

Grand Challenges in Medical Imaging and Radiomics

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Grand Challenges in Medical Imaging & Radiomics

- Many investigators are developing algorithms
 - e.g., segmentation, image registration, computer-aided diagnosis (CAD), tomographic reconstruction
- Need to compare the performance of the various algorithms, however:
 - Different databases – training and testing
 - Different methods of scoring/evaluation
 - Different parameter sets for the same algorithm

Grand Challenges in Medical Imaging & Radiomics

- Grand Challenges aim to facilitate a fair comparison of algorithms:
- Provide a common training data set with curated annotation and “truth” to all participants
 - Have each participant be responsible for implementation of their algorithm
 - Provide a common testing data along with the metric of performance
 - Could be technical or medical motivated
- The dissemination of findings from Grand Challenges provides important information to the scientific community and helps to determine which approaches have the greatest promise for successful translation to clinical practice.
 - Note the collaborations between NCI, academia, and scientific organizations

2015 SPIE-AAPM-NCI

Lung Nodule Classification Challenge (Lungx)

- **LungX - Lessons Learned and Key Results**
 - Sam Armato, the University of Chicago
- Review the outcomes and lessons learned from the **2015 SPIE-AAPM-NCI Lung Nodule Classification Challenge (Lungx)**
- Speak of future Challenges

**2016 NIH-AAPM-Mayo Clinic
Low Dose CT Grand Challenge**

- **Overview of CT Reconstruction and Denoising Strategies**
 - Norbert Pelc, Stanford University
- **Overview of the Low Dose CT Grand Challenge**
 - Cynthia McCollough, Mayo Clinic
 - **Winners 1, 2, & 3**
