ARTIFICIAL INTELLIGENCE

104TH Scientific Assembly and Annual Meeting
Radiological Society of North America
McCormick Place, Chicago

November 25–30
Meeting.RSNA.org #RSNA18

RSNA® 2018
TOMORROW'S RADIOLOGY TODAY

Accreditation and Designation Statements

The Radiological Society of North America (RSNA®) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. The RSNA designates this live activity for a maximum of 99.25 *AMA PRA Category 1 Credits.*™ Physicians should claim only the credit commensurate with the extent of their participation in the activity. The Commission on Accreditation of Medical Physics Education Program (CAMPEP) has approved the direct transfer of *AMA PRA Category 1 Credit*™ to MPCEC on a credit-for-credit basis for medical physicists.

Corporate Symposium

Please refer to each course description in the online program to determine if CME credit is offered for the session. Instructions on claiming credit will be provided during the course. CME credit for the Corporate Symposiums will be provided through a third party provider and not through RSNA. Program information is subject to change. For the most up-to-date information, please use your Meeting App or visit *Meeting.RSNA.org*.

Machine Learning Showcase and Theater

Located in the North Hall, the Machine Learning Showcase is an exciting centerpiece of the exhibit halls. Here you'll find nearly 80 companies focusing on the latest developments in AI and ML software and products. Plus the Machine Learning Theater features 20-minute industry presentations daily from 11 AM to 2 PM on the latest hot topics. See inside for a complete list of presentations or visit *Meeting.RSNA.org*.

Walk Through The Week

SUNDAY, NOV 25, 2018

8:30 AM–4:00 PM

Demonstrations

RSNA Deep Learning Classroom: Presented by NVIDIA Deep Learning Institute

Session AI001-SU. . . . . AI Community, Learning Center

8:30–10:15 AM

Plenary Sessions

Opening Session

Session PS10 . . . . . Arie Crown Theater

10:45 AM–12:15 PM

Scientific Papers Sessions

Gastrointestinal (Machine Learning)

Session SSA09. . . . . N228

Science Session with Keynote: Informatics (Artificial Intelligence in Radiology: Cutting Edge Deep-Learning)

Session SSA12 . . . . . S406B

11:00–11:20 AM

Showcase Presentations

Machine Learning Theater: Deep Imaging: What Will be the Impact of AI-empowered Image Reconstruction, Diagnosis and Prognosis?: Presented by Quantib

Session ML11. . . .Machine Learning Showcase North Hall

11:30–11:50 AM

Showcase Presentations

Machine Learning Theater: icobrain - Adding AI to the brAIn: Presented by icometrix

Session ML12 . . .Machine Learning Showcase North Hall

12:00–12:20 PM

Showcase Presentations

Machine Learning Theater: Real Time 3D Radiology Portable Platform: Presented by AIExplore

Session ML13 . . .Machine Learning Showcase North Hall

12:30–1:00 PM

Posters and Exhibits: Discussions

Artificial Intelligence Sunday Poster Discussions

Session AIS-SUA . . . . . AI Community, Learning Center

12:30–12:50 PM

Showcase Presentations

Machine Learning Theater: QUIBIM Precision 3.0: AI as a Means, Not an End, For Imaging Biomarkers Integration in Clinical Practice: Presented by QUIBIM

Session ML14 . . . Machine Learning Showcase North Hall

1:00–1:30 PM

Posters and Exhibits: Discussions

Artificial Intelligence Sunday Poster Discussions

Session AIS-SUB . . . . . AI Community, Learning Center

1:30–1:50 PM

Showcase Presentations

Machine Learning Theater: Using AI within Existing Radiology Workflows at University of PA Health System: Presented by Nuance Communications

Session ML16 . . . Machine Learning Showcase North Hall

2:00–3:30 PM

Educational Courses

Deep Learning in Radiology: How Do We Do It?

Course RC153 . . . . . E450A

MONDAY, NOV 26, 2018

8:30 AM–4:00 PM

Demonstrations

RSNA Deep Learning Classroom: Presented by NVIDIA Deep Learning Institute

Session AI001-MO . . . . . AI Community, Learning Center

8:30 AM–12:00 PM

Educational Courses

Neuroradiology Series: Brain Tumors

Course RC205. . . . . S406B

Breast Series: Hot Topics (Supported by an Unrestricted Educational Grant from Hologic)

Course RC215 . . . . . Arie Crown Theater

8:30–10:00 AM

Educational Courses

Preparing your Radiology Practice and IT Department for Big Data

Course RC253. . . . . S503AB

10:30 AM–12:00 PM

Scientific Papers Sessions

Chest (Lung Cancer Screening)
Session SSC03 . . . . . .E451A

Science Session with Keynote: Genitourinary (New Techniques for Renal Imaging)
Session SSC07 . . . . . S503AB

Science Session with Keynote: Informatics (Artificial Intelligence in Radiology: Bleeding Edge)
Session SSC09 . . . . . E450A

Physics (MR: New Techniques, Systems, Evaluation)
Session SSC12 . . . . . N226

11:00–11:20 AM

Showcase Presentations

Machine Learning Theater: Artificial Intelligence: Implications for Advanced Imaging and Precision Medicine: Presented by Siemens Healthineers
Session ML21 . . .Machine Learning Showcase North Hall

11:30–11:50 AM

Showcase Presentations

Machine Learning Theater: Adaptive Intelligence and Radiologist Efficiency: Presented by Philips
Session ML22 . . .Machine Learning Showcase North Hall

12:00–12:20 PM

Showcase Presentations

Machine Learning Theater: AI Improves Imaging Workflow for MR and PET Exams: Faster, Safer, and Smarter: Presented by Subtle Medical
Session ML23 . . .Machine Learning Showcase North Hall

12:15–12:45 PM

Posters and Exhibits: Discussions

Artificial Intelligence Monday Poster Discussions
Session AIS-MOA . . . . . AI Community, Learning Center

12:30–2:00 PM

Educational Courses

Introduction to Machine Learning and Texture Analysis for Lesion Characterization (Hands-on)
Course RCA23 . . . . . S401AB

12:30–12:50 PM

Showcase Presentations

Machine Learning Theater: Actionable Intelligence and the Future of Precision Health: Presented by CorTechs Labs
Session ML24 . . .Machine Learning Showcase North Hall

12:45–1:15 PM

Posters and Exhibits: Discussions

Artificial Intelligence Monday Poster Discussions

Session AIS-MOB . . . . . AI Community, Learning Center

1:00–1:20 PM

Showcase Presentations

Machine Learning Theater: AI: Fad or Forever: Presented by MaxQ AI

Session ML25 . . .Machine Learning Showcase North Hall

1:30–3:00 PM

Educational Courses

Molecular Imaging Symposium: Neurologic MI Applications

Course MSMI23. . . . . S405AB

1:30-2:30 PM

Scientific Papers Sessions

BOOST: Head and Neck-Science Session

Session MSRO23. . . . . E450A

1:30–1:50 PM

Showcase Presentations

Machine Learning Theater: Medical Imaging: Challenges and Opportunities: Presented by Google Cloud

Session ML26 . . .Machine Learning Showcase North Hall

2:00–3:30 PM

Corporate Symposium

AI Innovation in High Resolution Imaging: Presented by Canon Medical Systems

Session CS23 . . . . . .S101AB

2:00–3:30 PM

Showcase Presentations

Machine Learning Theater: ML Pneumonia Detection Challenge Recognition

Machine Learning Showcase North Hall

2:30–4:00 PM

Educational Courses

Clinical Decision Support: From Theory to Clinical Practice

Course RCC24. . . . . S501ABC

3:00–4:00 PM

Scientific Papers Sessions

Cardiac (MRI: General Topics)

Session SSE04 . . . . . N226

Genitourinary (Imaging of Renal Stones)

Session SSE11. . . . . S102CD

Informatics (Artificial Intelligence in Radiology: More Cutting-Edge Deep Learning)
Session SSE14 . . . . . **E353C**

Neuroradiology/Head and Neck (Thyroid and Parathyroid Imaging)
Session SSE18 . . . . . **E351**

Physics (Breast X-Ray Imaging)
Session SSE23 . . . . . **S502AB**

4:30–6:00 PM

Educational Courses
Special Interest Session: Demystifying Machine Learning and Artificial Intelligence for the Radiologist
Session SPSI24 . . . . . **E451A**

TUESDAY, NOV 27, 2018

8:30 AM–4:00 PM

Demonstrations
RSNA Deep Learning Classroom: Presented by NVIDIA Deep Learning Institute
Session AI001-TU . . . . . **AI Community, Learning Center**

8:30–10:00 AM

Educational Courses
Quality Improvement Symposium: Value in Imaging 1: Value in Radiology
Course MSQI31 . . . . . **S402AB**

Deep Learning & Machine Intelligence in Radiology
Course RC353 . . . . . **S406A**

8:30 AM–12:00 PM

Educational Courses
Neuroradiology Series: Artificial Intelligence in Neuroradiology
Course RC305 . . . . . **S406B**

Gastrointestinal Series: Advances in Abdominal CT
Course RC309 . . . . . **E451A**

9:00–10:00 AM

Expanding Precision Medicine along Clinical Pathways with AI Powered Decision Support: Presented by Siemens Healthineers
Session CS32 . . . . . **S102AB**

9:00–10:30 AM

Corporate Symposiums
Artificial Intelligence: Impact and Implications to Radiology: Presented by Philips Healthcare
Session CS31 . . . . . **S101AB**

Medical Imaging: The Path Forward: Presented by Google Cloud
Session CS33 . . . . . S105D

10:30 AM–12:00 PM

Scientific Papers Sessions

Cardiac (Coronary Atherosclerosis)
Session SSG02 . . . . . S104B

Chest (Lung Nodule)
Session SSG03 . . . . . S504AB

Informatics (Artificial Intelligence in Radiology: No Pixels or Fake Pixels)
Session SSG06 . . . . . N230B

Musculoskeletal (Machine Learning and Artificial Intelligence)
Session SSG08 . . . . . S102CD

Physics (CAD/Machine Learning)
Session SSG13 . . . . . S404AB

11:30–11:50 AM

Showcase Presentations

Machine Learning Theater: Cloud and Machine Learning are Improving Workflows and Accuracy Across the Enterprise: Presented by ARTERYS, Inc.
Session ML32 . . . Machine Learning Showcase North Hall

12:00–12:20 PM

Showcase Presentations

Machine Learning Theater: Finding a Similar Case to Understand Yours-The Impact of Search on Clinical Radiology: Presented by contextflow
Session ML33 . . . Machine Learning Showcase North Hall

12:15–12:45 PM

Posters and Exhibits: Discussions

Artificial Intelligence Tuesday Poster Discussions
Session AIS-TUA . . . . . AI Community, Learning Center

12:30–1:30 PM

Lunch and Learns

Lunch and Learn: Real-World Deployment of Deep Learning for Breast Cancer Screening: Presented by Kheiron Medical Technologies (invite-only)
Session LL23 . . . . . S403B

12:30–12:50 PM

Showcase Presentations

Machine Learning Theater: The Hype, the Reality, and the Global Landscape of Medical AI: Presented by Infervision
Session ML34 . . . Machine Learning Showcase North Hall

12:45–1:15 PM

Posters and Exhibits: Discussions
Artificial Intelligence Tuesday Poster Discussions
Session AIS-TUB . . . . . AI Community, Learning Center

1:00–1:20 PM

Showcase Presentations
Machine Learning Theater: Human + Machine: The Future of AI Augmented Radiology: Presented by Enlitic
Session ML35 . . .Machine Learning Showcase North Hall

1:30–1:50 PM

Showcase Presentations
Machine Learning Theater: How AI Can Improve Diagnostic Performance and Reduce Reading Time in Breast Tomosynthesis: Presented by iCAD
Session ML36 . . .Machine Learning Showcase North Hall

2:00-3:30 PM

Corporate Symposium
AI: Fad or Forever: Presented by MaxQ AI
Session CS35 . . . . . S102AB

2:30–4:00 PM

Educational Courses
Leveraging Machine Learning Techniques and Predictive Analytics for Knowledge Discovery in Radiology (Hands-on)
Course RCA34 . . . . . S401AB

3:00–4:00 PM

Scientific Papers Sessions
Neuroradiology (Artificial Intelligence in Neuroimaging)
Session SSJ18 . . . . . .E451B

Physics (Image Reconstruction)
Session SSJ22 . . . . . N227B

4:30–6:00 PM

Educational Courses
Mini-course: Image Interpretation Science - Computational Perception
Course RC425. . . . . S103AB

Deep Learning-An Imaging Roadmap
Course RC453. . . . . .E451B

WEDNESDAY, NOV 28, 2018

7:15–8:15 AM

Educational Courses
Hot Topic Session: Fast MSK MR Imaging
Session SPSH40. . . . . E450A

8:30 AM–4:00 PM

Demonstrations

RSNA Deep Learning Classroom: Presented by NVIDIA Deep Learning Institute

Session AI001-WE . . . . . AI Community, Learning Center

8:30–10:00 AM

Educational Courses

Deep Learning: Applying Machine Learning to Multi-disciplinary Precision Medicine Data Sets

Course RC553 . . . . . .E451B

9:00–10:30 AM

Corporate Symposium

Medical Imaging Analytics & AI: Technologies and Solutions for Better Healthcare Today and in the Future: Presented by Intel®

Session CS41 . . . . . .S101AB

10:30 AM–12:00 PM

Educational Courses

From Texture Analysis to Deep Learning for Lesion Characterization (Hands-on)

Course RCA42 . . . . . S401AB

10:30 AM–12:00 PM

Scientific Papers Sessions

Breast Imaging (Artificial Intelligence)

Session SSK02 . . . . . .E451B

Science Session with Keynote: Chest (Artificial Intelligence/ Deep Learning)

Session SSK05 . . . . . N227B

Physics (CT: Image Quality)

Session SSK18 . . . . . E353C

11:00–11:20 AM

Showcase Presentations

Machine Learning Theater: The Curated Marketplace - A New Platform Approach: Presented by Blackford

Session ML41 . . .Machine Learning Showcase North Hall

11:30–11:50 AM

Showcase Presentations

Machine Learning Theater: AI-driven Mammography: Applying the Right Filter: Presented by Densitas, Inc.

Session ML42 . . .Machine Learning Showcase North Hall

12:00–12:20 PM

Showcase Presentations

Machine Learning Theater: From AI-powered Diagnostic Support Tools to Imaging Biomarkers: Aiming for Beyond Human-Level Accuracy: Presented by Lunit, Inc.
Session ML43 . . . Machine Learning Showcase North Hall

12:15–12:45 PM

Posters and Exhibits: Discussions

Artificial Intelligence Wednesday Poster Discussions
Session AIS-WEA . . . . . AI Community, Learning Center

12:30–2:00 PM

Educational Courses

AI, Radiomics, Text Mining, and More: 2018's Key Advances in Imaging Informatics
Course RCC43. . . . . S501ABC

12:30–1:30 PM

Lunch and Learns

Lunch and Learn: Breaking New Ground: Using AI at Scale Across a Global Imaging Network to Minimize Diagnostic Interpretation Risk: Presented by lifeIMAGE (invite-only)
Session LL31. . . . . S404AB

Lunch and Learn: How Artificial Intelligence is Changing Medical Imaging: Presented by Konica Minolta Healthcare (invite-only)
Session LL32 . . . . . S403A

Lunch and Learn: Thinking Faster, Safer, & Smarter: How You Can Use AI to improve MR and PET Imaging Efficiency, Patient Satisfaction, and Safety: Presented by Subtle Medical (invite-only)
Session LL33 . . . . . S403B

12:30–12:50 PM

Showcase Presentations

Machine Learning Theater: AI for Medical Image Diagnosis: Presented by LPixel, Inc.
Session ML44 . . . Machine Learning Showcase North Hall

12:45–1:15 PM

Posters and Exhibits: Discussions

Artificial Intelligence Wednesday Poster Discussions
Session AIS-WEB . . . . . AI Community, Learning Center

1:30–1:50 PM

Showcase Presentations

Machine Learning Theater: AI Empowering Medical Data: Presented by Hangzhou YITU Healthcare Technology Co., Ltd
Session ML46 . . . Machine Learning Showcase North Hall

2:30–4:00 PM

Educational Courses

Advanced AI Tools for Radiologist-driven Mining of Imaging and Hospital-based Data Sets for Developing and Testing Hypothesis from Clinical Practice (Hands-on)
Course RCA44 . . . . . **S401AB**

3:00–4:00 PM

Scientific Papers Sessions

Science Session with Keynote: Breast Imaging (Risk-Based Screening: Should We Do It?)
Session SSM02. . . . . **E350**

Cardiac (Anatomy)
Session SSM03. . . . . **S102CD**

Gastrointestinal (Gallbladder and Bile Ducts)
Session SSM09. . . . . **S503AB**

Radiation Oncology (Genitourinary)
Session SSM22. . . . . **E261**

THURSDAY, NOV 29, 2018

8:30 AM–4:00 PM

Demonstrations

RSNA Deep Learning Classroom: Presented by NVIDIA Deep Learning Institute
Session AI001-TH . . . . . **AI Community, Learning Center**

8:30–10:00 AM

Educational Courses

The Impact of Artificial Intelligence on Radiology Training and Practice Around the World (Sponsored by RSNA Committee of International Radiology Education)
Course RC616 . . . . . **E350**

Mini-course: Radiation Safety for Patients and Staff - Emerging Advances in Patient Radiation Protection
Course RC625. . . . . **S105AB**

Machine Learning and Artificial Intelligence: The Non-Interpretive Considerations
Course RC653. . . . . **E450A**

10:30–12:00 PM

Educational Courses

Novel Discoveries Using the NCI's Cancer Imaging Archive (TCIA) Public Data Sets
Course RCC52. . . . . **S501ABC**

10:30 AM–12:00 PM

Scientific Papers Sessions

Breast Imaging (Abbreviated MRI, Ultrafast Imaging and Artificial Intelligence)

Session SSQ01 . . . . . E450A

11:00–11:20 AM

Showcase Presentations

Machine Learning Theater: Programming Clinical AI with Simulation: Presented by Riverain Technologies

Session ML51 . . .Machine Learning Showcase North Hall

11:30–11:50 AM

Showcase Presentations

Machine Learning Theater: From Artificial Intelligence to Augmented Intelligence: The Role of Medical Imaging in Diagnosis: Presented by Shenzhen Imsight Medical Technology Co., Ltd

Session ML52 . . .Machine Learning Showcase North Hall

12:00–12:20 PM

Showcase Presentations

Machine Learning Theater: State-of-the-art Deep Learning for Breast Cancer Screening: Presented by Kheiron Medical Technologies

Session ML53 . . .Machine Learning Showcase North Hall

12:15–12:45 PM

Posters and Exhibits: Discussions

Artificial Intelligence Thursday Poster Discussions

Session AIS-THA . . . . . AI Community, Learning Center

12:30–2:00 PM

Educational Courses

Leveraging Machine Learning Techniques and Predictive Analytics for Knowledge Discovery in Radiology (Hands-on)

Course RCA53. . . . . S401AB

12:30–12:50 PM

Showcase Presentations

Machine Learning Theater: Towards Intelligent Healthcare: Presented by NVIDIA

Session ML54 . . .Machine Learning Showcase North Hall

12:45–1:15 PM

Posters and Exhibits: Discussions

Artificial Intelligence Thursday Poster Discussions

Session AIS-THB . . . . . AI Community, Learning Center

1:00–1:20 PM

Showcase Presentations

Machine Learning Theater: SOPHiA Radiomics-Integration of Imaging, Genomic and Clinical Data to Support Decision Making in Oncology: Presented by SOPHiA Genetics

Session ML55 . . . Machine Learning Showcase North Hall

1:30–1:50 PM

Showcase Presentations

Machine Learning Theater: DEEP:PHI, Medical Image AI Platform: Presented by DEEPNOID

Session ML56 . . . Machine Learning Showcase North Hall

3:00–4:00 PM

Educational Courses

Hot Topic Session: Biomarker and Personalized Medicine in Lung Cancer Imaging

Session SPSH52 . . . . . E350

4:30–6:00 PM

Educational Courses

Machine Learning for Radiotherapy Applications

Course RC722 . . . . . N227B

The Human Side of Artificial Intelligence

Course RC724 . . . . . .E451B

Platforms and Infrastructures for Accelerated Discoveries in Machine Learning and Radiomics

Course RC753 . . . . . .E451A

FRIDAY, NOV 30, 2018

8:30 AM–12:00 PM

Demonstrations

RSNA Deep Learning Classroom: Presented by NVIDIA Deep Learning Institute

Session AI001-FR . . . . . AI Community, Learning Center

Posters and Exhibits Discussions

(CME is available when the author is present for discussion during the lunch period)

SUNDAY, NOV 25, 2018

12:30–1:00 PM

Scientific Posters

Deep Learning Based Radiomics and Its Usage in Prediction for Metastatic Colorectal Cancer
GI332-SD-SUA5 . . . . . **Station #5**

Effect of Inter-Observer Variability on Deep Learning in Chest X-Rays
AI200-SD-SUA1 . . . . . **Station #1**

Machine Learning Based CT-FFR Integrating With Quantitative Myocardial Mass Subtended By Coronary Stenosis Outperforms Plaque Features for Predicting Hemodynamical Significance of Lesions
CA204-SD-SUA5 . . . . . **Station #5**

Using Deep Learning to Predict Emphysema in Early Lung Cancer Screening Low-Dose CT Scan
CH259-SD-SUA4 . . . . . **Station #4**

12:30–1:00 PM

Education Exhibits

Deep Learning-Based Texture Classification for Similar CT Image Retrieval
AI152-ED-SUA2 . . . . . **Station #2**

Real Time Detection and Labeling of Image Objects: YOLO (You Only Look Once), A Case Study (with Pitfalls) in Training and Running a Deep Network to Detect and Label Objects
AI023-EC-SUA . . . . . **Custom Application Computer Demonstration**

1:00–1:30 PM

Scientific Posters

Automated Foreign Object Detection in Chest X-Ray Images Based on Deep Learning
AI201-SD-SUB1 . . . . . **Station #1**

Context-Guided Deep Learning Framework for Skull Stripping
NR368-SD-SUB1. . . . . **Station #1**

CT Texture Analysis for the Prediction of KRAS Mutation Status in Colorectal Cancer via a Machine Learning Approach
GI334-SD-SUB2 . . . . . **Station #2**

Detection and Phenotyping of Emphysema Using a New Machine Learning Method
CH263-SD-SUB4 . . . . . **Station #4**

Diagnosis of Transition Zone Prostate Cancer (TZ PCa): Logistic Regression and Machine Learning Models of Quantitative ADC, Shape and Texture Features Improves Accuracy Compared to Subjective Evaluation with PI-RADSv2
GU206-SD-SUB2 . . . . . **Station #2**

Prediction of Parkinson's Disease by Using Deep Learning 3D-Convolutional Neural Networks
NR369-SD-SUB2 . . . . . **Station #2**

Superiority of Artificial Intelligence over Radiologists in Detecting Pulmonary Nodules
CH261-SD-SUB2. . . . . **Station #2**

1:00–1:30 PM

Education Exhibits

Application of Deep Learning Object Detection for CT Scout Localizer-based Clinical Scan Region Planning
PH008-EB-SUB . . . . . **Hardcopy Backboard**

Deep Learning for Discovery of Latent Information in Contrast Free Cardiac CT Images
AI025-EB-SUB . . . . . **Hardcopy Backboard**

Deep Learning in Pulmonary Nodule Detection and Classification Using Images of Digital Radiography
CH240-ED-SUB6 . . . . . **Station #6**

MONDAY, NOV 26, 2018

12:15–12:45 PM

Scientific Posters

Automatic Contrast Enhancement Detection on Head CT
AI202-SD-MOA1 . . . . . **Station #1**

Prostate Cancer Lesion Segmentation and Gleason Score Prediction Using Multi-parametric MRI via Deep Residual Neural Network
AI203-SD-MOA4. . . . . **Station #4**

Semi-Automatic RECIST Labeling on CT Scans with Cascaded Convolutional Neural Networks
AI204-SD-MOA6. . . . . **Station #6**

12:15–12:45 PM

Education Exhibits

Abdominal Segmentation for Body Compositoin Using Deep-Learning U-Net
AI027-EB-MOA . . . . . **Hardcopy Backboard**

An Artificial Intelligence-Based System for Triaging of Digital Mammography Exams
AI026-EB-MOA . . . . . Hardcopy Backboard

Deep Learning Techniques for Automated Segmentation of Diffuse Lung Disease Opacities on CT Images
AI143-ED-MOA5 . . . . . Station #5

12:45–1:15 PM

Scientific Posters

3D Context Enhanced Region-based Convolutional Neural Network for Universal Lesion Detection in a Large Database of 32,735 Manually Measured Lesions on Body CT
AI208-SD-MOB3 . . . . . Station #3

Application of Machine Learning to Infer Ultrasound LI-RADS Categories across Multi-Institutional Radiology Reports
GI351-SD-MOB5 . . . . . Station #5

Improving Radiology Appointment Wait Time Prediction with Machine Learning
AI206-SD-MOB2 . . . . . Station #2

Machine Learning-Based Analysis of MRI Radiomics: Pathological Classification and Clinical Staging Prediction of Thymic Epithelial Tumors
CH270-SD-MOB2 . . . . . Station #2

Recognition of Pediatric Long-Bone Fractures in the Setting of Variable Open Growth Plates by Convolutional Neural Networks
AI209-SD-MOB4 . . . . . Station #4

Solid Renal Tumor Detection Using Convolutional Neural Networks
AI205-SD-MOB1 . . . . . Station #1

TUESDAY, NOV 27, 2018

12:15–12:45 PM

Scientific Posters

Automated CT and MR Liver Biometry Using a Generalized Convolutional Neural Network for Liver Segmentation
GI360-SD-TUA6 . . . . . Station #6

Automatic Femoral Neck Fracture Detection and Classification Utilizing Advanced Deep Learning Techniques
MK370-SD-TUA1 . . . . . Station #1

Automatic Segmentation for Pulmonary Pure Ground-Glass Nodules from Follow-Up CT Scans Using Recurrent Convolutional Neural Networks
CH277-SD-TUA4 . . . . . Station #4

Deep Learning Approach for Image Denoising in Low-Dose CT
PH225-SD-TUA1 . . . . . Station #1

Deep Learning for Automatic Detection and Segmentation of Acute Epidural and Subdural Hematomas in Head CT
NR390-SD-TUA1 . . . . . **Station #1**

Deep Learning-Enabled Normalization of Reconstruction Kernel-Induced Variability of Emphysema Index in Low-Dose Lung CT
IN211-SD-TUA2 . . . . . **Station #2**

Fast, Robust and Accurate Segmentation of the Complete Cerebral Vasculature in 4D-CTA Using Deep Learning
NR397-SD-TUA7 . . . . . **Station #7**

Machine Learning Based Radiomics for Glial Tumor Classification
NR398-SD-TUA8 . . . . . **Station #8**

Performance of Various Machine Learning Methods in CT Texture Analysis to Differentiate Lung Cancer from Benign Nodule with Small Ground-Glass Opacity Nodules
CH275-SD-TUA2 . . . . . **Station #2**

Synthetic PET Generator: A Novel Method to Improve Lung Nodule Detection by Combining Outputs from a Pix2pix Conditional Adversarial Network and a Convolutional Neural Network Based Malignancy Probability Estimator
AI213-SD-TUA2 . . . . . **Station #2**

Transfer-Learning for Imaging-Based Lung Cancer Stratification
AI212-SD-TUA1 . . . . . **Station #1**

12:45–1:15 PM

Scientific Posters

Deep Learning for Detection of Hip, Knee, and Shoulder Arthroplasty Dislocations and "Transfer Learning" to Native Joint Dislocations
MK380-SD-TUB4 . . . . . **Station #4**

Determination of Musculoskeletal Magnetic Resonance Imaging Protocol between Routine Protocol and Radiologist-Tailored Protocol Using Deep-learning Convolutional Neural Networks
MK379-SD-TUB3 . . . . . **Station #3**

Development and Validation of a Deep Learning Model For More Accurate and Consistent Assessment of MRI Background Parenchymal Enhancement
BR251-SD-TUB5 . . . . . **Station #5**

Diagnosis of Triple Negative Breast Cancer Using Machine Learning Methods of Quantitative Computerized Ultrasound Features
BR252-SD-TUB6 . . . . . **Station #6**

Identification of Autism Spectrum Disorder Using Deep Learning
NR405-SD-TUB7 . . . . . **Station #7**

Impact of Deep Learning-based CT Denoising on Normal Anatomical Structures in Low Dose Chest CT : FBP vs IRT vs Deep Learning
AI215-SD-TUB1 . . . . . **Station #1**

Influence of Readers' Experience on the Classification Performances of the Deep Neural Network (DNN) for Classifying Myocardial Delayed Enhancement on Cardiac MRI
CA231-SD-TUB1 . . . . . **Station #1**

Machine Learning for Identifying the Value of Digital Breast Tomosynthesis using Data from a Multicentre Retrospective Study
AI216-SD-TUB2 . . . . . **Station #2**

Patient Data Adapted Deep Learning for Multi-Label Chest X-Ray Classification
AI218-SD-TUB3 . . . . . **Station #3**

Predicting Pathological Noninvasiveness in T1 Non-Small Cell Lung Cancer on Chest CT Scan Using Deep Learning Algorithm
CH281-SD-TUB3 . . . . . **Station #3**

Validation of Deep Learning Technique for Quantification of Cardiac Left Ventricle
CA232-SD-TUB2. . . . . **Station #2**

WEDNESDAY, NOV 28, 2018

12:15–12:45 PM

Scientific Posters

Artificial Intelligence in Bone Age Assessment: Evaluation of Diagnostic Accuracy and Efficiency of a Novel Fully Automated Algorithm in Comparison to the Greulich Pyle Atlas Method
PD234-SD-WEA5 . . . . . **Station #5**

Convolutional Neural Network Based Breast Cancer Risk Stratification Using a Mammographic Dataset
BR259-SD-WEA6 . . . . . **Station #6**

Deep Learning for Acute Ischemic Stroke on Diffusion-Weighted MR Imaging
NR414-SD-WEA7. . . . . **Station #7**

Deep Learning Reconstruction in Thoracic CT: Comparison of Image Quality with Iterative Reconstruction Methods
CH289-SD-WEA6 . . . . . **Station #6**

Longitudinal Prediction of Pediatric Diffusion MRI Data using Graph-Based Deep Learning
PD231-SD-WEA2 . . . . . **Station #2**

Patient and Tumor Characteristics to Predict the Benefit of Pre-Operative Breast MRI: Results from a Machine Learning Approach at a High Volume Academic Center
BR255-SD-WEA2 . . . . . **Station #2**

Radiologists versus Deep Learning Model Inter-Observer Variability in Mammographic Breast Density Assessment
BR258-SD-WEA5 . . . . . **Station #5**

12:15–12:45 PM

Education Exhibits

"Virtual" High-Dose Technology: Radiation Dose Reduction in Thin-Slice Chest CT at a Micro-Dose (mD) Level by Means of 3D Deep Neural Network Convolution (NNC)
AI146-ED-WEA1 . . . . . **Station #1**

12:45–1:15 PM

Scientific Posters

Automated Cardiac MR Plane Classification Using VGG-19 Convolutional Neural Network: A Deep Learning Study
CA249-SD-WEB5 . . . . . **Station #5**

CT Head Intracranial Hemorrhage Detection with Deep Learning: Experience with 9 Million Images
NR417-SD-WEB1 . . . . . **Station #1**

Detection of Pacemaker and Determination of MRI-conditional Pacemaker Based on Deep-learning Convolutional Neural Networks to improve the Patients' MRI Safety
IN227-SD-WEB3 . . . . . **Station #3**

Development and Validation of a Deep Learning-Based Automatic Detection Algorithm for Active Pulmonary Tuberculosis on Chest Radiographs
CH295-SD-WEB6 . . . . . **Station #6**

Employing Artificial Intelligence to Predict Hematocrit Values from Non-Contrast CT Imaging Data—Towards Fully Automated CT-derived Myocardial Extracellular Volume Fraction Quantification
CA250-SD-WEB6 . . . . . **Station #6**

Lung Nodule Detection Performance Using a Deep Convolutional Neural Network Model Using Wide Detector Spectral Ct Monochromatic Imaging? A Preliminary Phantom Study
CH291-SD-WEB2 . . . . . **Station #2**

Patient Identification on Chest X-Ray Using Artificial Intelligence
IN226-SD-WEB2 . . . . . **Station #2**

Potential of Deep Learning and Conventional Radiomics in the Task of Distinguishing Between Malignant and Benign Breast Lesions in a Large Clinical MRI Dataset from China
BR265-SD-WEB5 . . . . . **Station #5**

12:45–1:15 PM

Education Exhibits

Quality Assurance for Crowdsource Annotation of the ChestX-ray 14 Dataset for the RSNA-STR Machine Learning Challenge: How We Did It
AI149-ED-WEB1 . . . . . **Station #1**

THURSDAY, NOV 29, 2018

12:15–12:45 PM

Scientific Posters

"Virtual" Full-Dose (VFD) Technology: Radiation Dose Reduction in Digital Breast Tomosynthesis (DBT) by Means of Neural Network Convolution (NNC) Deep Learning
BR275-SD-THA3. . . . . . **Station #3**

Automatic Generation of Synthesized Perfusion Maps from Multimodal MRI using a Deep Neural Network based Learning Scheme: A First Step Towards Quantification of Ktrans, Permeability, and Susceptibility Artifacts
NR428-SD-THA3. . . . . . **Station #3**

Markerless Tumor Tracking for Hepatocellular Carcinoma Using Fluoroscopic Imaging with a Deep Neural Network
AI231-SD-THA2 . . . . . **Station #2**

Morphological Classification of the Cortical Bone Layer Using Deep Learning in Panoramic Radiography
AI232-SD-THA3 . . . . . **Station #3**

Support Vector Machine Model for Stratification of Liver Stiffness using Clinical Data
AI230-SD-THA1 . . . . . **Station #1**

Utilization of Bone Suppression Imaging by Using Deep Learning on Chest Radiograph: Detectability of Lung Nodules and Exploring for Effectual Interpretation Methods
CH297-SD-THA2. . . . . . **Station #2**

12:15–12:45 PM

Education Exhibits

Emerging Approaches for Applying Artificial Intelligence in Neuroradiology
AI150-ED-THA4 . . . . . **Station #4**

12:45–1:15 PM

Scientific Posters

CT Image Enhancement for Lesion Segmentation Using Stacked Generative Adversarial Networks
AI234-SD-THB1 . . . . . **Station #1**

Fully Automated Breast Lesion Segmentation on DCE-MRI Using a Convolutional Neural Network for Radiomic Analysis
BR273-SD-THB1 . . . . . **Station #1**

Machine Learning to Evaluate Atherosclerotic Plaque Composition by Coronary CT: Validation with IB-IVUS
CA257-SD-THB1 . . . . . Station #1

12:45–1:15 PM

Education Exhibits

A Two-Stage Deep-Learning Scheme for Reducing Radiation Dose in Digital Breast Tomosynthesis (DBT)
AI151-ED-THB2 . . . . . Station #2

Anatomical Borderline Structure Detection in Chest X-Ray by Deep Neural Networks
AI024-EC-THB . . . . . Custom Application Computer Demonstration

DeepGrow – A General-Purpose and Interactive Segmentation Tool Based on Deep Learning
IN008-EC-THB . . . . . Custom Application Computer Demonstration

Education Exhibits

SPACE NO.	EXHIBIT TITLE
AI021-EC-X	Methodology to Curate and Crowdsource Annotation of the ChestX-ray14 Dataset for the RSNA-STR Machine Learning Challenge: How We Did It
AI022-EC-X	The Next Step in Electronic Cleansing for CT Colonography: Unsupervised Machine Learning
BR112-ED-X	Preparation of Digital Mammograms for the Application of Deep Learning Algorithms
CA155-ED-X	Cardiac Image Analysis with Deep Learning Methods
IN100-ED-X	Robotic Process Automation: Go Beyond Artificial Intelligence in the Radiology Department
IN101-ED-X	Optimization of Imaging Parameters for Use in Medical Imaging Using the Deep Learning Technique
IN102-ED-X	Artificial Intelligence Use in Radiology: Development, Current Use, and Present-Day Controversies
IN104-ED-X	Automated Construction of the Optimal Structure for 3D CNN by Using the Bayesian Optimazation
IN107-ED-X	Data Enhancement of Deep Learning for Medical Image Analysis: How Do We Increase Precisely Labeled Training Images?
IN111-ED-X	Machine Learning: Solutions to Shortcomings
IN113-ED-X	Machine Learning: A Theoretical Stepwise Premier for Radiologists
IN116-ED-X	3-Minute Recipe for Deep Learning: Principle, Hardware, and Software
IN117-ED-X	What Radiologists Should Learn about Machine Learning?
IN119-ED-X	The Artificial Intelligence Journal Club: A Multi-Institutional Resident-Driven Web-Based Educational Initiative
IN120-ED-X	Historical Overview of Machine Learning (ML) and Deep Learning in Medical Image Analysis - What are the Sources of the Power of Deep Learning?

IN121-ED-X	Seeing Through the Eyes (and Visual Cortex) of a Machine: Convolutional Neural Networks at the Forefront of Machine Intelligence in Medical Imaging
IN122-ED-X	Concepts in Artificial Intelligence: A Primer for Radiologists
IN123-ED-X	Hands-On Machine Learning for Difussion Tensor Imaging Assessment: From Theory to Practice
IN124-ED-X	Artificial Intelligence Using Neural Network Architecture for Radiology (AINNAR): The Decoding of the Technical Terms in AI
IN126-ED-X	Practical Guide to Using PyTorch for Deep Learning Based Image Segmentation in Radiology
IN127-ED-X	Case Based Approach to Image Classification with PyTorch: a Primer for Novice Machine Learning Practitioners
IN129-ED-X	Application of Deep Learning to Pancreatic Imaging - The Radiologists' Perspective
IN131-ED-X	Decentralized Deep Learning on a Blockchain
IN132-ED-X	Supervised vs. Unsupervised Machine Learning for Radiologists in a Nutshell
IN133-ED-X	Artificial Intelligence for the Average Intelligence: A Practical Guide
IN137-ED-X	Virtual Radiologists: Current Status of Deep Learning in Radiology and Its Future Trends
IN138-ED-X	Strengths, Weakness, Opportunities and Threats: SWOT Analysis of Machine Learning for Radiology Applications
PH100-ED-X	Does Deep Learning Help in Diagnosis of Hyperacute Stroke in Noncontrast CT?
PH110-ED-X	Possibility of Deep Learning Technique in Medical Imaging: Can Deep Learning Improve Image Quality?
PH117-ED-X	Optimization Method of Hyper-Parameters in Convolutional Neural Network for Medical Image Application
VI109-ED-X	Artificial Intelligence and Interventional Radiology: Current Status, Future Applications, and Related Controversies

Demonstrations

*(All Demonstrations will occur in the **AI Community, Learning Center**)*

SESSION	DESCRIPTION
AI002-EB	A Deep Learning Framework for Radiotherapy Delivery in Thoracic Oncology
AI003-EB	Ultra Low Dose PET/MRI Imaging of Crohn's Disease Using a Novel Deep Learning Reconstruction Method
AI004-EB	Development and Visual Assessment of a Deep Learning System for Automated Tuberculosis Screening Using Chest Radiographs
AI005-EB	Automated Detection and Localization of Large Vessel Occlusion on CTA of the Head Using Deep Learning Systems
AI006-EB	Radiomic Modeling to Predict Risk of Vertebral Compression Fracture After Stereotactic Body Radiation Therapy for Spinal Metastases
AI007-EB	Artificial Intelligence-Assisted Automated Detection and Outcome Prediction of Subarachnoid Hemorrhage: Techniques and Educational Approaches
AI008-EB	Machine Learning to Predict Risk of Upgrade and Recurrence of Ductal Carcinoma In Situ
AI009-EB	Machine Learning-based Virtual Metastasis Biopsy as an Early Predictor of Tumor Progression and Resistance Mutation Acquisition in Colon Cancer Patients
AI010-EB	Deep Learning on CT Angiogram to Aid in the Detection of Emergent Large Vessel Occlusion
AI011-EB	Segmentation and Quantitative Assessment of Prognostic Features in Type B Aortic Dissection Using Machine Learning
AI012-EB	Automated Liver Biometry and Fat Quantification in Non-alcoholic Fatty Liver Disease with Convolutional Neural Networks

AI013-EB	A Deep Learning Approach for Identifying Imaging Biomarkers and Outcome Modeling in Chronic Obstructive Pulmonary Disease
AI014-EB	Deep Learning for Radiological Image Quality Improvement: Impact on the Accuracy of Diagnosis and Organ Segmentation
AI015-EB	Combining Genomic and Clinical/ Dosimetric Variables to Predict Radiation Toxicity in Localized Prostate Cancer Patients Via Computational Genomics and Machine Learning
AI016-EB	Detection of Obstructive and Restrictive Lung Disease on Chest Radiography Using Machine Learning and Integrated Pulmonary Function Data
AI017-EB	Radiogenomics of Diffuse Cerebral Gliomas
AI018-EB	Utilization of Deep Learning to Predict Characteristics and Treatment Response in Renal Tumors
AI030-EB	Crowds Cure Cancer: Help Annotate Data from the Cancer Imaging Archive

Machine Learning Showcase Exhibitors

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ARTERYS	7964
Balzano Informatik AG	6066
BEIJING DEEPWISE & LEAGUE OF PHD TECHNOLOGY CO LTD	7773
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Dai Nippon Printing Co Ltd	6273
DEEPNOID	6964
DEEPRADIOLOGY	6761
Densitas Inc	7367W
DiA Imaging Analysis	8168
Enlitic Inc	7367Q
EnvoyAI	7367A
Fovia Inc	6064
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Galileo CDS Inc	6673
GE Healthcare	8169

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HeartFlow, Inc	6961
HeartVista Inc	7971
Huiying Medical Technology Co Ltd	6370
iCAD, Inc	8161
icometrix nv	7367P
ImageBiopsy Lab (IB Lab GmbH)	7367R
Imbio LLC	7565
Infervision	7367K
Kheiron Medical Technologies Ltd	6366
Koios Medical	6973
LPixel Inc	7573
Lunit Inc	7561
MaxQ-AI	6161
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MEDEXPRIM	7367Z
Median Technologies	7064
Medstreaming	7164
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Siemens Healthineers	7367U
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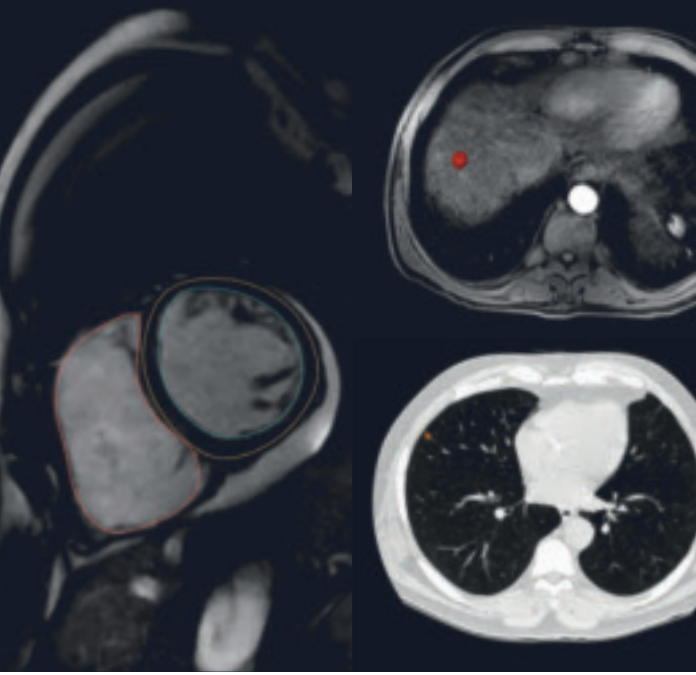

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