

## Spring Colloquium

**March 26, 3:30-4:30pm**  
**Seitz 313**

### **Evolution of Artificial Intelligence in Radiology Lessons Learned from the Past 30 Years**

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Abstract: The radiology community has been developing computer-aided diagnosis (CAD) tools and products using feature-based radiomics and convolutional neural networks (CNN) for the past 30 years. Much of the development however focused on computer aided detection (CADe) which was based on pattern-recognition and supervised machine learning requiring close collaboration between technical imaging and clinical experts. In spite of the large amount of research and development and availability of many AI Imaging products, clinical adoption has been slow. In addition, recent publications have highlighted that the clinical use of CAD in digital mammograms provided no statistically significant improvements for the performance of radiologists. However, CAD application in lung cancer screening has shown to be fruitful and provides a clinical advantage but faces different types of challenges impeding its full-scale use in clinical operations.

This seminar will offer a detailed discussion on how such systems can be developed and tested in order for it to obtain FDA approval for clinical use. The idea of big data can be misleading in the field of medical imaging. Successful AI product such as CAD for lung cancer screening requires approximately 1,000 cases of realistic mix of high-quality data for training and approximately 300 cases for testing.

Ultimately AI tools must offer clinically meaningful solutions to the end-user in terms of impact and effectiveness. The seminar will conclude with some observations and thoughts on the future role of AI in radiology.