RSNA Press Release

RSNA Announces Results of Cervical Spine Fracture AI Challenge

Released: November 23, 2022

OAK BROOK, Ill. (Nov. 23, 2022) — The Radiological Society of North America (RSNA) has announced the official results of the RSNA Cervical Spine Fracture AI Challenge. Conducted by RSNA in collaboration with the American Society of Neuroradiology (ASNR) and the American Society of Spine Radiology (ASSR), the aim of the challenge was to explore whether artificial intelligence (AI) could be used to aid in the detection and localization of cervical spine injuries.

The international imaging dataset compiled and curated for the challenge is one of the largest and most diverse of its kind, including detailed clinical labels, radiologist annotations and segmentations.

"A unique aspect of this year's RSNA AI Challenge is the great diversity of data," said Errol Colak, M.D., FRCPC, assistant professor in the Department of Medical Imaging at University of Toronto in Ontario, Canada.

To create the ground truth dataset, the challenge planning task force collected imaging data sourced from 12 sites on six continents, including more than 1,400 CT exams with diagnosed cervical spine fractures, and a roughly equal number of negative exams. To aid researchers in training their detection algorithms, spine radiology specialists from the ASNR and ASSR provided expert image level annotations to a subset of these images to indicate the presence, vertebral level and location of any cervical spine fractures.

For the challenge competition, contestants attempted to develop machine learning models that matched the radiologists' performance in detecting and localizing fractures within the seven vertebrae that comprise the cervical spine.

The top eight competitors and teams in the RSNA Cervical Spine Fracture AI Challenge are:

1. Qishen Ha
2. RAWE
    - Hao Chen, MCS - Birmingham, UK
    - Peng Guo - Shanghai, China
    - Ryan Rong, PhD - Lake Mary, FL
    - Puyu Zhou, PhD - Shenzhen, China
3. Darragh Hanley, BAI - Dublin, Ireland
4. Selim Seferbekov, MEE - Minsk, Belarus
5. Speedrun
    - Christof Henkel, PhD - Vienna, Austria
    - Pascal Pfeiffer, PhD - Vienna, Austria
    - Philipp Singer, PhD - Vienna, Austria
6. Ian Pan, MD (team name: Skecherz) - Brookline, MA
7. Shuolin Liu, MEE (team name: qwer) - Beijing, China
8. Harshit Sheoran - Rohtak, India

The teams will be recognized in a presentation on Monday, Nov. 28, in the AI Showcase during RSNA's 108th Scientific Assembly and Annual Meeting at McCormick Place Chicago (RSNA 2022, Nov. 27 – Dec. 1).

"The machine learning models that were developed as part of this challenge may help advance patient care by assisting radiologists and other physicians in detecting fractures, which can be a difficult task," Dr. Colak said. "These models may be of particular value in underserviced areas with limited access to expert neuroradiologists. Furthermore, these models can help patient care by prioritizing positive CT scans for radiologist review in high volume clinical settings."

The RSNA Cervical Spine Fracture AI Challenge was conducted on a platform provided by Kaggle, Inc. The top performing competitors will be awarded a total of $30,000.

For more information on the challenge, visit RSNA.org/AI-image-challenge or contact 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*)