Join Dr. Valentina Pedoia and Dr. Claus-C. Glüer, as they host the **Transatlantic UCSF/CAU Webinar on Artificial Intelligence in Biomedical Imaging:** *Fighting the Pandemic with Federated Learning*

Thursday, 29 April 2021 at 08:30AM-10:30AM

Hosts:

       Dr. Claus-C. Glüer, Section Biomedical Imaging,
       Department of Radiology and Neuroradiology, University Medical Center Schleswig-Holstein and Christian-Albrechts-University, Kiel, Germany

       Dr. Valentina Pedoia, Center for Intelligent Imaging
       Department of Radiology & Biomedical Imaging, University of California, San Francisco, USA

Presentations:

Collaborative Learning in Medical Imaging: Opportunities and Challenges
Dr. Jayashree Kalpathy-Cramer, Associate Professor of Radiology at MGH/Harvard Medical School
(0830AM UCSF/17:30 Kiel)

Joint Imaging Platform for Federated Clinical Data Analytics
Dr. Marco Nolden, Senior scientist, Division of Medical Image Computing of the German Cancer Research Center in Heidelberg
(9:30AMUCSF/18:30 Kiel)

Lessons Learned from Real-World Federated Learning: Experience with COVID-19 Modeling at UCSF
Dr. Jason Crane, Director Computational Core and Dr. Pablo Damasceno, PhD, Machine Learning Scientist
(10:00AM UCSF/1900 Kiel)

Guest Speaker
Dr. Jayashree Kalpathy-Cramer

Talk Title: Collaborative Learning in Medical Imaging: Opportunities and Challenges

Short Abstract: Federated learning, split learning, and other approaches for collaborative learning provide mechanisms for building robust, multi-institutional models in a privacy-preserving manner without the need for data sharing. This can be especially important in healthcare, where the brittleness of models is a challenge. Models built using single institutional data often don't generalize to data from other institutions due to heterogeneity in acquisition, populations, and disease presentation. Data sharing can be a challenge due to the need to maintain patient privacy. Additionally, institutions may not have sufficiently sized datasets for rare diseases. Collaborative learning can help improve the robustness of these models. Using examples from the healthcare domain, we'll discuss real-life examples of collaborative learning using open-source frameworks. We'll demonstrate tangible improvements in model performance and discuss technical challenges

Bio: Dr. Jayashree Kalpathy-Cramer is an Associate Professor of Radiology at MGH/Harvard Medical School. She co-directs the QTIM lab and the Center for Machine Learning at the Athinoula A. Martinos Center for Biomedical Imaging. Her lab works at the intersection of machine learning and healthcare with a focus on medical imaging. Please see https://qtim-lab.github.io/ for more details.

Photo:

Guest Speaker
Dr. Marco Nolden

Presenter Date: 29 April 2021

Talk Title: Joint Imaging Platform for Federated Clinical Data Analytics

Short Abstract:
Image analysis is one of the most promising applications of artificial intelligence (AI) in health care, potentially improving prediction, diagnosis, and treatment of diseases. Although scientific advances in this area critically depend on the accessibility of large-volume and high-quality data, sharing data between institutions faces various ethical and legal constraints as well as organizational and technical obstacles. The Joint Imaging Platform (JIP) of the German Cancer Consortium (DKTK) addresses these issues by providing federated data analysis technology in a secure and compliant way. Using the JIP, medical image data remain in the originator institutions, but analysis and AI algorithms are shared and jointly used. Common standards and interfaces to local systems ensure permanent data sovereignty of participating institutions. This talk will present the Joint Imaging Platform and other projects based on the recently released Kaapana open-source framework.

BIO: Dr. Marco Nolden is a computer scientist working on software and algorithms for medical imaging research, with a focus on translation and open-source technologies. He is a senior scientist at the Division of Medical Image Computing of the German Cancer Research Center in Heidelberg, the largest biomedical research center in Germany with more than 3000 employees.

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Role: Guest Speaker/s
Dr. Jason Crane and Dr. Pablo Ferreira De Souza

Talk Title: Lessons Learned from Real-World Federated Learning: Experience with COVID-19 Modeling at UCSF

Short Abstract: UCSF's experience participating in a 20-site federated learning study to develop a model for predicting COVID outcomes from emergency department imaging, labs and vitals will be presented. Our real-world experience participating in the federated learning consortium ranging from technical ramp-up to data gathering and training will be presented together with results from the study. Jason Crane

Bio:

Dr. Jason Crane is the Director of Computational Core for the Center for Intelligent Imaging in the Department of Radiology and Biomedical Imaging responsible for developing and managing state-of-the-art computational hardware and software to enable cutting-edge biomedical imaging research and clinical translation, with the most advanced CPU and GPU computing architecture, large-scale data storage and interoperability tools, and software stack for both traditional image analysis and state-of-the-art machine learning techniques.

Pablo Ferreira De Souza, PhD, Computational and Data Scientist
Dr. De Souza has over 15 years of experience in high-performance computing and has worked on a diverse range of problems, from biochemical engineering to mathematics to neuroscience. As a staff scientist at the Center for Intelligent Imaging at the UC San Francisco, he helps train, evaluate, and deploy deep learning applications to improve clinical care

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