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The British Institute of Radiology

In association with

RCR
The Royal College of Radiologists

28-29 JANUARY 2021

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#BIRAI21

ARTIFICIAL INTELLIGENCE IN PRACTICE 2021

Virtual event

CPD: 8 CREDITS (4 PER DAY)

Bayer have part funded this event

PHILIPS

SIEMENS Healthineers

Advanced Accelerator Applications
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ARTIFICIAL INTELLIGENCE IN PRACTICE 2021

Virtual event

CPD: 8 CREDITS (4 PER DAY)

28-29 JANUARY 2021

After the success of the last three artificial intelligence events in 2018, 2019 and 2020 jointly organised by The British Institute of Radiology in association with The Royal College of Radiologists, we are back again in 2020. This time it will be even bigger and better with a new format-VIRTUAL!

This year's event will be held across two-days with afternoon sessions appealing to our multidisciplinary audience.

We invite all radiologists (consultants and trainees), radiographers, physicists, oncologists as well as other healthcare professionals and those with an interest in AI to join us at this exciting event.

All sessions will be recorded and avaialble to those registered on-demand if you are unable to attend the live event.

Programme Organisers

Dr Hugh Harvey, Managing Director, Hardian Health

Dr Amrita Kumar, Consultant Radiologist, Frimley Health

Sponsors

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This course provides 8 CPD credits in accordance with the CPD Scheme of the Royal College of Radiologists

ARTIFICIAL INTELLIGENCE IN PRACTICE 2021

CPD: 4 credits

Day 1 – Thursday 28 January 2021

13:00	**Welcome and introduction**
13:05	**Connecting our hearts – AI in cardiovascular medicine** Professor Declan O'Regan, Professor of Imaging Sciences, Imperial College London
13:25	**Q&A**
13:30	**Value of AI to patients** Professor Saurabh Jha, Assistant Professor, University of Pennsylvania
13:50	**Q&A**
13:55	**What you need to know about the new MDR and UKCA regulations** Dr Hugh Harvey, Managing Director, Hardian Health
14:15	**Q&A**
14:20	**AI in Radiology – from technical innovation to clinical benefit** Mr Hasan Jouni, Business Development Manager - Digital Health, Siemens Healthineers
14:40	**Cardiovascular disease- How can artificial intelligence make and impact** Dr Orit Wimpfheimer, Chief Medical Officer, Zebra Medical Vision
15:00	**Break**
15:15	**Experiences with mammography AI evaluation, analysis and route to clinical practice in the iCaird project** Dr Gerald Lip, Clinical Director, North East of Scotland Breast Screening Service, Chief Investigator, Mammography AI project as part of iCaird, University of Aberdeen
15:35	**Q&A**
15:40	**Stroke AI and the NHS: Augmenting the clinical stroke pathway & impact assessment** Mr Riaz Rahman, VP Healthcare Global, Brainomix; Dr Kiruba Nagaratnam, Consultant Stroke Physician and Geriatrician, Royal Berkshire NHS Foundation Trust; Dr Andrew Leary, Clinical Innovation Adoption Senior Manager, Oxford AHSN; Mrs Tracey Marriott, Director of Clinical Innovation Adoption, Oxford AHSN
16:00	**Q&A**
16:05	**Is the NHS to slow to adopt – Panel discussion** Mr Dominic Cushnan, Head of AI Imaging, NHSX; Dr Kiruba Nagaratnam, Consultant Stroke Physician and Geriatrician, Royal Berkshire NHS Foundation Trust; Mr Hassan Chaudhury, Digital Health Specialist, Healthcare UK
16:30	**Close of day 1**

ARTIFICIAL INTELLIGENCE IN PRACTICE 2021

CPD: 4 credits

Day 2 – Friday 29 January 2021

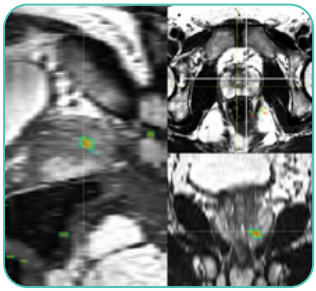
13:00	**Welcome and introduction**
13:05	**Latest updates on data governance and ethics** Ms Jessica Morley, Policy Lead EBM DataLab, University of Oxford
13:25	**Q&A**
13:30	**Adoption of AI into the NHS - realities/ experiences** Dr Indra Joshi, Director of AI, NHSX
13:50	**Q&A**
13:55	**What do the patients think?** Dr Liz O'Riordan, Breast Surgeon with breast cancer and patient advocate
14:15	**Q&A**
14:20	**We have the data, how do we get the insights? Practical examples of AI-based quality assurance and workflow improvements.** Mr Jeroen van Duffelen, COO and Co-founder, Aidence
14:40	**Reducing radiologist workload with AI-assisted chest X-ray interpretation** Dr Neelan Das, Consultant Cardiovascular Interventional Radiologist & AI Lead Radiology, East Kent Hospitals University Foundation Trust
15:00	**Break**
15:15	**A culture of continuous privacy compliance** Mrs Karima Noren, Co-Founder, The Privacy Compliance Hub
15:35	**Q&A**
15:40	**Health economics considerations on the use and introduction of AI-driven technologies in the NHS** Dr Cynthia Iglesias, Senior Health Economist/Associate Professor of Health Economics, University of York
16:00	**Q&A**
16:05	**Taking practical steps to harness the value of health and care data** Dr Claire Bloomfield, CEO, National Consortium of Intelligent Medical Imaging, University of Oxford
16:30	**Q&A**
16:35	**Fostering a strong ecosystem for AI in medical imaging** Dr Geraldine McGinty, President of the American College of Radiology, Chief Strategy Officer, Weill Cornell Medicine
16:55	**Q&A**
17:00	**Close of event**

Product spotlight: Watson Elementary

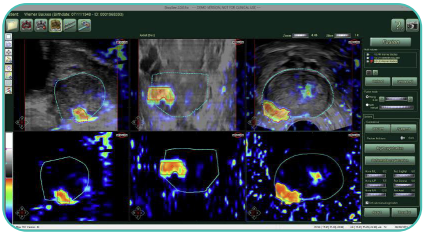
Fast malignant lesion detection

The Watson Elementary software has incorporated deep learning and artificial intelligence (AI) neural nets to produce an accurate and exceptionally fast prediction of a suspicious lesion in the prostate. The system has also utilised AI to ensure that the new feature of auto-segmentation of the prostate is reliable and precise. It's core is embedded in AI and AI will continue to help guide it's development.

Reach beyond today



- Automatic fast image co-registration of T_2WI, Diffusion Weighted (DWI) and Dynamic Contrast Enhanced (DCE) MR images, works without DCE too
- Automatic image resolution matching
- Automatic Apparent Diffusion Coefficient (ADC) map generation
- Automatic DCE model fits
- Real time per-pixel data access
- Synchronized side-by-side 3D viewing
- Synchronized parameter overlays
- Automatic standard report generation
- Extended annotation of ROIs and prostate outline
- Easy PI-RADS 2.1 scoring
- Workflow checklists
- DICOM Structured Reporting with worklist support
- DICOM RTS Export



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ZEBRA MEDICAL VISION

2014
ESTABLISHED

AI FOR MEDICAL IMAGING
A 2B$ MARKET BY 2023

5
GLOBAL DIRECT OFFICES

THE CHALLENGE

The demand for medical imaging services is continuously increasing, outpacing the supply of qualified radiologists and stretching them to increase output, without compromising patient care.

1	50	400	1.6
Radiologist	Patient studies	Images / study	Seconds / image

WE TRANSFORM PATIENT CARE USING AI

Zebra-Med uses AI to empower radiologists and help them along with health providers manage the ever increasing workload without compromising quality of care.

OUR METHODOLOGY

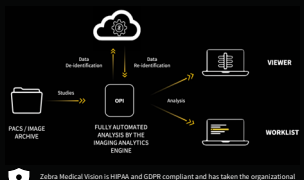
We teach computers to automatically read and diagnose millions of medical imaging studies with clinical records to create high-performance algorithms that detect medical conditions faster, for numerous findings in parallel.

ZEBRA-MED SOLUTIONS

Using 30M patient scans with associated clinical data, we provide a wide range of AI products for Radiology, Cardiology, ER and more. A wide range of AI products for radiology, integrated into the workflow.

HOW IT WORKS

Automated Imaging Analytics Engine



Zebra Medical Vision is HIPAA and GDPR compliant and has taken the organizational and technical measures in place to fulfill its fundamental requirements.

Bone Health Solution - VCF identification vertebral compression fractures in an effort to help stem the widespread impact of osteoporosis.

Cardiac Solution - CCSng analyze existing coronary data to provide an 'early-warning' system for asymptomatic suffers from coronary artery disease.
Expected FDA submission Q4 2020

Neuro Solution - ICH, MLS a radiological computer-aided triage and notification software indicated for use in the analysis of adult non-contrast head CT scans for ICH and MLS 510K pending.

COVID19 Solution relieves the burden on health systems globally by providing timely decision support tools for clinicians.
For investigational use only

Chest solution:

Abnormal Chest X-ray. Pneumothorax (FDA,CE), **Pleural Effusion** (FDA, CE), **Pulmonary opacities** (Investigational use), **Free air** (investigational use). A suite of radiological triage and notification software that automatically flag clinically significant findings.

Normal Chest X-ray. A radiological workflow tool to optimize the reporting on chest x-rays with no radiological evidence of clinically-significant abnormalities. Not commercially available in the US, for investigational use only.

Mammo Solution - 2D Mammo Triage aid the mammographer with a more accurate reading of suspicious lesions while reducing the number of false positives that hamper the current solutions.

INNOVATION

Over 20 granted patents

11 PUBLICATIONS

A robust mix of data science, clinical research and collaborations to achieve game changing results
nature medicine

REGULATION

10 Marks

6 Clearances

KEY PARTNERS

Google, PHILIPS, CHANGE HEALTHCARE, AMGEN, aws, Canon Canon Medical Systems USA, Inc., Intermountain Healthcare, intelerad, NUANCE, Johnson & Johnson, NVIDIA, wellbeing, CLALIT, EMERGENT CONNECT

"...We were quite pleased with the Zebra-med pilot and results, and as such are expanding our use of the technology to increase the patient flow into our FLS program in 2018 and 2019..."

DR. KASSIM JAVAID
ASSOCIATE PROFESSOR, UNIVERSITY OF OXFORD

"...Our radiologists are gaining a level of trust in the emerging technology and are adapting to the integration of AI results into real-time radiology reporting..."

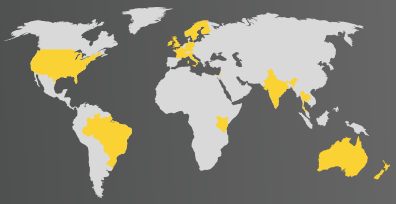
DR. KEITH WHITE
MEDICAL DIRECTOR, IMAGING SERVICES, INTERMOUNTAIN HEALTH

"...Zebra-med's acute CXR pneumothorax and CT Brain bleed products demonstrated a promising potential to substantially reduce turn around time and increase the radiologist's confidence in making these diagnoses..."

DR. TERENCE A. MATALON
CHAIRMAN OF IMAGING, ALBERT EINSTEIN MEDICAL CENTER

DISTRIBUTION CHANNELS FOOTPRINT

Over **10,000** hospitals in **40** countries



COMPRESSION FRACTURE:
10X Uplift in capacity of FLS with 100% treated patients satisfaction

PROVEN ROI

TRIAGE:
85% Reduction in time to detect Pneumothorax and Intracranial Hemorrhage cases

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Version 3.1.05, November 16, 2020

aidence
human sense in artificial intelligence

Veye Chest is CE-marked as a second or concurrent reader

Veye Chest

your AI lung nodule management assistant

Veye Chest clinical features

Detection

- >= 3mm and <=30 mm in size
- Solid and sub-solid nodules

(part-solid/ground-glass opacity)

Quantification

- Diameters: long axis, perpendicular short axis, and the average axial diameter
- Volume: per-slice segmentation and 3D visualisation

Growth assessment

- Growth percentage
- Volume Doubling time (VDT)

Integration

- Seamless integration with any PACS

Why radiologists choose Veye Chest:

"I love the detection indications. It is a simple yet effective solution that really helps me to report nodules faster. I directly know where to find them."

Dr. Caroline McCann, Liverpool Heart and Chest Hospital NHS Trust Foundation (UK)

"Veye helps us read CT chest scans faster because it provides clear markers for nodules."

Dr. Floris Rietema and Dr. Paul Algra, Northwest Clinics (the Netherlands)

Artificial Intelligence

Transforming data into knowledge for better care

AI-Rad Companion is a family of vendor-neutral, multi-organ augmented reading solutions that automatically prepare clinical input to be interpreted by radiologists, pathologists and/or clinicians.

Through automation, the suite of AI-Rad Companion solutions reduce the burden of simple repetitive tasks, making better use of the knowledge and skills of experienced physicians, and reducing the time from imaging to report.

AI-Rad Companion reduces the time of interpretation and reporting, automatically performs measurements, prepares results for reports, provides comparisons to prior studies and automatically highlights abnormalities, characterises anatomies, matches results with reference values.

For more information contact
hasan.jouni@siemens-healthineers.com

siemens-healthineers.co.uk

AI-Rad Companion requires the institution to have a teamplay account.

SIEMENS Healthineers

Improving Respiratory Health Outcomes

with qure.ai's qXR AI solution

Using Artificial Intelligence (AI), Qure.ai has built an automated chest X-ray interpretation solution called qXR.

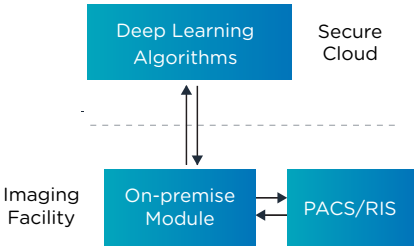
qXR utilizes deep learning algorithms and advanced computing to augment human expertise, by reading and triaging chest X-rays.

qXR helps reduce the chances of late diagnoses, under-diagnoses and even potential misdiagnoses, to help healthcare providers deliver better patient care.

qXR ADVANTAGES AT A GLANCE

- Separate normals from abnormals
- Peer reviewed
- 3M+ Global training dataset
- CE Class II Certified
- Report interpretations in under a minute
- IT & workflow integration
- Cost effective
- HIPAA & GDPR Compliant

How it works



ALGORITHM TRAINING AND CLINICAL VALIDATION

- qXR have been trained on over 3.7 million X-rays, including data from many clinical centres and different types of imaging hardware.
- qXR is hardware agnostic and compatible with all major PACS/RIS IT systems.
- We are constantly working towards adding new capabilities to our AI products as well as improving accuracy of our algorithms.
- Research publications including peer reviewed papers and results from independent validation studies are available on our website.

Read Validation Studies Now

qXR

- Sensitivity and specificity equivalent to expert radiologists.
- Identifies and highlights 29 abnormalities on chest X-rays.
- Indicates COVID-19 by detecting ground-glass opacities and consolidations.
- Aids early lung cancer diagnosis by detecting lung nodules as small as 5mm.
- Reduces reporting workload up to 40% by segregating the normal scans from the ones that need to be reviewed.

Click here try it yourself today

www.qure.ai @qure_ai partner@qure.ai

Biographies and abstracts

Dr Claire Bloomfield, CEO National Consortium of Intelligent Medical Imaging, University of Oxford

Dr Claire Bloomfield is the CEO of the world-leading Consortium of Artificial Intelligent Medical Imaging (NCIMI) at the University of Oxford — NCIMI is Oxford's new and revolutionary launchpad to improve the healthcare industry through the use of AI. The NCIMI consortium is led from the University, where Claire is successfully managing partnerships with 14 NHS hospitals, clinical leaders, industry experts, academic researchers, patient groups and philanthropic organizations.

Claire's own research has been focused on Neuroscience and she has held research fellowships at Oxford University and the University of Maryland School of Medicine. Following her academic research career and before becoming the CEO of the NCIMI Consortium, Claire returned to Oxford as the Head of Strategy and Innovation for the Cancer Research UK Centre. Claire's role placed her at the nexus of cancer activity within the university community and the UK overall, affording unique opportunities to work on cross-departmental and pan-divisional projects resulting in raising more than 250 million pounds to further UK cancer research.

Claire's particular interest in imaging and AI focuses on supporting the ecosystem to develop effective collaborations that generate value for all stakeholders, and ensuring equity and diversity in both the development and application of healthcare AI.

Taking practical steps to harness the value of health and care data

There is signficant potential for clinical, economic development and commercial value to be derived from data controlled by and/or generated with the NHS, and the landscape within which front-line professionals, HEIs, corporate entities and policymakers are operating is, necessarily, fast-evolving.

The Government has published several iterations of its Code of Conduct for Data-driven Health and Care Technology and, most recently, an addendum to the Code which provides guiding commercial principles designed to 'Create the right framework to realise the benefits of health data'.

It has also established a National Centre of Expertise within the NHSX in order to provide NHS organisations with the legal and commercial support they need to forge data agreements which maximise the value of such data and, in time, the Centre is expected to develop and improve articulation of a national policy framework in this important regard.

Biographies and abstracts

Professor Declan O'Regan, Professor of Imaging Sciences, Imperial College London

Professor Declan O'Regan is an MRC Clinical Scientist and Consultant Radiologist who leads the Computational Cardiac Imaging Group at the MRC London Institute of Medical Sciences. He is also Director for Imaging Research at Imperial College Healthcare NHS Trust. He is committed to science engagement and is a past Roentgen (UK) and Rowan-Williams (Australasia) travelling professor lecturing internationally on the role of artificial intelligence (AI) in healthcare. He is board member for the British Society of Cardiac MR and sits on the Advisory Council of the British Heart Foundation. His work is funded by the MRC, BHF, NIHR and Bayer.

Connecting our hearts – AI in cardiovascular medicine

We are in a transition to an era of digital medicine, typified by advances in technology and an exponential increase in the creation of large and complex datasets. This includes molecular data generated by 'omics technologies, medical imaging data, health data derived from patient records and data generated by patients themselves. The use of data science and innovative ways of analysing these datasets has the potential to improve the diagnosis, treatment, and prognosis of people with heart and circulatory disease. In this talk the role of machine learning in analysing the moving heart will be explored and whether it holds the key to a healthier future.

In the meantime, the advice and guidance available to those who wish to enter into pertinent agreements with third parties is limited. NCIMI is therefore working with Future Care Capital to develop a 'data value capture framework' to support the NHS, academic and commercial partner collaborations of NCIMI.

Dr Gerald Lip, Clinical Director, North East of Scotland Breast Screening Service Chief Investigator, Mammography AI project as part of iCaird, University of Aberdeen, Aberdeen Royal Infirmary

Dr Gerald Lip is a graduate of Trinity College Dublin where along with his medical degree he also gained an MSc in Health Informatics. He is an Honorary Clinical Lecturer with the University of Aberdeen and is the Chief Investigator of the AI project in mammography which is the flagship project in Grampian for the Industrial Centre for Artificial Intelligence Research in Digital Diagnostics (iCaird).
Dr Lip is also the Clinical Director for Breast Screening in the North East of Scotland and Chair of the National Users Group of the Breast Screening IT system.

Experiences with Mammography AI evaluation, analysis and route to clinical practice in the iCaird project

Dr Lip will speak and present latest findings in the iCaird project and detail the challenges faced in the implementation of the project.

He will also update the audience with the latest findings on the large-scale mammography AI project being run with Canon and Kheiron medical.

Biographies and abstracts

Dr Geraldine McGinty, Associate Professor of Clinical Radiology and Population Health Sciences, Weill Cornell Medicine; Chief Strategy Officer Weill Cornell Physician Office; President, American College of Radiology

Dr. McGinty did her Medical training in Ireland at the National University and then came to the USA for residency at the University of Pittsburgh where she was Chief Resident. Her fellowship was in Women's Imaging at the Massachusetts General Hospital. While working at Montefiore Medical Center in the Bronx she completed an MBA at Columbia University.

She is an internationally recognized expert in imaging economics. She has served an advisor to the CPT Editorial Panel, the JCAHO and the National Quality Forum. She was Chair of the American College of Radiology's Commission on Economics and was the radiology member of the AMA's Relative Value Update Committee from 2012-2016.

In May 2018 she was elected as the Chair of the ACR's Board of Chancellors, the first woman to hold this office. She was until 2013 Managing Partner of a 70 physician multispecialty medical group on Long Island. In 2014 she joined the faculty at Weill Cornell Medicine in New York City. As well as her clinical practice there she serves as Chief Strategy Officer and Chief Contracting Officer for the Weill Cornell Physician Organization's more than 1600 members. Her role as lead negotiator for managed care contracts at Weill Cornell Medicine incorporates both traditional fee for service agreements as well as value based payment arrangements. She is also a member of WCM's digital health strategy team.

She serves as a Non-Executive Director of IDA Ireland, the national foreign direct investment agency and serves on the Board of Agamon, a healthcare technology start-up.

Her published work has focused on payment models for imaging, most recently a bundled payment for breast cancer screening. Recently she has focused on the impact of Artificial Intelligence on Medical Imaging and has spoken at the Turing Institute and to the WHO Focus Group on AI in Healthcare on this topic. In 2015 she was voted Radiology's Most Effective Educator by the readers of Aunt Minnie, a radiology news site with more than 140,000 members. She has more than 14000 followers on Twitter.

Fostering a strong ecosystem for AI in medical imaging

To fully leverage the power of AI all stakeholders must work together

Physicians have a unique responsibility to ensure that their patients' interests are best served

Biographies and abstracts

Mr Hasan Jouni, Business Development Manager – Digital Health Services, Siemens Healthineers

Hasan works with Siemens Healthineers to deliver impactful digital health solutions to UK healthcare providers. After studying clinical laboratory diagnostics and molecular pathology, Hasan worked with an international supplier of software solutions for chronic diseases management and as a program manager for the Cleveland Clinic.

AI in Radiology – From technical innovation to clinical benefit

Siemens Healthineers has been involved in AI development for more than 20 years. They own more than 500 patent families related to machine learning, of which more than 125 are rooted in deep learning. With established AI expertise, vast medical data sets, and exceptional computing power needed for creating AI supported healthcare solutions, they continue our venture into the world of AI and to translate AI findings into clinical routine. Their vision is not only to provide tools for digitalisation, but also to translate data and insights into actionable findings.

Siemens Healthineers believe that digital innovation has three levers to support informed decision making: streamlining operations management, supporting diagnostic and therapeutic decision making, and connecting care teams and patients.

To enable radiologists' access to innovative solutions, they have built their digital offerings into 3 layers: the infrastructure and health information exchange level, cloud platform level, and clinical applications level (Siemens Healthineers and third party).

Mr Hassan Chaudhury, Digital Health Lead, Healthcare UK, DIT

Mr Hassan Chaudhury promotes the UK Digital Health and Care sector abroad at Healthcare UK; a joint initiative of the Department of Health and Social Care, NHS England and the Department for International Trade (DIT), with a global role advising DIT commercial teams in over 100 UK embassies, supporting UK firms and NHS organisations to export, and foreign firms to set up and scale in the UK.

His background is in frontline social work, NHS informatics, commissioning, commissioning support and public health. He later co-founded Health iQ - an award-winning agency focusing on real world evidence and health analytics and held CIO and Chief Commercial Officer positions before its acquisition and his exit in 2019.

He is a Director at Vita Healthcare, Strategy Lead at The Source Group, a founder of the TECH4CV19 community, co-chair of the PM Society Diversity Interest Group, a champion of the FutureNHS Data and Analytics Support for Covid19 Workspace, a mentor for SimDH, a member of The Institution of Engineering & Technology (IET) Healthcare Sector Executive Committee, and holds an Honorary Research post at Imperial College London. The Financial Times named him in the top 100 most influential BAME leaders in UK tech in 2019.

Biographies and abstracts

Dr Indra Joshi, Director of AI, NHSX

Dr Indra Joshi is the Director of AI for NHSX, leading on the creation of the NHS AI Lab. Her other responsibilities include overseeing digital health initiatives within the NHS with a focus on data, digital health standards and evidence.

Indra has a unique portfolio with experience stretching across policy, digital health, national project strategy and implementation; whilst remaining true to her professional training as an emergency medic.

She is a Founding Member of One HealthTech – a network which campaigns for the need and importance of better inclusion of all backgrounds, skillsets and disciplines in health technology. Alongside she is a Vice Chair for the British Computer Society (Health), an international speaker and consultant on digital health, an expedition medic, and most importantly a mum to two wonderful little munchkins.

Ms Jess Morley, Policy Lead/ Doctoral Researcher, The DataLab/ Digital Ethics Lab, University of Oxford

Ms Jess Morley is a researcher at the University of Oxford. She is policy lead in the University's DataLab, directed by Dr. Ben Goldacre, and a Doctoral candidate at the Oxford Internet Institute where she is a member of the Digital Ethics Lab, directed by Professor Luciano Floridi. Her research focuses on how to "design an algorithmically enhanced NHS," by considering the technical, regulatory, and ethical frameworks needed in order to deploy large scale analytics safely and effectively into the healthcare system. Prior to working at the University full-time Jess was Technology Advisor at the Department of Health and Social Care and eventually AI subject matter expert at NHSX.

AI for healthcare: How to be ethically mindful

The use of big data analytics in the healthcare service presents tremendous opportunities for improving the quality of care and saving lives. However, the development, deployment and use of advanced analytical technologies (including AI) in the healthcare system also poses great ethical risks. To ensure the NHS can capitalise on the dual advantage of pro-ethical AI (capitalising on the opportunities whilst mitigating the risks), we must be ethically mindful. This talk will cover what this means, and how we operationalise the concept.

Biographies and abstracts

Ms Karima Noren, Co Founder of The Privacy Compliance Hub, The Privacy Compliance Hub

Ms Karima Noren is the Co Founder of The Privacy Compliance Hub - A platform which enables organisations to establish, maintain and demonstrate a culture of continuous privacy compliance in order to successfully protect the personal information of people and comply with the law.

Karima is the former Head of Legal for Google in Emerging Markets. She is a member of the Society of Computers & The Law sub committee on data protection. She has Extensive, hands on experience of implementing compliance programmes for multiple companies.

Karima is passionate about taking the complicated and making it simpler.

A culture of continuous privacy compliance

The 4th Industrial Revolution is all about data. Personal information continuously flows through every part of a business, between businesses and around the world in ever more personalised and targeted ways. There is more of it, it is shared everywhere and it is used more intensively. At the same time, individuals are becoming more privacy conscious and are demanding better privacy protection. Regulators now have the powers to act. With fines for non compliance which can run into the millions, companies have to be ready.

In societal terms, privacy is of increasing importance. Whether it is the misuse of personal data for the purpose of interfering in the democratic process (Facebook/ Cambridge Analytica); the unlawful development of contact tracing apps to contain the spread of coronavirus; or the use of facial recognition technology by commercial enterprises and law enforcement alike to track individuals; the importance of respecting a person's right to privacy is greater than it has ever been.

Let's talk about privacy because it matters. Greatly.

Dr Liz O'Riordan, Retired Consultant Breast Surgeon and Patient Advocate

Dr Liz O'Riordan was a 40-year-old consultant breast surgeon when she was diagnosed with stage 3 breast cancer herself. She had a locoregional recurrence in 2018 which forced her to retire. She has become a passionate patient advocate, writing 'The Complete Guide to Breast Cancer' with Prof Trish Greenhalgh. She speaks internationally about how to improve the quality of patient care and as a keen interest in digital health

What do the patients think?

Liz will talk about what artificial intelligence means to the general public and to patients, and the importance of making sure that patients are involved at every step of development of any AI product.

Biographies and abstracts

Dr Orit Wimpfheimer, Chief Medical Officer, Zebra Medical Vision

Dr Orit Wimpfheimer is a Diagnostic Radiologist who founded her Israel based teleradiology company in 2001 and has joined Zebra first as clinical director and now as Chief Medical Officer to bring her experience to direct and promote AI technology.

Opportunistic identification of coronary calcium on non-cardiac CTs to flag patients at risk of future cardiovascular event

Coronary artery disease (CAD) accounts for 50% of all cardiovascular related deaths, which remains the leading cause of death worldwide. As atherosclerotic disease is often asymptomatic, in 30-50% of individuals an acute myocardial infarction is the first indicator of disease. Preventative strategies focus on identifying and risk stratifying patients to facilitate lifestyle and pharmaceutical interventions, both shown to significantly reduce incidence of future cardiovascular events. The use of dedicated ECG-gated cardiac Computed Tomography (CT) to quantify coronary artery calcium (CAC) increases the accuracy of cardiovascular disease screening and improves the prediction of a future cardiovascular event. However, cardiac gated CTs are dedicated studies and are typically used to visualize the heart, thus this cohort of patients are already under investigation for cardiovascular disease, as opposed to non-cardiac-gated CTs that are being performed for many indications, from acute pneumonia to lung cancer screening. This presents a unique opportunity to opportunistically screen a much larger patient cohort for undiagnosed CAC.

We generated a convolution neural network based device to detect and classify the coronary artery calcium burden on non-cardiac-gated CT scans performed for a myriad of clinical indications. The device was trained on over 4,000 coronary lesions and classifies patients into mild, moderate or severe coronary calcium burdens, based on a scoring similar to the traditional Agatston system used on cardiac-gated CTs. Initial performance showed promising results with overall agreement between the established ground truth category and the device output of 89.0% [95%CI 85.6% - 92.2%]. Of particular interest during development were the challenges faced due to motion artifacts from the non-ECG-gated image capture, especially in distinguishing coronary artery stents from severe calcifications.

Opportunistic screening for cardiovascular risk has huge potential to guide more patients into appropriate care and treatment, aiding to tackle this global crisis.

Biographies and abstracts

Dr Hugh Harvey, Managing Director, Hardian Health

Dr Hugh Harvey is a board certified radiologist and clinical academic, trained in the NHS and Europe's leading cancer research institute, the ICR, where he undertook his research MD. Previously a consultant radiologist at Guys & St Thomas', he has held lead roles at two UK AI start-ups, acted as co-chair of the government Topol Review into AI in healthcare, and is now director at Hardian Health, a health technology consultancy focussed on investment, regulation and delivery of technology into the NHS.

Mr Jeroen van Duffelen, COO and Co-Founder, Aidence

Mr Jeroen van Duffelen is COO and co-founder of Aidence. Jeroen's entrepreneurial spirit led him to teach himself software engineering and starting his own company commercializing an online education platform. He then tried his hand in the US startup ecosystem where he joined a rapidly scaling cloud company. Jeroen returned to Amsterdam where he ran a high-tech incubator for academic research institutes, it is here Jeroen first got his taste for applying AI to healthcare.

Why Jeroen is excited about applying AI to the healthcare industry: "There have been many claims about technologies reducing the cost of healthcare. I believe AI is the first one that will actually be able to do this, through automating labor-intensive tasks."

Jeroen's vision Aidence & Veye Chest: "Aidence will develop an AI suite that will fully automate the basic & tedious tasks that radiologists have to perform on a daily basis, allowing them to focus on the most important and difficult tasks."

Dr Saurabh Jha , Associate Professor of Radiology, University of Pennsylvania

Saurabh Jha (aka @RogueRad) is a British-trained medic and American-trained radiologist. He writes extensively about politics, culture, medicine, health policy as well as artificial intelligence.

Value of AI to patients

The purpose of any medical technology is to improve patient care. Yet it may be hard for patients to judge, qualitatively and quantitatively, if technology improves their care. How will patients know if AI is valuable? How will doctors know if patients value AI?

Biographies and abstracts

Mr Riaz Rahman, VP Healthcare Global, Brainomix

Mr Riaz Rahman is Vice President Healthcare Global at Brainomix. Holding degrees from Kings College and Imperial College London he has held a number of senior management and commercial roles in Pharmaceuticals, Management Information, Strategic Health Consultancy and MedTech working across both public and private healthcare.

At Brainomix he leads the development and execution of international commercial strategies. He has been involved with the company's rise from its very first client to over 300 hospitals worldwide and 400,000 stroke patients treated using the Brainomix Stroke AI platform.

Managing key relationships with clinicians, policymakers and key opinion leaders across multiple countries he is deeply passionate about delivering demonstrable success to the clinical frontline. A flagship UK project he is currently leading in collaboration with the NHS, NHSX and the Oxford AHSN is the accelerated deployment of the Brainomix Stroke AI platform across 30 NHS stroke centres and 5 stroke ISDN's to facilitate an independent health economic impact assessment of the technology used at scale.

Contact: rrahman@brainomix.com

Stroke AI and the NHS: Augmenting the clinical stroke pathway & impact assessment

In the UK, stroke is the most common serious neurological disease (incidence 115-150 per 100,000 population) and a leading cause of death.

The Brainomix Stroke artificial intelligence (AI) platform, designed for the acute pathway, is currently being used in 40 NHS stroke centres with a further 30+ centres under active deployment. This session will showcase the challenges and opportunities of introducing the technology into the NHS; demonstrate the real-world impact to the stroke clinical pathway; and provide an insight into a multi-year multi-regional independent evaluation of the technology to improve the delivery of acute stroke care.

Biographies and abstracts

Dr Kiruba Nagaratnam, Consultant Stroke Physician and Clinical Lead for Stroke Medicine, The Royal Berkshire Hospital, Reading

Dr Kiruba Nagaratnam is a stroke physician and geriatrician, and the clinical lead for stroke medicine at the Royal Berkshire NHS Foundation Trust. He is passionate about incorporating advancing technology into the care of stroke survivors. He has been instrumental in adopting artificial intelligence and digital technology in the acute stroke pathway in the Thames Valley region. The AF Champions programme he jointly led with the primary care physicians in West Berkshire and Oxford Academic Health Science Network has improved the detection and management of atrial fibrillation in the region. He is also involved in research projects incorporating immersive virtual reality and artificial intelligence in stroke rehabilitation.

Dr Amrita Kumar, AI Clinical Lead & Consultant Radiologist, Frimley Health NHS Foundation Trust

Amrita has been recently named 2020 Top 50 Innovator in UK for leading innovation within the NHS transforming healthcare and research with the use if AI technology. She was appointed as a substantive Consultant Radiologist at Frimley Health in 2013 with a subspecialist interest in breast cancer screening.

She has a keen interest in Artificial Intelligence and has set up trust wide research collaboration to implement a digital enabled AI infrastructure, as well as implement novel AI software for improved detection of cancer.

Ultimately, her aim is to have a positive social impact on cancer screening policy and practice within the NHS integrated with AI, working in conjunction with various stakeholders with a mission statement of patient-focused healthcare. She has also been appointed at the British Institute of Radiology National Clinical Intelligence & Informatics Committee to look at the national integration and implementation of AI into clinical practice.

Biographies and abstracts

Dr Neelan Das, Senior Consultant Cardiovascular and Interventional Radiologist, East Kent Hospitals University Foundation Trust

Dr Neelan Das is a Senior Consultant Cardiovascular and Interventional Radiologist at Kent and Canterbury Hospital.

He is leading on the implementation of artificial intelligence tools within the division of imaging at East Kent Hospitals Foundation Trust and has published on the ethics of AI in radiology.

Neelan also leads on research and is the local principle investigator in several cutting edge trials utilising Interventional radiology techniques, medical imaging and advanced technology.

In his spare time, he enjoys his family as well as pondering how the world might look in a hundred years.

Reducing radiologist workload with AI-assisted chest Xray interpretation

An evaluation of 1040 chest xrays using the QXR AI platform was undertaken at East Kent Hospitals NHS Foundation Trust. They were re reviewed by two consultant radiologists. The software analysed the xrays. Sensitivity compared to the radiologists was found to be high.

Conclusion: The QXR platform has a high sensitivity and appears likely to be able to streamline reporting of CXRs therefore utisiling a radiologist's time more effectively.

Mr Dominic Cushnan, Head of AI Imaging, NHSX

Mr Dominic Cushnan joined the NHS in 2014 and is currently Head of AI Imaging for the NHS AI Lab. Dominic has a technical background having founded a technology company specialising in computer vision and human interface technologies. Since his appointment in the NHS AI Lab, January 2020, he has developed an AI Buyers guide for healthcare and co-developed the national covid chest imaging database for the training and testing of AI models.

Biographies and abstracts

Dr Andrew Leary, Clinical Innovation Adoption Senior Manager, Oxford Academic Health Science Network

Dr Andrew Leary has an extensive healthcare background with unique experience across clinical, applied technology and innovation roles. He has worked in diverse capacities from direct patient care as a doctor to multi-centre collaboration, evaluating health technologies and delivering complex change.

Recent responsibilities at Oxford AHSN include the co-development and management of real-world evaluations into acute stroke artificial intelligence decision support tools across a number of integrated stroke delivery networks for the national Artificial Intelligence in Health and Care Award and for NHS England South East; and leading the regional implementation of the national Emergency Laparotomy Collaborative Programme to standardise best practice in emergency laparotomy surgery across the Thames Valley region.

Andrew is also an NHS Clinical Entrepreneur.

Mrs Tracey Marriott, Director of Clinical Innovation Adoption, Oxford Academic Health Science Network

Mrs Tracey Marriott is an MBA qualified commercial and transformational change professional with over 15 years' experience within the private and public health sector. She has extensive experience of delivering complex programmes regionally, nationally and across Europe (budget values up to £1.6billion). Tracey joined the Oxford AHSN in 2013 and heads its work to identify and implement evidence-based clinical innovation. She works closely with the Oxford AHSN's Strategic and Industry Partnerships team to support the NHS and industry with adoption of innovation.

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