utilizing AI Technology
- Self Reporting Enabled with AI and ICT Technology
- High-Quality Cleaning and Disinfection Process Enabled with ICT Technology
- Efficient therapy with ICT technology

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Computer-Aided Diagnosis (CAD)

Computers quantitatively analyze medical images and supports disease diagnosis (detection and differentiation) by doctors. Doctors make final decisions.

Detection → Diagnosis

- Biopsy sampling
- Endoscopic testing
- Endoscopic surgery
- Surgical operation

CADx: computer-aided diagnosis

CADe: computer-aided detection

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Which diseases/organs does the technology apply to?

Cancer
Tumors
IBD
etc...
Partners

We will continue working with healthcare professionals while also looking to collaborate with other organizations that offer strong AI technology to complement our own CAD development, aiming to realize a range of CAD applications technologies for the gastrointestinal endoscopy field.

Healthcare Providers
Hospitals, Medical Societies, etc.

AI/CAD-related
Companies, Research Institutes, etc.

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Contribute to enhance the efficiency in endoscopic inspection

Clinical images are not allowed to be attached

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CADe: Computer-aided detection

Detecting lesions under various conditions based on training data from expert doctors

| Prominent lesion | Lesion at edge of image | Lesion in background |

Clinical images are not allowed to be attached

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CADe: Computer-aided detection

Detecting lesions under various conditions based on training data from expert doctors

| Lesion appears small in image | Dimly lit lesion | Flat lesion |

Clinical images are not allowed to be attached

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Launched EndoBRAIN®, AI-assisted diagnostic support software for endoscopic images, with an expectation as a diagnostic support tool for doctors in colonoscopies. Obtained the Japan’s first regulatory approval as an AI technology in the endoscopy field.
May 7th, 2018

News Release from Olympus America Inc. (OAI)

Executed a co-development agreement with ai4gi, a joint venture between Satis Operations and Imagia, specialized in AI solution for real-time clinical decision support in colonoscopy.
Near future: Multiple CAD devices will be offered by various companies.

Doctors require multiple CAD devices on hand.
CAD Open Platform

Incorporate CAD software from various companies
→ CAD algorithms developed by our partners are converted to software that runs on our platform

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This technology will offer a range of CAD software available on our platform by converting CAD algorithms developed by partner companies to CAD software for use on our platform.

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CAD devices, developed by partner companies, may also be provided through our sales channel, independently from the CAD Open Platform, depending on circumstances.”
We will continue striving to develop technologies by utilizing AI and ICT to further advance and spread the Endoscopic Medicine technology not yet approved under the Act on Pharmaceuticals and Medical Devices.