

# RSNA Launches Intracranial Aneurysm Detection AI Challenge

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OAK BROOK, Ill. (July 29, 2025) — The Radiological Society of North America (RSNA) has launched the 2025 [RSNA Intracranial Aneurysm Detection AI Challenge](#). RSNA organizes artificial intelligence (AI) challenges to spur the creation of AI tools for radiology and improve patient care.

The challenge, developed in collaboration with the American Society of Neuroradiology (ASNR), the European Society of Neuroradiology (ESNR) and the Society of Neurointerventional Surgery (SNIS), focuses on AI-assisted detection and localization of intracranial aneurysms.

"This challenge is the first of its kind to span multiple imaging modalities—including computed tomography angiography (CTA), magnetic resonance angiography (MRA), and conventional MRI—for detecting and localizing intracranial aneurysms," said Jeff Rudie, M.D., Ph.D., co-leader of the challenge planning task force and member of the RSNA Radiology Informatics Council's Artificial Intelligence Committee. "It reflects a real-world clinical setting, where early, accurate diagnosis could prevent catastrophic outcomes. By leveraging a varied global dataset and expert radiologist annotations, we're pushing the frontier of AI in neuroradiology and neurovascular imaging."

Intracranial aneurysms affect an estimated 3.2% of the global population, according to studies cited by the U.S. National Library of Medicine. Alarmingly, up to 50% of intracranial aneurysms are first identified only after rupture—an event associated with high rates of serious complications and death.

Accurate and timely detection of aneurysms is critical for guiding treatment and preventing rupture. When identified early, patients can undergo monitoring or intervention that significantly reduces the risk of adverse outcomes.

AI tools that support radiologists in detecting these often-subtle lesions have the potential to transform patient care by improving diagnostic accuracy and efficiency.

"Intracranial aneurysms are common, deadly, and treatable," said Evan Calabrese, M.D., Ph.D., challenge planning task force co-leader, clinical neuroradiologist and assistant professor of radiology at Duke University School of Medicine in Durham, North Carolina. "They can be identified on a variety of medical imaging modalities, but are often difficult to detect, particularly when asymptomatic. This challenge aims to provide new state-of-the-art methods for automated detection of aneurysms on routine brain scans done for other purposes. This opportunistic screening approach may save lives and reduce diagnostic burden for radiologists, using the images that we already have available. It's a win-win for patients, radiologists and health systems."

The goal of the RSNA Intracranial Aneurysm Detection AI Challenge is to develop machine learning models to detect and localize intracranial aneurysms across a variety of medical imaging modalities, including CTA, MRA and T1 post-contrast and T2-weighted MRI.

Participants will be tasked with detecting and localizing aneurysms across 13 distinct anatomical locations within the intracranial circulation. The reference dataset—meticulously curated by the RSNA challenge planning task force—includes CT and MR imaging exams from 18 sites across five continents, annotated by more than 60 expert radiologists for the presence and location of aneurysms. To give competitors richer anatomical context, a subset of MRI studies also includes 3D segmentations of those same 13 vascular locations, where aneurysms most commonly arise.

To construct these models, AI researchers need access to substantial volumes of imaging data annotated by expert radiologists. RSNA's AI challenges engage the radiology community to develop such datasets, which provide the standard of truth in training AI systems to perform tasks relevant to diagnostic imaging.

"The dataset behind this challenge is unprecedented in scale and variety, with over 6,500 imaging studies and more than 3,500 annotated aneurysms contributed by 18 institutions worldwide," said Dr. Rudie, a neuroradiologist at Scripps Clinic Medical Group in La Jolla, California. "This level of collaboration enables the development of AI

models that are both clinically meaningful and globally generalizable."

In a challenge, researchers compete on how well their AI models perform specific tasks such as detection, localization and categorization of abnormal features according to defined performance measures. Each AI challenge explores and demonstrates the ways AI can benefit radiology and improve patient care.

"This challenge is unique in that: 1) the number and variety of types of brain scans are unrivaled, 2) aneurysm size, parent vessel and precise location were double annotated by expert neuroradiologists and neurointerventionalists, and 3) it focuses on opportunistic screening on routine imaging rather than focusing only on imaging performed explicitly for detecting aneurysms," Dr. Calabrese said.

The 2025 RSNA Intracranial Aneurysm Detection AI Challenge is open to all researchers. The competition will be conducted on a platform provided by [Kaggle, Inc.](#) Partial sponsorship support was provided by DEEPNOID. The top nine performing competitors will share in a total of \$50,000 in prize money.

Previous RSNA AI challenges have drawn over 1,000 teams composed of expert AI researchers from around the world. The highest performing models are made available under open licenses to encourage additional research.

"AI challenges like this one are essential for advancing the field," Dr. Rudie said. "They create structured opportunities for researchers worldwide to solve clinically meaningful problems, accelerate innovation and build tools that can eventually improve patient care."

The competition will run through October 14, 2025. Winners will be announced in November, and winning teams will be recognized in the AI Theater during RSNA's 111th Scientific Assembly and Annual Meeting (RSNA 2025), held Nov. 30 – Dec. 4 at McCormick Place in Chicago.

For more information on RSNA AI challenges, visit [RSNA.org/AI-image-challenge](https://www.rsna.org/AI-image-challenge) or contact [informatics@rsna.org](mailto:informatics@rsna.org).

RSNA is an association of radiologists, radiation oncologists, medical physicists and related scientists promoting excellence in patient care and health care delivery through education, research and technologic innovation. The Society is based in Oak Brook, Ill. ([RSNA.org](https://www.rsna.org))