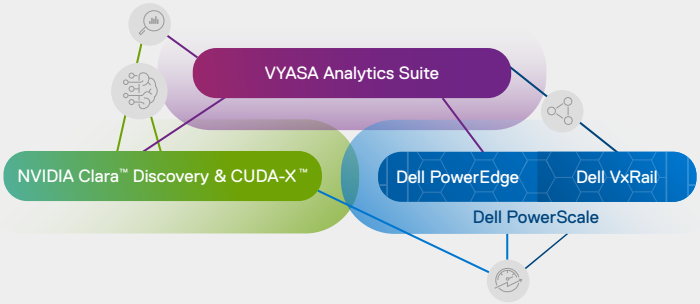
Streamlined image analytics

ADVANCING ANALYSIS OF MEDICAL IMAGERY THROUGH DEEP LEARNING

On average, hospitals create up to 50 petabytes of data annually. Unfortunately, as much as 97% of this information goes unused.[1] One area where this is particularly pertinent is imaging which is rich with insight but increasingly challenging to manage, access and analyze via traditional methods. As a result, critical data points can be missed that can influence early detection, diagnoses and research.

Retina, Vyasa's image analytics application, is addressing this problem head-on. By accessing Vyasa's Layar data fabric, Retina can connect to diverse sets of images regardless of storage location or file type without moving or replicating the content. The application then applies deep learning to connected image sets creating an intuitive environment for exploring and analyzing images on a single platform.

Vyasa offers a complete product suite of applications, each designed for specific life science and healthcare data analytics needs. The technology is built on an infrastructure powered by the NVIDIA Clara Discovery application framework and NVIDIA's GPU hardware with Dell PowerEdge Servers or Dell VxRail and Dell PowerScale for flexible, secure storage.



Dell PowerEdge supporting NVIDIA GPUs and Dell PowerScale modern storage for unstructured data

HOW WE HELP LIFE SCIENCE AND HEALTHCARE ORGANIZATIONS

The Layar Data Fabric securely connects internal and external data sources, then applies automatic deep learning AI algorithms to text and images. This allows you to use Layar to extract insights from the content to enable collaborative data sharing.

MEDICAL IMAGING DETECTION

By 2040, the global burden is expected to grow to 27.5 million new cancer cases and 16.3 million cancer deaths simply due to the growth and aging of the population.[2] Deep learning has proven necessary and effective to meet this future increase in cases and improve the precision and recall of automated cancer detection.

Vyasa Retina image analytics

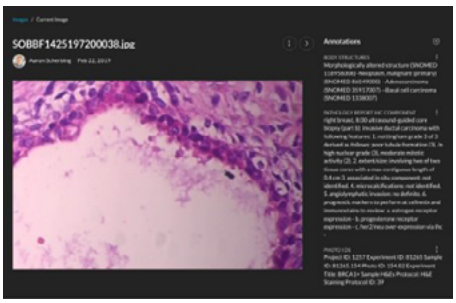
Powered by NVIDIA and Dell Technologies, Retina streamlines imaging workflows across the organization. Retina's analytics are used to enhance image classification and cohort curation, as well as enhance AI model training with enhanced traceability and reproducibility.

More than 90% classification accuracy for tissue diagnostics[3]

The optimized models can help triage cases so that clinicians can prioritize the most suspicious cases.

Reduce manual input by medical professionals

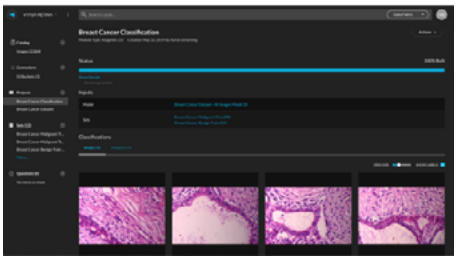
The ability to reduce manual input from physicians, oncologists and pathologists means improved outcomes and more time to treat patients.



COHORT IDENTIFICATION & CURATION

The complexity and file size of medical imagery makes these assets increasingly challenging to organize and manage. Manual methods for identifying and collecting images for analysis and cohort selection is time and labor-intensive. Effectively leveraging metadata with deep learning can accelerate this process.

Retina can quickly access and analyze images stored on Dell Technologies. Retina's pre-built deep learning models accelerate image identification and classification accelerating user's ability to curate data sets, improve cohort creation, analyze tissue malignancy and more.



MODEL MANAGEMENT & TRAINING

Deep learning models hold great promise for analyzing medical imagery. However, managing models across various data sets, file types, etc., can be a challenge for data scientists, IT teams and healthcare professionals.

Retina's model management dashboard streamlines model training for data science and analytics teams. Key features of Retina's model management and training capabilities include:

- Annotation tags and a built-in augmentation library for image modification.
- Optimize models with tiling and multi-instance techniques to minimize network/ memory footprint and facilitate training on large images.
- Manage, store and analyze model metadata within a dashboard for easy deployment.
- Refer back to training sets for enhanced model traceability.
- Deploy models to decentralized sites while maintaining oversight of performance and quality control.

It's easy to get started. Vyasa is deployed through NVIDIA Clara™ Discovery and uses Dell PowerScale connectors.

Reach out to us today.

VYASA

Vyasa is advancing deep learning AI into approaches that enable humans to elevate the nature of their work beyond rote activities inherent in processing digital content. Using highly scalable deep learning software and analytics, we enable organizations to ask complex questions across large scale integrated data sets to gain critical insights for better decisions.

» **Contact us** at *hello@vyasa.com* to learn more

DELL Technologies

Dell Technologies is helping life sciences and healthcare organizations simplify their administration; coordinate and manage patient care; transition from episodic care to coordinated, advanced personalized care with a focus on prevention and wellness; and ultimately improve population health and individual patient outcomes.

» **Learn more** about our solutions for healthcare

NVIDIA

NVIDIA Clara™ Discovery is a collection of frameworks, applications, and AI models enabling GPU-accelerated drug discovery, with support for research in genomics, proteomics, microscopy, virtual screening, computational chemistry, visualization, clinical imaging, and natural language processing.

» **Learn more** about NVIDIA Clara™ Discovery

[1] *World Economic Forum (2019) 4 ways data is improving healthcare https://www.weforum.org/agenda/2019/12/four-ways-data-is-improving-healthcare*
[2] *American Cancer Society® Global Cancer Facts & Figures.*
[3] *Vyasa Analytics internal project client results.*

For more technical information on Vyasa's offerings, please visit us at vyasa.com.