

Monday, 22 June 2020

Oral session 1

09.00-10.40 Conference opening and introductory session – Machine-learning-based segmentation and detection in medical imaging

Chair: Jonny Hansson

09.00-09.30 **Welcome and conference opening**

09.30-10.00 **Invited speaker**

[O1-1] The Swedish CARDioPulmonary bioImage Study (SCAPIS) – need for image analyses and machine learning in large population trials

Göran Bergström (University of Gothenburg and Sahlgrenska University Hospital)

Sweden

10.00-10.15 **[O1-2] Pulmonary nodule detection in chest CT using a deep learning-based reconstruction algorithm**

C Franck, M Spinhoven, A Snoeckx, H El Addouli, S Nicolay, A Van Hoyweghen, P Deak and F Zanca
Belgium and Germany

10.15-10.30 **[O1-3] Development of deep learning-based segmentation for ¹⁷⁷Lu SPECT/CT based kidney dosimetry**

J Khan, T Rydén, M Van Essen, J Svensson and P Bernhardt

Sweden

10.30-10.40 **Presentation from exhibitors**

Mediel

10.40-11.00 **Social and exhibitor interaction (see separate Zoom meeting)**

Oral session 2

11.00-12.30 Radiation dose and image quality in computed tomography

Chair: Åse A Johnsson

11.00-11.15 **[O2-1] Clinical image quality evaluation studies in abdominal CT: effect of Advanced Modeled Iterative Reconstruction (ADMIRE) on potential dose reduction**

B Kataria, J Nilsson Althén, Ö Smedby, A Persson, H Sökjer and M Sandborg

Sweden

11.15-11.30 **[O2-2] Extra-colonic findings – identification at low-dose CTC**

F Thorén, Å A Johnsson, J Brandberg, M Hellström and M Båth

Sweden

11.30-11.45 **[O2-3] Effective dose and feasibility of scouts using real and alternative settings on different CT systems**

T M Svahn and J C Ast

Sweden

11.45-12.00 **[O2-4] Evaluating proposed dose and noise levels for chest CT**

A Dedulle, H Bosmans, J Jacobs and N Fitousi

Belgium

12.00-12.15 **[O2-5] Evaluation of the image quality in abdominal CT protocols based on Swiss diagnostic reference levels**

D Racine, A Viry, C Aberle, T Lima, R Treier, S T Schindera and F R Verdun

Switzerland

12.15-12.30 **[O2-6] Is the standard age classification correct for paediatric head CT examinations?**

A Dedulle, K Houbrechts, J Jacobs, H Bosmans and N Fitousi

Belgium

12.30-12.40 **Presentation from exhibitors**

Philips

12.40-14.00 **Social and exhibitor interaction/Lunch (see separate Zoom meeting)**

Oral session 3

14.00-15.40

Mammography and tomosynthesis

Chair: Magnus Båth

- 14.00-14.45 **Invited speaker**
[O3-1] Breast tomosynthesis in screening – from optimization to a large screening trial. 14 years of experience from Malmö, Sweden
Sophia Zackrisson (Lund University and Skåne University Hospital)
Sweden
- 14.45-15.00 **[O3-2] The effect of dose reduction on the reproduction of anatomical structures in chest tomosynthesis**
M Mirzai, C Meltzer, J Vikgren, R Rossi Norrlund, B Gottfridsson, Å Allansdotter Johnsson, M Båth and A Svåkvist
Sweden
- 15.00-15.15 **[O3-3] Visual grading assessment and rejection rate evaluation for digital mammography**
G Hellgren, M Dustler, S Zackrisson, A Bejnö and A Tingberg
Sweden
- 15.15-15.30 **[O3-4] Assessment of image quality in digital mammography: from model observers to detective quantum efficiency evaluation**
E Ramírez, S O Benavides, J Abella and W Lopera
Colombia
- 15:30-15:40 **Presentation from exhibitors**
Eizo Nordic

15.40-16.00

Social and exhibitor interaction (see separate Zoom meeting)

Oral session 4

16.00-17.15

Estimation of patient radiation doses in radiology

Chair: Charlotta Lundh

- 16.00-16.15 **[O4-1] Retrospective analysis of whole body skeleton conventional radiography in myeloma staging**
L Weber and M Geijer
Sweden
- 16.15-16.30 **[O4-2] Comparison of organ doses in whole-body computed tomography scans of paediatric and adult patient models, estimated by different methods**
L C Chipiga, A V Vodovatov, V Yu Golikov and C Bernhardsson
Russian Federation and Sweden
- 16.30-16.45 **[O4-3] Measurement of radiation-induced microvascular changes in the skin after Chronic Total Occlusion Percutaneous Coronary Intervention (PCI-CTO)**
E Tesselaar, P Vorel Macková, C Pagonis, S Saers, M Sandborg and M Ahle
Sweden
- 16.45-17.00 **[O4-4] Estimation of the effective doses from typical fluoroscopic examinations with barium contrast**
A V Vodovatov, V Yu Golikov, R R Akhmatdinov, I G Kamyshanskaya and C Bernhardsson
Russian Federation and Sweden
- 17.00-17.15 **[O4-5] Effective dose in paediatric interventional cardiology**
S Sarycheva
Russian Federation

17.15-17.30

Introduction to the poster session

Poster session 1

17.30-19.30

see separate list at the end of the programme

Chair: Patrik Sund

Tuesday, 23 June 2020

Oral session 5

09.00-10.30 **Optimisation of molecular imaging, absorbed dose estimates and radiation risk models** Chair: Peter Bernhardt

- 09.00-09.30 **Invited speaker**
[O5-1] Personalised treatment planning for molecular radiotherapy.
Part 1: The Good – benefits and opportunities
Glenn Flux (Royal Marsden Hospital and Institute of Cancer Research)
United Kingdom
- 09.30-09.45 **[O5-2] Evaluation of the image quality in Monte Carlo based SPECT/CT reconstruction of ¹¹¹In-octreotide**
E Wikberg, M van Essen, T Rydén and P Bernhardt
Sweden
- 09.45-10.00 **[O5-3] IDAC-Alpha – an alpha dosimetry software for healthy tissue**
M Andersson, T Meyer, E Koumarianou and S Mattsson
Sweden
- 10.00-10.15 **[O5-4] Improved age and gender specific radiation risk models applied on cohorts of Swedish patients**
M Andersson, K Eckerman, D Pawel, A Almén and S Mattsson
Sweden
- 10.15-10.30 **[O5-5] X-ray and molecular imaging during pregnancy and breastfeeding – when should we be concerned?**
S Mattsson and S Leide-Svegborn
Sweden
- 10.30-10.40 **Presentation from exhibitors**
Tesika Teknik

10.40-11.00 **Social and exhibitor interaction (see separate Zoom meeting)**

Oral session 6

11.00-12.30 **Software and online tools enabling studies of image quality and radiation dose** Chair: Patrik Sund

- 11.00-11.15 **[O6-1] Virtual clinical trials in medical imaging optimization**
P R Bakic, B Barufaldi, M Dustler, A D A Maidment, S Zackrisson and A Tingberg
USA and Sweden
- 11.15-11.30 **[O6-2] ViewDEX 3.0 – recent development of a software application facilitating assessment of image quality and observer performance**
A Svalkvist, S Svensson, T Hagberg and M Båth
Sweden
- 11.30-11.45 **[O6-3] A novel online framework for creating and performing reader studies in medical imaging**
M Dustler, G Hellgren, P Bakic, P Kragsterman, J Norling, I Servan Rivero and S Zackrisson
Sweden and USA
- 11.45-12.00 **[O6-4] Evaluation of VGC Analyzer by comparison with gold standard ROC software and analysis of simulated visual grading data**
J Hansson, L G Månsson and M Båth
Sweden
- 12.00-12.15 **[O6-5] An innovative personal online dosimetry system using computational calculations for personnel in interventional radiology**
M Andersson, U O'Connor, M Abdelrahman, A Camp, V García, M Amor, M Ginjaume, F Vanhavere and A Almén
Sweden, Ireland, Belgium and Spain
- 12.15-12.30 **[O6-6] Clinical optimization in fluoroscopic and interventional radiology by retrospective studies of DICOM Radiation Dose Structured Reports**
C Granberg, M Hellström and J Andersson
Sweden
- 12.30-12.40 **Presentation from exhibitors**
Olórin

| | |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12.40-14.00 | Social and exhibitor interaction/Lunch (see separate Zoom meeting) |
| <i>Oral session 7</i> | |
| 14.00-15.30 | Addressing the potential for improved education, diagnostics and therapy Chair: Peter Bernhardt |
| 14.00-14.30 | Invited speaker [O7-1] Personalised treatment planning for molecular radiotherapy. Part 2: The Bad – risks and threats Glenn Flux (Royal Marsden Hospital and Institute of Cancer Research) <i>United Kingdom</i> |
| 14.30-14.45 | [O7-2] Evaluation of the quality of education in courses on radiation protection in Germany P Strauß, R Eßeling, G Stamm and H Lenzen <i>Germany</i> |
| 14.45-15.00 | [O7-3] Evaluation of the quality of education in manufacturer’s initial trainings for radiographic devices in Germany P Strauß, R Eßeling, G Stamm and H Lenzen <i>Germany</i> |
| 15.00-15.15 | [O7-4] Improving image quality by increasing the amount of light in the reading room P Sund <i>Sweden</i> |
| 15.15-15.25 | Presentation from exhibitors Sectra Sverige |
| 15.25-15.40 | Announcements |
| 15.40-16.00 | Social and exhibitor interaction (see separate Zoom meeting) |
| <i>Oral session 8</i> | |
| 16.00-17.15 | Quality control, quality assurance and characterisation of medical imaging systems Chair: Angelica Svalkvist |
| 16.00-16.15 | [O8-1] A Swedish implementation of manufacturer specific quality assurance for radiological equipment H Sundström, J Sjöberg, C Granberg and J Andersson <i>Sweden</i> |
| 16.15-16.30 | [O8-2] Automated QC for intervention system and mammography system T Visanuyanont, P Gluchowski, T Moberg and E Hillberg <i>Sweden</i> |
| 16.30-16.45 | [O8-3] Signal-to-noise ratio rate measurement in fluoroscopy for quality control and teaching good radiological imaging technique H Elgström, E Tesselaar and M Sandborg <i>Sweden</i> |
| 16.45-17.00 | [O8-4] Evaluation of spectral imaging with respect to iodine-concentration quantification and HU-values for monoenergetic reconstructions on six CT scanners from two vendors N Sogge, I H R Hauge, H K Andersen, K N Bolstad, A Dybwad, S Jenu, H E S Pettersen, S Flatabø and A C T Martinsen <i>Norway</i> |
| 17.00-17.15 | [O8-5] Frequency response and distortion properties of reconstruction algorithms in computed tomography J Larsson, M Båth and A Thilander Klang <i>Sweden</i> |
| 17.15-17.30 | Introduction to the poster session |
| Poster session 2 | |
| 17.30-19.30 | see separate list at the end of the programme Chair: Patrik Sund |

Wednesday, 24 June 2020

Oral session 9

08.30-10.00

AI and machine learning for optimisation of medical imaging

Chair: Magnus Båth

08.30-09.15

Invited speaker

[O9-1] From image quality to care outcome – evolved optimisation process supported by AI/Deep Learning

Mika Kortnesniemi (HUS Medical Imaging Center, University of Helsinki)

Finland

09.15-09.30

[O9-2] CT image denoising with a novel deep learning-based reconstruction technique: a phantom study

C Franck, P Deak, G Zhang and F Zanca

Belgium and Germany

09.30-09.45

[O9-3] The deep learning algorithm ConvIP for improvement of ¹⁷⁷Lu SPECT images reconstructed with sparse acquired projections

T Rydén, M van Essen, I Marin, J Svensson and P Bernhardt

Sweden

09.45-10.00

[O9-4] AI and deep learning in diagnostic radiology – is this the next phase of scientific and technological development?

B M Moores

United Kingdom

10.00-10.10

Presentation from exhibitors

Fujifilm Nordic

10.10-10.30

Social and exhibitor interaction (see separate Zoom meeting)

Oral session 10

10.30-11.45

Strategies for optimisation of medical imaging

Chair: Lars Gunnar Månsson

10.30-10.45

[O10-1] Underexposures are a major image quality problem in musculoskeletal radiography

M Geijer

Sweden

10.45-11.00

[O10-2] Optimisation of computed tomography in an university hospital radiology department: how to manage change

J Brandberg, H Milde and A Thilander Klang

Sweden

11.00-11.15

[O10-3] Optimisation of examination protocols for computed tomography – a tentative working process

J Elgqvist, A Svåkvist and A Thilander Klang

Sweden

11.15-11.30

[O10-4] Aligning video- and structured data for imaging optimisation

J Ivarsson, A Almén, M Falkenberg, C Lundh and M Båth

Sweden

11.30-11.45

[O10-5] A model for evaluating the use of imaging in image guided interventional procedures - possible implications on optimisation of radiation protection

C Lundh, J Ivarsson, M Falkenberg, M Båth and A Almén

Sweden

11.45-12.00

Announcements and conference closing

Chair: Jonny Hansson

Poster session 1 – Monday, 22 June 2020, 17.30-19.30

[P-1] Semi-automated 3D segmentation of pelvic region bones in CT volumes for the annotation of machine learning datasets

J Jeuthe, J C González Sánchez, M Magnusson, M Sandborg, Å Carlsson Tedgren and A Malusek
Sweden

[P-2] Segmentation of pelvic region bones in medical dual-energy computed tomography volumes using the 3D U-Net

J C González Sánchez, M Magnusson, M Sandborg, Å Carlsson Tedgren and A Malusek
Sweden

[P-3] Accuracy of CT numbers obtained by DIRA and Monoenergetic Plus algorithms in dual-energy computed tomography

A Malusek, M Magnusson, M Sandborg, G Alm Carlsson, L Henriksson and Å Carlsson Tedgren
Sweden

[P-4] Optimal selection of base materials for accurate dual-energy computed tomography: comparison between the Alvarez-Macovski method and DIRA

M Magnusson, G Alm Carlsson, M Sandborg, Å Carlsson Tedgren and A Malusek
Sweden

[P-5] On the possibility to resolve gadolinium- and cerium-based contrast agents from their CT numbers in dual-energy computed tomography

A Malusek, L Henriksson, P Eriksson, N Dahlström, Å Carlsson Tedgren and K Uvdal
Sweden

[P-6] Comparison of metal artefacts using different dual-energy CT techniques

E Pettersson, A Bäck and A Thilander-Klang
Sweden

[P-7] Investigation of a novel metric for direction of distortion power of nonlinear medical imaging algorithms

J Larsson, M Båth and A Thilander Klang
Sweden

[P-8] Creating an energy and angle independent 4π silicon dosimeter for quality control of CT/CBCT- using a CAD and MC simulation approach

L Herrnsdorf, M Andersson, M Gunnarsson and S Mattsson
Sweden

[P-9] Quantitative evaluation of a photon-counting mammography and direct-digital mammography unit prior to 3D imaging

T M Svahn, J Riffel, R Gordon and M Hartbauer
Sweden, Austria, Germany and USA

[P-10] Influence of arm positions on effective dose during CT scans of neck, chest, abdomen/pelvis on different CT units

T M Svahn and J C Ast
Sweden

[P-11] Performance of ultra-low dose computed tomography (CT), standard dose CT and digital radiography: an anthropomorphic lung phantom study

T M Svahn, T Sjöberg, K Shahgaldi and M Parenmark
Sweden

[P-12] Comparison and optimization of imaging techniques of multiple digital radiography systems for scoliosis

T M Svahn, K Shahgaldi, D Axbåge, D Dackell and M Stenström
Sweden

[P-13] Evaluation of image quality of skull radiographs using European criteria for quality assessment as a reference guide

D Z Joseph, A A Aminu, I Garba, M S Umar and S S Bature
Nigeria

[P-14] The relationship between mean glandular dose and compressed breast thickness as a panacea for dose optimisation in mammography

J Josephine, C C Nzotta, D Z Joseph
Nigeria

[P-15] Quantification of pulmonary pathology in cystic fibrosis – comparison between digital chest tomosynthesis and computed tomography

C Meltzer, M Gilljam, J Vikgren, R Rossi Norrlund, K Vult von Steyern, M Båth and Å Allansdotter Johnsson
Sweden and Norway

[P-16] Comparison of two chest tomosynthesis cystic fibrosis scoring systems and High Resolution Computed Tomography Brody scoring

R Rossi Norrlund, C Meltzer, C Söderman, Å Allansdotter Johnsson, J Vikgren, D Molnar, M Gilljam and M Båth
Sweden

[P-17] Evaluation and optimization of image quality from the quality controls of digital radiography equipment in a diagnostic imaging service at Fundación Valle del Lili

E J Durán, S Benavides, E Ramirez, R Chamorro, A Quiroga and W Lopera
Colombia

Poster session 2 – Tuesday, 23 June 2020, 17.30-19.30

[P-18] Radiological implications of radiation dose distribution in paediatric patients undergoing diagnostic x-ray examination in some Nigerian teaching hospitals

C A Aborisade
Nigeria

[P-19] Dose evaluation and proposal of local diagnostic reference levels in paediatric cardiac catheterization

M Hultenmo, A Nygren, B Söderberg and H Wåhlander
Sweden

[P-20] Establishment of diagnostic reference levels for radiography examinations in Bosnia and Herzegovina: results from IAEA project

A Beganović, A Drljević, I Lasić, S Galić, E Đedović, L Ibrišimović, J Davidović, G Vuleta, A Nuhan, A Duraković, J Praskalo, J Marinković and J Vassileva
Bosnia and Herzegovina and Austria

[P-21] Establishment of diagnostic reference levels for computed tomography in Bosnia and Herzegovina: results from IAEA project

A Beganović, A Drljević, I Lasić, S Galić, E Đedović, L Ibrišimović, J Davidović, G Vuleta, A Nuhan, A Duraković, J Praskalo, J Marinković and J Vassileva
Bosnia and Herzegovina and Austria

[P-22] Exposure of the Swiss population in 2018 by medical X-rays

A Viry, J Bize, P R Trueb, B Ott, S Schindera, D Racine, F R Verdun and R LeCoultre
Switzerland

[P-23] Patient doses and optimisation in common dental radiographic and panoramic examinations

I Shatskiy
Russian Federation

[P-24] Influence of the patient weight on the conversion coefficients from dose-area product to the effective dose

V Golikov

Russian Federation

[P-25] Evaluation of radiation doses using cone beam computed tomography in endovascular aortic repair and scoliosis procedures

L Strandberg, P Jonasson and M Larsson

Sweden

[P-26] Assessment of patient's and occupational exposure from PET/CT with various radiopharmaceuticals

H Salah, F H Mayhoub, A Sulieman, H I Al-Mohammed, M Alkhorayef and B Moftah

Saudi Arabia, Sudan and United Kingdom

[P-27] The potential to use TLD measurements in purpose to validate the occupational radiation protection at the department of nuclear medicine

I Nilsson, J Himmelman, J Khan and J Dalmo

Sweden

[P-28] A survey of occupational eye dose levels measured at collar height in image-guided interventions – a method for monitoring and identification of the requirement of more accurate measurements

M Larsson, P Jonasson and C Lundh

Sweden

[P-29] Evaluation of annual radiation exposure in cardiac catheterization department in Saudi Arabia

A Sulieman, F Mayhoub, H Salah, M Alkhorayef, H Al-mohammed and B Moftah

Saudi Arabia

[P-30] Staff dose evaluation by application of radiation protection during ERCP procedures performed with a mobile C-arm

A Österlund, W Drohn, H Hödlmoser, M Greiter, M Schmid and H-E Källman

Sweden and Germany

[P-31] Radiation leakage in two CT rooms due to construction failure

M Bergfjord and A Mamour

Sweden

[P-32] High-sensitive biomarkers of blood total antiradical activity in mice exposed to gamma irradiation

T Sanikidze, G Ormotsadze, I Chkhikvishvili, E Shekiladze, M Gogebashvili, S Kalmakhelidze, E Lomadze and M Buleishvili

Georgia

[P-33] Offline adaptive radiation therapy in the treatment of head and neck cancer using MIMvista Software

Y Herrassi, Y Raoui, S Moujahid, S Jebbari, R Sebihi and K Tanouti

Morocco

[P-34] Evaluation of Iterative Model-Based Reconstruction (IMR) in abdominal Computed Tomography imaging at two different dose levels

E Hettinger, M-L Aurumskjöld, H Sator, F Holmquist, D Svärd and P Timberg

Sweden

[P-35] Optimisation of radiation dose to paediatric patients using ^{SURE}Exposure 3D low and high image quality techniques

A Sulieman, H Adam, A Elnour, M Alkhorayef and D A Bradley

Saudi Arabia, Sudan, United Kingdom and Malaysia