
RSNA Press Release

RSNA Announces Lumbar Spine Degenerative Classification AI Challenge Results

Released: November 20, 2024

OAK BROOK, Ill. — (Nov. 20, 2024) – The Radiological Society of North America (RSNA) has announced the results of the 2024 [RSNA Lumbar Spine Degenerative Classification AI Challenge](#).

The challenge explored whether artificial intelligence can be used to aid in the detection and classification of degenerative spine conditions using lumbar spine MR images. The carefully curated and annotated dataset, developed in collaboration with the American Society of Neuroradiology (ASNR), included images from eight sites across five continents.

AI-driven detection tools have the potential to enhance the efficiency and accuracy of diagnostic radiology. To build these tools, AI researchers need access to substantial volumes of imaging data annotated by expert radiologists. Data challenges such as the RSNA Lumbar Spine Degenerative Classification AI Challenge 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.

"This is the largest open-source annotated lumbar spine MRI dataset of its kind," said Jason Talbott, M.D., Ph.D., co-leader of the challenge task force and professor of clinical radiology & biomedical imaging at University of California at San Francisco and San Francisco General Hospital.

In a challenge, researchers compete on how well their AI models perform specific tasks such as detection, localization and classification 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 AI challenge addresses a clinical issue that has been shown to be challenging for radiologists to agree upon, so it serves a potential role for AI to provide some standardization and consistency that has been difficult for radiologists," said Tyler Richards, M.D., co-leader of the challenge task force and assistant professor of neuroradiology at the University of Utah Hospital.

According to the World Health Organization, low back pain is the leading cause of disability worldwide, affecting 619 million people in 2020, a 60% increase over 1990.

Most people experience low back pain at some point in their lives, and its prevalence increases with age. MRI provides a detailed view of the lumbar spine vertebrae, discs and

nerves, enabling radiologists to assess the presence and severity of conditions that cause low back pain. Proper diagnosis and treatment can improve the overall health and quality of life for patients.

The challenge, launched in May and hosted on a platform provided by Kaggle, Inc. (an Alphabet company), attracted 1,874 teams from around the world—a new record for participation in an RSNA challenge. Competing teams developed models to detect and classify degenerative spine conditions using lumbar spine MR images.

The challenge focused on classifying and localizing three lumbar spine degenerative conditions: Neural Foraminal Narrowing, Subarticular Stenosis and Spinal Canal Stenosis.

The competition phase concluded in October. The prize-winning solutions were then reviewed by a team of volunteer AI experts to confirm the results. The nine teams submitting the highest-scoring algorithms shared in \$50,000 total prize money.

The winning teams in the RSNA Lumbar Spine Degenerative Classification AI Challenge are:

1. Avengers
2. IanPan-Kevin-Yuji-Bartley
3. SonySpine s & tkmn & Moyashii
4. SPINE CHART
5. Two people
6. NVSpine
7. HLIP
8. K_mataro
9. Adam Narai

The Educational Merit Award is a distinction to recognize a winner from among the top 9 teams whose entry is deemed outstanding in clarity, completeness, organization and efficiency of its submitted code.

Two teams were selected for the 2024 Educational Merit Award:

- SonySpine s & tkmn & Moyashii
- Avengers

Winners will be recognized in the AI Theater on Dec. 2 at 4 p.m. CT during RSNA 2024 at McCormick Place Chicago (Dec. 1-5, 2024).

The challenge planning committee is developing a supplement to the dataset used in the challenge. The supplement will be used in detailed analysis of the performance and generalizability of models produced for the challenge. The entire challenge dataset, including the supplementary data, will be published on the RSNA [Medical Imaging Resource for AI \(MIRA\)](#) website.

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

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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)