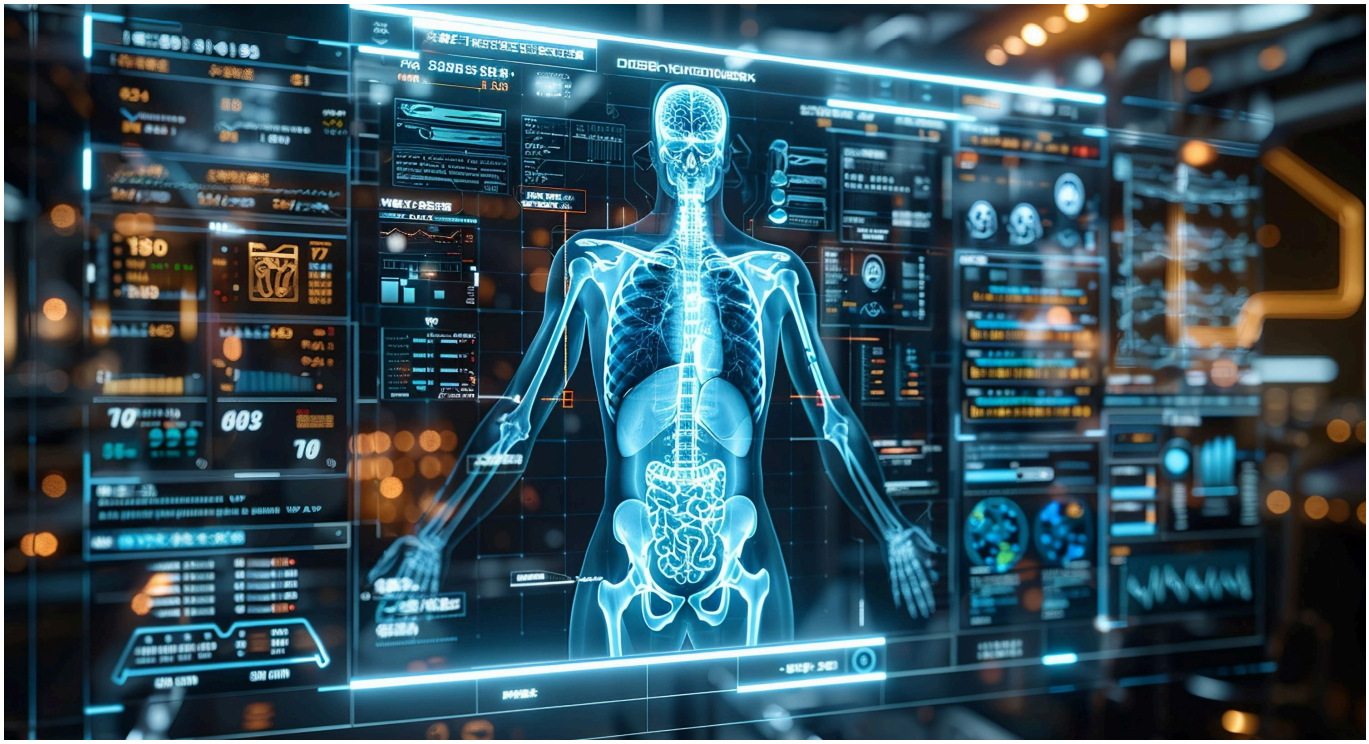
TECH OFFER

Platform for AI-Assisted Image Labeling, Training, and Deploying AI Models in Healthcare



KEY INFORMATION

TECHNOLOGY CATEGORY:
Infocomm - Healthcare ICT
Infocomm - Video/Image Analysis & Computer Vision
Infocomm - Big Data, Data Analytics, Data Mining & Data Visualisation
Healthcare - Telehealth, Medical Software & Imaging

TECHNOLOGY READINESS LEVEL (TRL): TRL8
COUNTRY: SINGAPORE
ID NUMBER: TO175228

OVERVIEW

AI has the potential to significantly enhance diagnostic efficiency, allowing healthcare providers to quickly analyze medical images (e.g., X-Ray, MRI, CT, PET) and generate preliminary diagnostics for further review. This is achieved through a comprehensive workflow that involves:

1. Leveraging the deep expertise of medical professionals to accurately annotate medical images, creating a robust training dataset for the AI model.

2. Training computer vision models based on these datasets to achieve target performance levels.

3. Continuously refining these models over time through the incorporation of new data.

Traditionally, this process demands a team of engineers to set up and maintain multiple tools, making it resource-intensive and costly. The technology offered here is a no-code, end-to-end platform that revolutionizes this process by enabling healthcare professionals to directly contribute their expertise through an AI-assisted image labeling tool. This tool allows technical teams to collaboratively and efficiently label large datasets with pixel-level accuracy. Model training and fine-tuning can then be managed by a single individual, significantly reducing the time from concept to deployment - from months to weeks - while also cutting costs associated with hiring specialized machine learning engineers.

The technology owner has worked with universities, hospitals, and MedTech start-ups to develop unique computer vision solutions in the healthcare space. The technology owner is seeking collaborations with healthcare organizations aiming to harness computer vision to enhance operational efficiency and quality of care. Alongside the platform, professional services are available to support development, customize necessary integrations, and ensure the success of client projects.

TECHNOLOGY FEATURES & SPECIFICATIONS

This platform includes the following key features:

Labeling Tools for Medical Scans

- Supports 2D and 3D scans (e.g., NifTi, DICOM, MPR)

- AI-assisted labeling for masks, keypoints, or volume

- Collaborative working environment enabling labeling tasks to be distributed, with gates for management review and tie-breaking scenarios for data that are harder to assess

- Importable / exportable major annotation formats, including COCO JSON, LabelMe, PascalVOC, COCO MASK, and CSV Width-Height

AI-Assisted Labeling

Medical datasets are often large and complex. The AI-assisted labeling feature uses advanced contour analysis methods and deep learning to enable precise labeling with minimal user input. Users simply need to identify areas of interest / not of interest, and the platform will automatically generate accurate masks around the targeted regions.

General Specifications

- HIPPA and SOC II compliant, with ability to deploy on-premise to protect data security

- "One-Click Train" for immediate model training leveraging 50+ foundational models

- Audit trails to facilitate approvals for medical AI - documenting characteristics like data sets, model parameters, and model performance

POTENTIAL APPLICATIONS

This platform addresses one of the major challenges faced by researchers, machine learning engineers, and data scientists in

healthcare: the tedious and time-consuming task of data labeling. With this automated segmentation algorithms, teams have successfully labeled thousands of medical images in a fraction of the time typically required.

Computational Pathology and Medical Imaging Applications:

- Disease Detection and Identification (e.g., Tumor Lesions, Fractures, Foreign Objects) from X-Ray, MRI, and other medical imaging technologies

- Anomaly Detection in Blood Cell Scans and Pathology Scans

UNIQUE VALUE PROPOSITION

This platform enables healthcare teams to label data significantly faster, utilizing an AI-enabled segmentation tool that requires only a few clicks to create pixel-perfect masks. The tool can be used collaboratively, to divide up the workload between medical professionals, with built-in gates for management review. Given the high level of expertise required for medical data labeling, this platform allows professionals such as doctors and researchers to perform this task up to ten times faster.

Additional benefits include a minimal learning curve, as the platform does not require mastery of many different tools. Moreover, it supports an end-to-end workflow, allowing teams to quickly transition from labeled images to trained deep-learning models (e.g., FasterRCNN, MaskRCNN, DeepLabV3, YOLO). The platform also supports the generation of labeled files compatible with multiple popular frameworks, streamlining the process of building and deploying powerful AI models in healthcare.

Most importantly, all project IP is owned by the client. This allows MedTech companies to protect their core business. For healthcare systems looking to do in-house development, this fundamentally changes the current economics of AI in healthcare. Instead of pay per use, where costs scale with increased usage, the costs are concentrated into development and use of the AI can scale while costs remain relatively flat.