

**AIMed Radiology 2020 virtual agenda**  
**Wednesday 20 May 2020**  
**8am to 2pm PST**

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8:00	8:15	<p><b>Chair's welcome</b></p> <p>Dr Anthony Chang, Founder, <b>AIMed</b> and Chief Artificial Intelligence Officer, <b>Children's Hospital of Orange County (CHOC)</b></p>
8:15	8:30	<p><b>Keynote address: Radiology's post pandemic future</b></p> <p><i>How will the profound global disruption created by the novel coronavirus impact the future of radiology? Will innovation be accelerated or grind to a halt? Which of the emergency accommodations in regulatory policy outlast the virus and how will they change the practice of radiology? How will we take the valuable lessons we have learned during this crisis and use them to shape our profession in a positive way?</i></p> <p>Geraldine McGinty MD MBA FACR, President, <b>American College of Radiology</b>, Departments of Radiology and Population Science, <b>Weill Cornell Medicine</b></p>
8:30	8:40	<b>Networking</b>
8:40	9:25	<p><b>Module 1: Data issues in radiology for artificial intelligence</b></p> <p><i>For AI innovation, the starting point always has to be the data. But what constitutes good quality data, how can it be accessed, and can you ever have enough?</i></p> <ul style="list-style-type: none"> <li>• Understanding the different types of data and how to integrate and harmonize datasets</li> <li>• Acknowledging the limitations of healthcare data, including heterogeneity</li> <li>• Challenges around data privacy and security</li> </ul> <p><b>Deep learning and data</b></p> <p><i>The high performance of modern computer vision methods has resulted in considerable interest in applications to radiology. To galvanize research in this area, a number of research groups have released large publicly available datasets, for example chest radiographs which benefit from large resources such as NIH ChestX-ray14, CheXpert, PadChest, and MIMIC-CXR. These images particularly benefit from a free-text interpretation provided by a practicing domain expert, which provides a human interpretable label of the image. However, caution must be taken when developing models using data acquired during routine clinical practice. A number of implicit biases exist: the acquisition of the image is based on clinical need, the interpretation of the image is a response to a specific clinical question, and the structuring of the data is not intended for retrospective research. In this tutorial, we will evaluate why open source medical imaging data</i></p>

		<p><i>is so important, the performance of classifiers on distinct institutions, and highlight generalization issues, and discuss strategies for making more data available. We will end with suggestions for researchers who aim to build datasets and/or machine learning models on retrospectively collected clinical data.</i></p> <p>Dr Matthew Lungren, Co-Director, <b>Stanford Center for Artificial Intelligence in Medicine and Imaging</b></p> <p><b>Challenges around healthcare data and security: the modern day wild west</b> <i>Data security in the healthcare space has long been a hot button topic. From the advent of HIPPA to further patient-centric data restriction, hospitals struggle with the inherent challenges of data procurement, securement and sharing. In this age of Big Data, processes that require aggregated data sets must negotiate these hurdles to keep patient information and privacy safe. We delve into some of these topics and various approaches to data security within the healthcare domain. In close, we ask whether there are institutions better suited to data protection than others.</i></p> <p>Dr Sudhen Desai, Director of Research, Interventional Radiology, <b>Baylor College of Medicine</b></p>
9:25	9:35	<b>Networking</b>
9:35	10:05	<p><b>Education partner presentation: An epidemic during a pandemic: Radiologist burnout in the setting of COVID-19</b></p> <p><i>COVID-19 pandemic has turned the world upside down and the field of radiology is not immune. How has radiology changed? Are you prepared for what the future might hold? Learn how radiologists as individuals, radiology as a field, and emerging technologies will all need to adapt to a changing healthcare environment.</i></p> <p>David Gruen, MD, MBA, FACR, Chief Medical Officer, Imaging, <b>Watson Health</b> and Diagnostic Radiologist, <b>Jefferson Radiology</b>, CT, USA</p>
10:05	10:15	<b>Networking</b>
10:15	11:00	<p><b>Module 2: Machine and deep learning in medical imaging</b> <i>Machine and deep learning can help in reviewing data, as well as potentially seeing patterns which clinicians might not otherwise pick up. This session will offer real examples that are happening in radiology right now.</i></p> <ul style="list-style-type: none"> <li>● Convolutional neural networks</li> <li>● Recurrent neural networks</li> <li>● Deep reinforcement learning</li> </ul> <p>Dr Tanveer Syeda-Mahmood, IBM Fellow, Chief Scientist, <b>IBM Almaden Research Center</b> and Visiting Scholar, <b>Stanford University</b></p> <p>Dr Peter Chang, Co-Director, <b>UCI Center for AI in Diagnostic Medicine</b></p>

11:00	11:10	<b>Networking</b>
11:10	11:25	<p><b>Education partner presentation: The clinical value of radiology AI</b>  <i>Sharing reflections on the clinical value of the AI-Rad Companion and how AI is supporting radiologists in their daily work. Also sharing experiences of AI algorithms that bring value and support in the fight against COVID-19.</i></p> <p>Professor Philippe Grenier, Former Professor of Radiology and Chairman, <b>Sorbonne University</b>, and AI Implementation Lead, <b>Hôpital Foch</b></p>
11:30	12:15	<p><b>Module 3: Natural language processing in radiology workflow</b>  <i>NLP is already being used to great effect in radiology workflow. This session will feature live examples, as well as the different business and care delivery models that are working in deployment.</i></p> <ul style="list-style-type: none"> <li>• Applying NLP to EHR and data mining</li> <li>• Reflections on the deployment of chatbots</li> <li>• Labeling and NLP</li> </ul> <p><b>NLP in radiology</b>  <i>Medical imaging has been a common examination in daily clinical routine for screening and diagnosis of a variety of diseases. Although hospitals have accumulated a large number of image exams and associated reports, it is yet challenging to effectively use them to build high precision computer-aided diagnosis systems. In this discussion, we present an overview of cutting-edge techniques for mining existing free-text report data for assisting medical image analysis via natural language processing (NLP) and deep learning. Specifically, we present (1) a method to text mine disease image labels (where each image can have multi-labels) from the associated radiological reports using NLP, and (2) a deep learning model to extract attributes (e.g., type, location, size) of lesions of interest from the clinical text. Taken together, we expect our approach will contribute to advancement in understanding of the radiological world and enhancing the clinical decision-making.</i></p> <p>Dr Matthew Lungren, Co-Director, <b>Stanford Center for Artificial Intelligence in Medicine and Imaging</b></p> <p>Dr Orest Boyko, Associate Professor of Radiology, <b>University of Southern California</b></p>
12:15	12:25	<b>Networking</b>
12:25	12:40	<p><b>Education partner presentation: Simplifying DevOps for AI Projects</b>  <i>Modern businesses are building smarter applications powered by massive amounts of data generated at scale. Utilizing the right AI infrastructure lets you unleash the productivity of your data scientists. Providing a containerized AI platform improves data scientists and IT productivity. For example, enable users to access large, shared datasets with minimal data management hassle. We'll discuss ways a DevOps-minded AI strategy can impact time to production.</i></p>

		Emily Potyraj, AI Solution Architect, <b>Pure Storage</b>
12:40	1:25	<p><b>Module 4: Essential issues in AI in radiology</b> <i>Picking up on some of the prevailing concerns around AI in radiology, including data governance and liability, regulatory compliance and explainability.</i></p> <ul style="list-style-type: none"> <li>• Addressing the key ethical questions around artificial intelligence</li> <li>• Mitigating bias through true data diversity</li> <li>• Regulation and control of data sharing: public interest vs. patient privacy</li> <li>• FDA clearance and CE marks</li> </ul> <p><b>Uncovering overlooked AI topics in radiology</b> <i>When it comes to AI, there are many challenges unique to healthcare. In recent years, several research papers have demonstrated the brittleness of AI models and, thus, the importance of validation before clinical use. The typical validation process at individual sites requires many months, which delay real-life clinical implementation of AI. Furthermore, what has not been discussed with enough emphasis to date is the issues one may face post-deployment after the initial validation. AI models are known to decay over time, due to causes such as concept drift and data drift. Those who are working with AI in healthcare need to understand and learn to mitigate these issues.</i></p> <p><i>Another topic that has not received enough attention is the non-interpretative use of AI in radiology. When you attend conferences on AI in radiology and read related articles, you will often find that a vast majority of them discuss interpretative use cases of AI in radiology, such as using AI to detect intracranial hemorrhage or breast cancer. While these are wonderful use cases of AI in radiology, it is essential to remember that the application of AI goes beyond computer vision. There are a large number of use cases outside image interpretation that can be beneficial and deliver value.</i></p> <p><i>The goal of this session is to discuss these often-overlooked topics in radiology. The brittleness of AI models will be discussed as well as using advanced analytics to speed up the validation process. Factors related to AI model decay and the importance of post-deployment surveillance will also be discussed. Finally, various non-interpretative use cases of AI in radiology will be shared.</i></p> <p>Dr Woojin Kim, Musculoskeletal Radiologist and Imaging Informaticist, <b>Palo Alto VA Hospital</b></p> <p>Dr Orest Boyko, Associate Professor of Radiology, <b>University of Southern California</b></p>
1:25	1:35	<b>Networking</b>
1:35	1:50	<p><b>Education partner presentation</b></p> <p>Dr Antonio Cistertino, Professor of Computer Science and Chief Information</p>

		Officer, <b>University of Pisa</b>
1:50	2:00	<b>Chair's closing remarks</b>  Dr Anthony Chang, Founder, <b>AIMed</b> and Chief Artificial Intelligence Officer, <b>Children's Hospital of Orange County (CHOC)</b>
2:00	3:00	<b>Extended networking session</b> <i>Relax and listen to an exclusive live set from acclaimed jazz singer Gabrielle Ducomble as you take the opportunity to catch up with friends, colleagues and new contacts in our online networking environment.</i>