

## NVIDIA and American College of Radiology AI-LAB Team to Accelerate Adoption of AI in Diagnostic Radiology Across Thousands of Hospitals

### NVIDIA Clara AI Toolkit Enables New ACR AI-LAB, Giving 38,000+ ACR Members and Other Radiology Professionals Ability to Develop and Deploy AI at Their Own Institutions

World Medical Innovation Forum -- NVIDIA and the American College of Radiology today announced a collaboration to enable thousands of radiologists nationwide to create and use AI for diagnostic radiology in their own facilities, using their own data, to meet their own clinical needs.

Following a successful three-month pilot program by both parties, ACR is integrating the [NVIDIA Clara™ AI toolkit](#) into the newly announced ACR Data Science Institute® [ACR AI-LAB™](#), a free software platform that will be made available to more than 38,000 ACR members and other radiology professionals to build, share, locally adapt and validate AI algorithms, while also ensuring patient data stays protected at the local institution.

The NVIDIA Clara AI toolkit is a key part of the NVIDIA Clara developer platform, which is designed to enable software-defined medical instruments and intelligent workflows. A platform to create data and algorithm pipelines, NVIDIA Clara consists of libraries for data and image processing, AI model processing, and visualization. For AI, the toolkit includes libraries for data annotation, model training, model adaptation, model federation and large-scale deployment.

Making the vision of the ACR AI-LAB a reality requires the collaboration of the entire ecosystem, including industry leaders GE Healthcare, Nuance and NVIDIA, along with a vast network of healthcare startups and leading research institutes. NVIDIA Clara powers GE Healthcare's Edison AI platform and the Nuance AI Marketplace, both of which are supporting the AI-LAB and are key solutions for the deployment of AI within the radiology workflow.

"This collaboration marks a significant milestone in an extraordinary ACR Data Science Institute project, helping enable the launch of the ACR AI-LAB, giving radiologists in any practice environment an opportunity to become involved in AI development at their own institutions, using their own patient data to meet their own clinical needs," said Bibb Allen Jr., M.D., FACR and chief medical officer of the Data Science Institute at the American College of Radiology.

"NVIDIA builds platforms that democratize the use of AI and we purpose-built the Clara AI toolkit to give every radiologist the opportunity to develop AI tools that are customized to their patients and their clinical practice," said Kimberly Powell, vice president of Healthcare at NVIDIA. "Our successful pilot with the ACR is the first of many that will make AI more accessible to the entire field of radiology."

#### Successful Pilot Paves Way to Democratized AI for Healthcare

An initial pilot with the Ohio State University (OSU) and the Massachusetts General Hospital and Brigham and Women's Hospital's Center for Clinical Data Science (CCDS) helped NVIDIA and ACR define the assets and pathways necessary to enable facilities to work together and with industry to refine AI algorithms without sharing potentially sensitive patient data. Bringing an AI model to the patient data, instead of patient data to the model, can help increase diversity in algorithm training, facilitate validation of the algorithms and enable radiologists to learn the steps needed to adapt algorithms to their institutions' clinical needs.

Using the NVIDIA Clara AI toolkit, OSU was able to quickly import a pre-trained model developed by CCDS. This model was customized to local variables and successfully labeled OSU data for further testing and improvement of the algorithm, all of which took place behind their own firewall. It resulted in a highly accurate and enhanced cardiac computed tomography angiography model, and the shared approach reduced algorithm training, validation and testing times by days.

"This software will offer radiologists, without computer programming experience, the ability to build and improve AI algorithms without the need to share their data," said Keith Dreyer, D.O., Ph.D., chief data science officer at Partners Healthcare and associate professor of radiology at Harvard Medical School. "Algorithms typically work best within the sites where they were trained, but those limited training sets are not always representative of the population at large. Training AI models on data from diverse sites helps ensure resiliency while reducing algorithm bias, resulting in improved inference across broader populations."

"Enabling a network of artificial intelligence between hospitals will create more robust algorithms, greater efficiencies and likely lead to better patient outcomes," said Dr. Richard White, chair of the department of Radiology and Medical Imaging Informatics at the Ohio State University Wexner Medical Center. "This will give us access to high-quality algorithms that will help us accelerate deep learning and machine learning in healthcare."

The architecture used in the pilot program, powered by the NVIDIA Clara AI toolkit, enables data aggregation, image annotation, image pre-processing and transformation, algorithm transfer and local computing for algorithm improvement, all of which are necessary to achieve the ultimate goal of the democratization of AI.

#### Ecosystem Support for ACR AI-LAB and NVIDIA Clara

Strong support for the ACR AI-LAB comes from NVIDIA Clara AI platform users and industry leaders GE Healthcare and Nuance.

"Democratizing AI takes not only state-of-the-art technology, but also close collaboration among industry leaders," said Keith Bigelow, senior vice president of Edison Portfolio Strategy at GE Healthcare. "By supporting the ACR community's AI-LAB efforts and harnessing the power of NVIDIA's Clara AI platform, GE Healthcare can lower costs and improve patient outcomes by accelerating the number of algorithms created and seamlessly deployed to Edison-powered healthcare devices and applications in hospitals nationwide. GE Healthcare looks forward to enabling the fastest path to compliant and productive use of ACR AI-LAB algorithms in our world leading medical devices and workflow applications."

"Combining the strength of the NVIDIA Clara AI platform with the scale of the Nuance AI Marketplace for Diagnostic Imaging will empower ACR AI-LAB developers to rapidly build and seamlessly deploy AI algorithms into the existing clinical workflows of over 70 percent of all radiologists across more than 5,800 connected healthcare facilities," said Karen Holzberger, vice president and general manager of Healthcare Diagnostics at Nuance. "Furthermore, the ubiquitous footprint of Nuance PowerScribe radiology reporting and PowerShare image-sharing solutions provides subscribers of our AI Marketplace with immediate access to the largest storefront of imaging AI algorithms that can be automatically integrated into the radiology reporting and interpretation tools they use every day."

### ACR-AI LAB Planned Debut and Availability

The initial version of ACR AI-LAB will be shown at the 2019 ACR Annual Meeting in Washington, from May 18-22. Attendees will be able to explore and experiment with the AI tools necessary to modify and refine AI models.

Soon after, ACR plans to provide online access and sample data from publicly available patient datasets.

The ACR AI-LAB builds upon the ACR TRIAD (Transfer of Images and Data), a platform that already connects thousands of radiology practices for ACR research, accreditation and registry program. Through the ACR AI-LAB, these same radiologists will now be provided with user-friendly computational tools that will help them learn about annotating datasets and training AI models as well as sample the AI tools that can be used to train and modify existing AI algorithms.

### About the American College of Radiology

The American College of Radiology (ACR), founded in 1924, is a professional medical society dedicated to serving patients and society by empowering radiology professionals to advance the practice, science, and professions of radiological care.

### About NVIDIA

[NVIDIA](#)'s (NASDAQ: NVDA) invention of the GPU in 1999 sparked the growth of the PC gaming market, redefined modern computer graphics and revolutionized parallel computing. More recently, GPU deep learning ignited modern AI — the next era of computing — with the GPU acting as the brain of computers, robots and self-driving cars that can perceive and understand the world. More information at <http://nvidianews.nvidia.com/>.

ertain statements in this press release including, but not limited to, statements as to: NVIDIA and the American College of Radiology accelerating adoption of AI in diagnostic radiology across thousands of hospitals; NVIDIA Clara AI toolkit enabling ACR AI-LAB and giving ACR members and radiology professionals the ability to develop and deploy AI; the benefits and impact of the collaboration between NVIDIA and the ACR, including the use of AI; ACR integrating the NVIDIA Clara AI toolkit into ACR AI-LAB, its availability and its ability to protect patient data; the benefits, performance and abilities of NVIDIA Clara and ACR AI-LAB; making ACR AI-LAB a reality requiring the collaboration of the entire ecosystem; the collaboration enabling the launch of ACR AI-LAB and giving radiologists an opportunity to become involved in AI development; NVIDIA's platform democratizing the use of AI; the NVIDIA Clara platform giving radiologists the opportunity to develop customized AI tools; the collaboration with ACR being one of many that will make AI more accessible to the entire field of radiology; the benefits and impact of being able to refine AI algorithms and use the software without sharing patient data; the benefits of bringing the AI model to patient data; the software enabling radiologists to build and improve AI algorithms without the need to share data; the benefits of training AI models on data from diverse sites, including improved inference across broader populations; enabling a network of artificial intelligence between hospitals creating more robust algorithms, greater efficiencies and likely leading to better patient outcomes, and it giving access to high-quality algorithms that will accelerate deep learning and machine learning in healthcare; and what the architecture enables and its contribution to the democratization of AI; the benefits of the AI-LAB and NVIDIA's Clara platform for GE Healthcare and it enabling the fastest path to the use of these products in its devices and applications; NVIDIA Clara and Nuance AI Marketplace empowering the deployment of AI algorithms and Nuance products providing access to imaging AI algorithms and their integration into use; and the availability of ACR AI-LAB are forward-looking statements that are subject to risks and uncertainties that could cause results to be materially different than expectations. Important factors that could cause actual results to differ materially include: global economic conditions; our reliance on third parties to manufacture, assemble, package and test our products; the impact of technological development and competition; development of new products and technologies or enhancements to our existing product and technologies; market acceptance of our products or our partners' products; design, manufacturing or software defects; changes in consumer preferences or demands; changes in industry standards and interfaces; unexpected loss of performance of our products or technologies when integrated into systems; as well as other factors detailed from time to time in the most recent reports NVIDIA files with the Securities and Exchange Commission, or SEC, including, but not limited to, its annual report on Form 10-K and quarterly reports on Form 10-Q. Copies of reports filed with the SEC are posted on the company's website and are available from NVIDIA without charge. These forward-looking statements are not guarantees of future performance and speak only as of the date hereof, and, except as required by law, NVIDIA disclaims any obligation to update these forward-looking statements to reflect future events or circumstances.

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