

# The Wizardry of Artificial Intelligence 2.0

AI and Machine Learning  
in Cancer Imaging

18 - 20 June, 2020

Champalimaud Foundation

Lisbon, Portugal

Organisation:



Champalimaud  
Foundation

**18 - 20 June**  
**2020**  
**Lisbon, Portugal**

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 about 400 participants representing 30 countries across the world. We were delighted by the level of interest and engagement shown.

The journey continues in June 2020, when we will assemble together 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.

For this meeting, we are also soliciting scientific abstracts of original research; as well as fresh ideas for AI/ML research to be presented in a scientific session and incubator session respectively.

We look forward to another engaging and stimulating meeting together in Lisbon!

Celso Matos (Champalimaud Foundation)

Dow-Mu Koh (ICIS)

On behalf of the organising committee\*

## Scientific Programme

18 June

2020

Lisbon, Portugal

In this session we discuss real-world considerations and challenges of enabling AI in imaging departments. What infrastructures should be in place to facilitate developments? How should data curation be approached? How should image data repository be configured to facilitate image analysis? What are the considerations to ensure the delivery high-quality AI science?

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

**08:30** Registration

**09:00** [Welcome session](#)

**09:10** [Session 1: Real world considerations: How do departments prepare for AI?](#)

Chair: Dow-Mu Koh, London, UK

**09:10** Data curation and data transformation  
(Luis Martí-Bonmatí, Valencia, Spain)

**09:30** Hospital IT infrastructure  
(TBC)

**09:50** Data repository and pipeline for image analysis  
(Simon Doran, Sutton, UK)

**10:10** Assuring high-quality AI science in cancer imaging  
(Charles Kahn, Pennsylvania, USA)

**10:30** Discussions

**10:50 - 11:10** **Coffee Break**

**11:10** [Session 2: AI and ML techniques and their relevance towards cancer imaging](#)

Chair: Fred Prior, Arkansas, USA

**11:10** Transfer Learning: The realistic medical imaging classification approach  
(Nickolas Papanikolaou, Lisbon, Portugal)

**11:40** Federated Learning: The answer to privacy related challenges?  
(Jorge Cardoso, London, UK)

**12:00** Deep Learning beyond images: Natural language processing applied to radiology reports  
(Howard Chen, Cleveland, USA)

**12:30** Discussions

## Scientific Programme

18 June

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**12:30 - 13:30 Lunch**

**13:30** [Keynote Lecture: Pathomics: Lessons learned and implications for cancer imaging](#)

Joel Saltz (Stonybrook, USA)

**14:20** [Session 3: Incubator presentations](#)

Chair: Nickolas Papanikolaou, Lisbon, Portugal

### **5 Incubator presentations**

15 minutes presentations + 5 minutes discussion

**15:30 - 16:00 Coffee Break (and poster session)**

**16:00** [Session 4: Controversies and advances in AI and machine learning approaches](#)

Chair: Charles Kahn, Pennsylvania, USA

**16:00** TGraph, vector and tensor-based networks and mass transfer techniques for radiomics (Mireia Crispin-Ortuzar, Cambridge, UK)

**16:25** Towards unsupervised machine learning: Segmentation versus non-segmentation of images (Bradley J. Erickson, Rochester, USA)

**16:50** Explainable AI for cancer imaging (Fred Prior, Arkansas, USA)

**17:15** Discussions

We discuss cutting edge thinking in AI including state-of-the-art approaches to radiomics, the use of segmented versus non-segmented images for AI, and the demand for AI to be explainable.



## Scientific Programme

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Lisbon, Portugal

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

**09:00** Session 4: Perspectives from Industry and health policy makers

Chair: Celso Matos, Lisbon, Portugal

**09:00** Scanner/ machine manufacturer  
(Mathias Goyen, Dusseldorf, Germany)

**09:20** PACS vendor  
TBC

**09:40** AI company  
(Florent Chandelier, Montreal, Canada)

**10:00** Health care policy maker/institution  
(John Freymann, Washington, USA)

**10:20** Discussions

**10:40 - 11:10 Coffee Break**

**11:10** Keynote Lecture: How to bring AI technologies into the marketplace?

FDA (Nicholas Petrick, Washington, USA)

**11:40** Session 6: Incubator session

Chair: Fred Prior, Arkansas, USA &  
Andrea Rockall, London, UK

**6 Scientific presentations**

7 minutes presentations + 3 minutes questions

**12:40 - 14:00 Lunch**



## Scientific Programme

19 June

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Lisbon, Portugal

We hear from individuals how they they are 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 lessons have been learnt?

**14:00** [Session 7: Real world translation: How I do it and lessons learnt](#)

Chair: Evis Sala, London, UK

**14:00** Image reconstruction  
(Hersh Chandarana, New York, USA)

**14:20** Disease detection  
(Rozemarijn Vliegenthart, Groningen, The Netherlands)

**14:40** Disease segmentation  
(Matthew Blackledge, Sutton, UK)

**15:00** Disease prognosis  
(Andrea Rockall, London, UK)

**15:20** Discussions

**15:40 - 16:00** **Coffee Break**

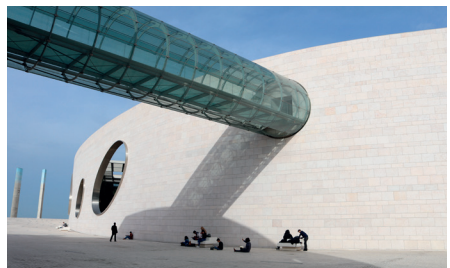
**16:00** [Session 8: Discussions and debate](#)

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

**16:00** Round table discussions

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

**17:00** [Closing remarks](#)



**Scientific Programme**

**20 June**

**2020**

**Lisbon, Portugal**

**09:00** [Post Meeting Hands-on Workshops](#)  
(60 to 80 people)

**09:00** AI for image classification  
(Bradley J. Erickson, Rochester, USA)

**11:00** Radiomics Workshop  
(Nickolas Papanikolaou, Lisbon, Portugal)

**12:30** [Post Meeting Closing Remarks](#)

**Notes**



### Organising Committee

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

### Registration dates

**Until 8 June Free** Registration

Registration form available at [www.icimatingsociety.org.uk](http://www.icimatingsociety.org.uk)

### Venue

Champalimaud Centre for the Unknown  
Av. de Brasília  
1400-038, Lisboa, Portugal

### Official language

English. No translation system available.

### Travel and accommodation

Travel and hotel arrangements are the responsibility of the participants.



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