

The Wizardry of Artificial Intelligence 2.0

AI and Machine Learning
in Cancer Imaging

22 - 24 July, 2021

VIRTUAL MEETING

Organisation:



Champalimaud
Foundation

22 - 24 July

2021

Virtual Meeting

Dear colleagues and friends,

On behalf of the Champalimaud Foundation and the International Cancer Imaging Society, we would like to invite you to participate in the 2nd multidisciplinary meeting on the development and application of artificial intelligence (AI) and machine learning (ML) in Cancer Imaging.

Our first meeting in 2019 was attended by around 400 participants representing 30 countries across the world. We were delighted by the level of interest and engagement shown.

The journey continues in July 2021, when we will assemble together, in a virtual setting, another expert multi-disciplinary faculty to share, discuss and debate current developments.

A particular focus of this meeting is to bring real-world understanding of the infrastructure and techniques required to develop and test AI tools, as well as to learn from the experience of those who have ventured into the field.

We look forward to another engaging and stimulating meeting, this time in a new remote format!

Celso Matos (Champalimaud Foundation)

Dow-Mu Koh (ICIS)

On behalf of the organising committee*

Scientific Programme

22 July

2021

In this session we discuss the real-world considerations and challenges of enabling AI developments in imaging departments. What infrastructures should be in place to facilitate developments? How should an image data curation be approached? How should image data repository be configured to facilitate image analysis? Last but not least, what are the considerations to ensure the delivery of high-quality AI science?

We examine some of the technical aspects of AI and ML techniques that are relevant to cancer imaging including transfer learning for smaller datasets, the federated learning model to overcome privacy issues, as well as the potential for natural language processing to identify appropriate data cohorts.

12:30 [Opening session](#)

12:40 [Session 1: Real world considerations: How do departments prepare for AI?](#)

Moderator: Dow-Mu Koh, London, UK

12:40 Data curation and data transformation

Luis Martí-Bonmatí (Valencia, Spain)

13:00 Data repository and pipeline for image analysis

Simon Doran (Sutton, UK)

13:20 Hospital IT infrastructure

Neil Sebire (London, UK)

13:40 Assuring high-quality AI science in cancer imaging

Charles Kahn (Pennsylvania, USA)

14:00 Discussions

14:30 - 15:00 Break

15:00 [Keynote Lecture 1](#)

Pathomics: Lessons learned and implications for cancer imaging

Joel Saltz (Stonybrook, USA)

15:45 [Session 2: AI and ML techniques and their relevance towards cancer imaging](#)

Moderator: Fred Prior, Arkansas, USA

15:45 Deep learning: Technique update, current pitfalls and how to avoid them

Henkjan Huisman (Nijmegen, The Netherlands)

16:15 Federated Learning: The answer to privacy related challenges?

Jorge Cardoso (London, UK)

16:45 Demystifying radiomics and AI: A blueprint for creating value in the cancer continuum

Nickolas Papanikolaou (Lisbon, Portugal)

17:15 Discussions

Scientific Programme

23 July

2021

We discuss some cutting edge thinking in AI and ML, such as state-of-the-art approaches to radiomics analysis. What are the pros and cons of using segmented versus non-segmented images for AI and ML? Should AI be explainable?

We hear the current perspectives and vision of scanner manufacturer, PACS vendor, AI company and healthcare policy maker towards the development of AI and ML in cancer imaging. What are the goals? What are the challenges? What strategies are being adopted to deliver the objectives?

12:30 Session 3: Controversies and advances in AI and machine learning approaches

Moderator: Seong Ki Mun, Virginia, USA

12:30 Graph, vector and tensor-based networks and mass transfer techniques for radiomics
(Mireia Crispin-Ortuzar, Cambridge, UK)

12:55 Towards unsupervised machine learning: Segmentation versus non-segmentation of images
(Bradley J. Erickson, Rochester, USA)

13:20 Explainable AI for cancer imaging
(Fred Prior, Arkansas, USA)

13:50 Discussions

14:20 - 14:50 Break

14:50 Keynote Lecture 2

Deep learning beyond images: Natural language processing applied to radiology reports
Curt Langlotz (Stanford, USA)

15:30 Session 4: Perspectives from Industry and health policy makers

Moderator: Celso Matos, Lisbon, Portugal

15:30 Scanner/ machine manufacturer
Ben Newton (Amersham, UK)

15:50 AI company
Florent Chandelier (Imagia - Montreal, Canada)

16:10 PACS company
INFINITT PACS (South Korea)

16:30 Informatics company
Rowland Illing (Amazon Web Services)

16:50 Health care policy maker/institution
(John Freymann, Washington, USA)

17:10 Discussions

Scientific Programme

24 July

2021

We hear from individuals how they have risen to the challenges of applying AI/ML and/or radiomics for image reconstruction, disease detection, disease segmentation and providing novel prognostic information in cancer imaging. Where did they begin? How did they do it? And what important lessons have been learnt?

12:30 [Session 5: Real world translation: How I do it and lessons learnt](#)

Moderator: Evis Sala, London, UK

12:30 Image reconstruction
(Hersh Chandarana, New York, USA)

12:50 Disease detection
(Rozemarijn Vliegenthart, Groningen, The Netherlands)

13:10 Disease segmentation
(Matthew Blackledge, Sutton, UK)

13:30 Disease prognosis
(Andrea Rockall, London, UK)

13:50 Discussions

14:20 - 14:45 Break

14:45 [Keynote Lecture 3](#)

How to bring AI technologies into the marketplace?
Nicholas Petrick, FDA (Washington, USA)

15:30 [Session 6: Discussions and debate](#)

Chairs: Evis Sala, London, UK &
Charles Khan, Pennsylvania, USA

15:30 Round table discussions

We have an expert multidisciplinary panel discussion with the audience on issues raised in the past three days, identifying common threads for further research and developments. We anticipate a lively dialogue between radiologists, radiographers/technicians, scientists, members from industries, as well as policy makers/ regulatory authorities.

16:30 [Closing remarks](#)

Accreditation

All participants will receive a certificate of participation, showing 12 CPD credits awarded according to the CPD scheme of the Royal College of Radiologists, UK.

European Accreditation Council for Continuing Medical Education (EACCME) accreditation has been applied for. EACCME European CME credits can be converted to AMA PRA Category 1 Credit™ by applying to the AMA. Please visit the American Medical Association (AMA) website for further information: <https://www.ama-assn.org/education/uemseaccme-cme-credit-recognition>

Organising Committee

Celso Matos, Dow-Mu Koh, Fred Prior, Charles Kahn, Nickolas Papanikolaou, Andrea Rockall, Evis Sala, Seong Ki Mun

Registration dates

Registration available at www.icimagingociety.org.uk
This is a non-profit meeting: the £65 registration fee is charged to defray facilitation costs of this virtual meeting.

Format

Virtual. Times shown in BST (British Summer Time).

Official language

English. No translation system available.

Speakers and Moderators

Andrea Rockall (London, UK)

Ben Newton (Amersham, UK)

Bradley Erickson (Rochester, USA)

Celso Matos (Lisbon, Portugal)

Charles Kahn (Pennsylvania, USA)

Curt Langlotz (Stanford, USA)

Dow-Mu Koh (Sutton, UK)

Evis Sala (Cambridge, UK)

Florent Chandelier (Montreal, Canada)

Fred Prior (Arkansas, USA)

Henkjan Huisman (Nijmegen, The Netherlands)

Hersh Chandarana (New York, USA)

Joel Saltz (Stonybrook, USA)

John Freymann (Washington, USA)

Jorge Cardoso (London, UK)

Luis Martí-Bonmatí (Valencia, Spain)

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Rowland Illing (Boston, USA)

Rozemarijn Vliegenthart (Groningen, The Netherlands)

Seong Ki Mun (Virginia, USA)

Simon Doran (Sutton, UK)



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