



AWS for Health Partner: NVIDIA

## Leverage the power of deep learning and improved image processing



High-performance computing and AI are addressing many of the challenges faced by health organizations today



# 93%

of healthcare leaders confirm AI is essential, very important or important to their strategy<sup>1</sup>

### Challenges in medical imaging workloads



#### Exponential data growth

Medical centers produce **over 50** petabytes of imaging data per year. **97%** of that data goes unused or unanalyzed<sup>2</sup>.



#### More studies need to be read than before

With advances in medical imaging instruments, scanners can tell more about a patient's health without the need for invasive procedures.



#### High demand for radiologists

The limited number of radiologists, multiplied by growing requirements for regulatory compliance and reporting can delay readings of studies as well as increase error rates.



#### Wide variety of imaging data types

Standardizing imaging formats can be a time-consuming process.



#### Storage and compute

Storing large files and processing medical imaging data requires significant computing power alongside the ability to easily access and search the stored data.



#### Collaboration and experimentation restraint

Healthcare compliance regulations demands make it challenging for researchers and scientists to collaborate effectively.

### How NVIDIA Clara Imaging on AWS solves medical imaging challenges



#### Scalable cloud-based compute and storage

Clara Imaging leverages AWS' scalable and cost-effective compute and storage capacity to accelerate medical imaging workloads.



#### Secure scientific experimentation

Clara Imaging is powered by open-source PyTorch-based MONAI (Medial Open Network for Artificial Intelligence) running on AWS. Data scientists can collaborate and scale by accessing their existing data stored on AWS.



#### Faster AI model creation

Accelerated data labeling, training, and tuning of AI models can bring AI workflows to radiologists to help with items such as detection, automatic measurements, classification of anomalies, and flagging of urgent cases.

### Types of medical imaging AI models created using NVIDIA on AWS

NVIDIA provides Clara Imaging, a deep-learning optimized application-building framework for data labeling, hyperparameter model tuning, model training, collaboration, and deployment for medical imaging. AI models can improve the quality of CT scans or help generate views of the body that were previously unattainable, such as 3D cinematic renderings of medical images and denoising of images.

#### Image enhancement

Process deep learning and improved image processing with virtually unlimited AWS compute and storage capacity to improve image quality and reconstruction while reducing time spent in MRI scans.

#### Optimized workflows

AI models can help with processes such as flagging of urgent cases, inserting findings from a DICOM image straight into reports or pulling previously reported findings to streamline workflows.

#### Automatic volumetric measurements

Medical imaging professionals can use AI to simplify and automate volumetric calculations for medical diagnosis and reduce time spent performing them.

#### Longitudinal tracking

AI models can help accurately compare medical imaging renderings over a period of time and automatically identify an area of suspected cancer.

#### Automatic reporting

Radiologists can automate reporting by building AI models into the process. AI can help automatically insert DICOM findings into reports or pull findings from previous reports for tracking purposes.

#### Detection of anomalies

AI models can provide a machine-assisted diagnosis by discovering anomalies not discernible by the human eye and flag urgent cases quickly.

#### Image reconstruction

The power of deep learning and improved image processing increases the dimensionality of data, allowing for superior image quality production and reconstruction, while reducing time spent in MRI scans.



### Results seen by Health organizations using Clara Imaging on AWS

Launched AI models in

# 2 weeks<sup>3</sup>

# 10x

faster data annotation<sup>4</sup>

# 50%

less medical imaging time spent using AWS inference endpoints

Reporting efficiency improved by up to

# 300x<sup>5</sup>



### Get started today

- 1 Go to AWS Marketplace
- 2 Search for 'NVIDIA Clara Train SDK Pipelines'
- 3 Subscribe
- 4 Launch and configure an Amazon Elastic Compute Cloud (Amazon EC2) instance
- 5 Download sample data, or your organization's data stored on AWS
- 6 Run the first Clara Imaging analysis

### Ready to accelerate your imaging workloads in the cloud?

With NVIDIA Clara Imaging on AWS, healthcare professionals can build AI models to optimize workflows across the medical imaging ecosystem. Get started today and reduce your time to results.

[Learn more about AWS for Medical Imaging](#)

#### Footnotes

- 1 AI in Healthcare 2020 Leadership Survey Report: 7 Key Findings
- 2 GE Healthcare Announces Strategic Collaboration Agreement with AWS to Transform Care Delivery and Help Clinicians Improve Patient Care
- 3 Amazon Reduces Infrastructure Costs on Visual Bin Inspection by a Projected 40% Using Amazon SageMaker
- 4 Fast AI Assisted Annotation and Transfer Learning Powered by the Clara Train SDK
- 5 NVIDIA Clara - Solutions for Medical Imaging

