



2nd Europe-China Health Summit on Medical Innovation, Medical Informatics, Medical Imaging and Medical Technology Transfer

Speaker Profile and Abstract book

Saturday October 17, 2020: Preconference Tutorials

PT1: Medical Robotics: Design Considerations and Research Tools (医疗机器人：设计方针及研究工具)

08:00-09:30 Brussels / 14:00-15:30 Beijing

The structure of this tutorial will be as follows:

- General Overview
- Research Progress (History, Examples, Current Stage, Challenges)
- Robot configurations (Classical serial arm, Non-classical serial arm, Parallel arm, Passive/active arm, Continuum robot, Soft robot, Hybrid system)
- Robot Design (Actuator, Mechanical transmission, Microcontroller, 3D printing, Example Tools: CAD software, Misumi Platform, Arduino, Raspberry Pi, and etc.)
- Force Sensing (Principles, Examples, Applications)
- Control (Kinematics, Human-robot interactions, Force & position control, Active & Passive compliance, Example Tools: CoppeliaSim, ROS, Matlab toolbox)
- Pre-planning and Navigation (Segmentation, Registration, Pre-planning, Tracking, Calibration, Example Tools: ITK-SNAP, 3D Slicer, VTK, PLUS, and etc.)
- Safety (Industrial v.s. Medical, Human factor, Clinical constrain, Rules: European & China, Strategies, Example Tools: Hazard traceability & risk evaluation matrix, FMECA/P-FMECA)

Speaker: Shuangyi Wang, Associate Professor, Chinese Academy of Sciences, Institute of Automation (CASIA)



PT2: Findable Accessible Interoperable Reusable (FAIR) Health Data Sets with HL7 FHIR: New Standards to support Health Research

10:00-11:30am Brussels /16:00-17:30 Beijing

This session will introduce FAIR health data sets and associated maturity models. Attendees will learn about measuring the degree of Findability, Accessibility, Interoperability, and Reusability (FAIR). After introduction to Data FAIRness and the FAIR4Health Project, the FAIRness indicators under the FAIR maturity model developed by RDA will be presented. Then, the FAIRification tools developed in the FAIR4Health project used for distributed data mining will be demonstrated. Finally, the emerging FHIR standards supported by the HL7 exploratory project on HL7 FHIR ways to deliver FAIR health data sets, "FAIRness for HL7 FHIR" will be presented with an invitation to participate and contribute. The session is organized by FAIR4Health project and supported by EFMI, RDA, and HL7 Europe.

Speakers:

Catherine Chronaki, HL7 Europe, EFMI, Belgium and Greece



Esther Thea, IMISE Leipzig, Germany



Alicia Martínez García, Andalusian Health Service, Spain



Alicia Martínez García. PhD in software engineering (University of Seville). She is researcher in the Group of Research and Innovation in Biomedical Informatics, Biomedical Engineering and Health Economy (Institute of Biomedicine of Seville). She is participant in lot of national and international research projects, and specialized in interoperability, software engineering, clinical decision support tools, health informatics standards, FAIR principles, and model-driven engineering. She is executive co-coordinator of FAIR4Health project (reference 824666, funded by the European Commission), project with objective is to facilitate and encourage the EU Health Research community to apply FAIR principles, share and reuse their datasets derived from publicly funded research initiatives through the demonstration of the potential impact that such strategy will have on health outcomes and health research. She is reviewer of scientific papers in Journal of Biomedical Informatics and Applied Computing and Informatics (Elsevier), and Journal of Medical Internet Research (JMIR Publications).

She is member of CTN139 committee in AENOR (Agencia Española de Normalización). She is member of RDA (Research Data Alliance). She is collaborator with HL7 Spain, and member of the scientific committee in Jornadas Nacionales de Informática Sanitaria en Andalucía. She is author of scientific papers in national and international scientific journals, and communications in national and international conferences.

Mert Gençtürk SRDC, Turkey



Anil Sinaci, SRDC, Turkey



Oya Beyan, Research Data Alliance, Germany

Giorgio Cangilioli, HL7 Europe, HL7 Italy, Belgium and Italy



PT3. Healthcare Innovation in the Post Pandemic Era

12:00-13:30 Brussels /18:00-19:30 Beijing

Speaker: Professor Shanhong Mao, Capital Medical University



Dr. Mao is a professor and PhD supervisor (part time) at Biomedical Engineering School of Chinese Capital Medical University. He also serves Chief Counsellor and Visiting Fellow of Chinese Academy of Inspection and Quarantine Sciences. With more than 30 years of experiences in healthcare innovation and business development, Dr. Mao served as Global Head of Mfg. Science and Technology at Alcon (Novartis), and various of executive positions in fortune 500 companies e.g. Bausch&Lomb and 3M. His expertise spans pharmaceuticals, medical devices, artificial intelligence in healthcare, and material science. Dr. Mao also served as adjunct professor at UTA, there he created the “Innovation and New Product Development” course to teach UT students new product development skills encompassing healthcare market analysis and segmentation, crossing innovation “valley of death” , product concept development, product design, mfg. process design and development, preclinical and clinical studies, regulatory approval, IP, business plan and project management. This class is brought to CCMU and currently taught at graduate student level. Dr. Mao has 15 patents, and 40 peer reviewed papers. He received his MBA from Carlson School of Business at University of Minnesota, PhD from UC Berkeley, MSc from Tsinghua University and BA from Peking University.

Tuesday October 20, 2020: Nobel in Medicine and other Workshops

Will the next Nobel prize be in preventive medicine with quantum computing?

08:00 – 08:30 Brussels CET/14:00-14:30 Beijing

Speaker: Ebba Carbonnier, Swelife and Karolinska Institute



Ebba Carbonnier Portfolio Manager for Nationally Scalable Solutions at Swelife, a Strategic Innovation Programme within Life Science. Examples of some of the national projects within the portfolio are Cell- and Gene Therapy, Biobanking and Prevention of childhood obesity. Carbonnier was previously

KI's Programme Leader for a joint programme between KI and Stockholm County Council. The programme aimed to improve conditions for healthcare and research to enable the rapid transfer of knowledge to personalized prevention and treatment. Key components in the solutions delivered were semantic interoperability, standardized outcome measures and digitization. The programme encompassed five projects and 25 subprojects within the areas of Arthritis, Breast cancer, Diabetes and Heart Failure. Prior to KI, Carbonnier has 14 years of Management Consulting experience, ranging from daily management of teams to creating and implementing strategies for global companies. Managing large scale multinational projects at e.g. AstraZeneca, Microsoft and Sandvik, is an area where Carbonnier has extensive experience. Carbonnier holds an MSc and an MBA with a focus on Operations Management. Having lived/studied/worked in five countries apart from Sweden, has given Carbonnier an ability to handle situations and create results in complex environments. Carbonnier is also a guest lecturer at the Swedish Royal Institute of Technology (KTH) within System Engineering. Carbonnier, Göran Johansson and Per Sikora initiated a collaboration between WACQT, GMS and Swelife in the beginning of 2019 with the purpose of starting to identify Quantum Algorithms suitable for Metagenomics within Life Sciences. Focus in the long run is on Preventative Health in a Healthy-Risk-III perspective so that we do not merely go on spending 97% of resources in the healthcare sector on the Ill part.

One Digital Health Workshop

13:00-14:30 Brussels /19:00-20:30 Beijing

The One Digital Health (ODH) paradigm has been recently introduced to integrate a broad computer science perspective (Digital Health) with a systemic approach of health and life sciences (One Health) that covers human health, animal health and the surrounding environment. It becomes therefore critical to figure out how the future generations of informaticians are called to deal with the new scenarios stemming within such a broad panorama, addressing with a systemic approach its intrinsic complexity. At the same time, reaching out to citizens to build understanding and capacity to engage in health prevention and care activities with appropriate self-monitoring, control and collaboration contributes additional insights if addressing security and privacy concerns is a core part of the effort. This workshop aims to set the agenda for stepping up training of future ODH professionals in different regions (e.g. Europe and China) using digital health to build bridges between cultures, public health, care and wellness, and clinical research.

Program: The 90 minutes of the workshop will be articulated in three parts. The first one will be built around the 3 following short presentations: (i) Introducing core concepts OH, DH, and ODH, their perspectives and challenges from clinical, research and mainly educational perspectives; (ii) Introducing and discussing citizens' capacity and understanding of ODH; (iii) Discussing on training and educating the future generations of citizens' and particularly the ODH professionals, to deal with complex health problems, and how it can be done with PBL activities and awareness, in non-health academic curriculums. Then, an open discussion will take place about the importance and the challenges of citizens' awareness, teaching and training students to embrace ODH. We will encourage focus on health literacy and patient summaries, reflecting on recent use of antibiotics to fight infections when traveling away from home, and high-risk food consumption, as illustrations of generation of added value services (such as datasets). We will conclude by summarizing the reflections of the discussion groups and proposing next steps to further develop ODH. The interested prioritized actions will be taken account in the proposal of common researches and grant applications.

Speakers:

Dr. Arriel Benis PhD is Senior Lecturer at the Faculty of Technology Management. He is also head of the AURIS lab (Laboratory for Automation, Robotics, IoT and Analytics Intelligence for Smart Industrial Engineering lab and head of BIA Lab (Business Intelligence and Automation Lab, at HIT the Holon Institute of Technology, Israel.

Catherine Chronaki is secretary general of HL7 Europe and President Elect of the European Federation for Medical Informatics. A Computer Engineer by training, her research interests are in the area of digital health, interoperability and standards.

Anne Moen is Professor at the University of Oslo, Norway and past chair of the European Federation for Medical Informatics.

Oscar Tamburis M.Eng., Ph.D. Università "Federico II" Napoli, DMVPA, LAVSE - CNR

Wednesday October 21, 2020: Day #1 - Health Informatics

Opening Keynote: Evaluating EHR Adoption across China's Hospital

21.10.2020 08:30-09:00 Brussels/ 14:00-14:30 Beijing

The motivation for installing EHR in China's hospitals was reviewed. The Model of EHR Grading (MEG) was used to assess the level of EHR adoption across mainland China's hospitals. MEG defines 39 EHR functions (e.g., order entry) which are grouped by 10 roles (e.g., inpatient physicians) and grades each function and the overall EHR adoption into nine levels (0–8). Besides the function factor, the EHR usage ratio and the data quality factors are also included in the assessment. The evaluating data across mainland China's hospitals from 2011 to 2019 was given. The result was analyzed. It shows that the EHR in most hospitals need improving and the assessment on EHR adoption can guide the hospital to build their EHR systems better.

Keynote Speaker: Liu, Haiyi, Professor, vice chair of CHIMA (China Hospital Information Management Association), and Chair of HL7 China



S1: Mobile health assessment and contact tracing apps – Digital Health Technology in Emergency Medicine

21.10.2020 9:00-11:30 Brussels/ 15:00-17:30 Beijing

S1.1. COVID 19 intelligent control system

TBA

Speaker: Bin Yang, deputy director of Institute for Internet Behavior, director of Research Center for Smart Healthcare, Tsinghua University (China)



Dr. Bin Yang is deputy director of Institute for Internet Behavior, director of Research Center for Smart Healthcare, Tsinghua University. And he is also executive director of China Research Hospital Association, vice president of Internet Hospital Branch, a fellow of Pingan AI Medical Research Center and director of equipment branch of China Medical Rescue Association. Dr. Yang's research interest lies in the establishment of network order, trust in cyberspace, and network architecture based on universal service, such as telemedicine and community service. He has participated in the planning and implementation of many national projects in the fields of industrial Internet, smart community, smart healthcare, smart government, network governance, and network security. A large number of application results have been formed in the fields of health monitoring management, telemedicine rescue and intelligent medical services. Now he is responsible for the construction of Tsinghua Intelligent Healthcare Framework.

S1.2 Co-management of COVID-19 in the NHS Scotland

TBA

Speaker: Chaloner Chute, Chief Technology Officer, Digital Health and Care Institute, NHS Scotland



Chal leads on our technical strategy and is responsible for the way we support and deliver technical innovation, by applying systems thinking and methodologies in support of our DHI innovation model. He is devoted to the idea that citizens can be empowered to take an active role in their own wellbeing. Chal believes digital health offers tools to achieve this, and the DHI has the fresh perspective necessary

to reconceive of the relationship between the citizen and those who might care for them. He brings a range of skills including a Master's in Healthcare Management & Leadership and a Master's in Public Health Policy: Health Systems. Five years working in digital innovation, 4 years working in Scottish Government public policy and has had project, programme, and portfolio management training and experience within the NHS. His specialism is in Clinical Decision Support, Health & care technology and unscheduled care.

S1.3 Role of Emergency medical Systems in Syndromic Surveillance

During this Covid-19 pandemic, we have seen how relevant is on-time information of the affected patients to make the right decisions. Public health services surveillance systems are based on the reporting of diagnostic cases, and this can generate a delay. Diagnosis sometimes requires a test that delays the reporting, or the disease is in the preliminary stages where tests are not so useful... Syndromic surveillance is based on symptoms and historical information to detect anomalies in the daily emergency activity; reports are on real time and represent the actual situation of the health system. Main complaints can be used as descriptors to classify the patients in generic groups of cases; this methodology has successfully been used during the flu epidemics. A revision of the pre-covid Syndromic surveillance based on emergency departments and the opportunities of this methodology during this pandemic is the objective of this presentation.

S1.4 The trial of smart medicine in emergency department during COVID-19

COVID-19 is an acute respiratory disease caused by the new human coronavirus (SARS-CoV-2). In the beginning of the pandemic, the emergency department was overcrowded, resulting in insufficient medical resources for a certain period of time. We tried to use the following ways to solve the problem, try to achieve the remote pre-examination and triage, the early screening of critically ill patients, data collection and management:

1. A machine learning-based model for survival prediction in COVID patients
2. Monitoring and Management of Home-Quarantined Patients With COVID-19 Using a WeChat-Based Telemedicine System
3. COVID-19 data collection and the management

Professor Wei Jie, Director of Teaching and Research, Department of Emergency and Critical Care Unit, Renmin Hospital of Wuhan University, China



Prof. Jie Wei, MD is Director of Teaching and Researching Section of Emergency and Critical Care medicine, Renmin Hospital of Wuhan university, P.R. China. She is also Vice president of China International Exchange and Promotion Association for Medical and Health care of Emergency

Medicine. P.R. China. A member of Standing Committee of China College of Emergency Physicians (CCEP), she is honorary Chairman of Hubei Province Emergency Medical Association, P.R. China. Her research is focused on the Cardiopulmonary cerebral resuscitation and post-resuscitation syndrome, Acute poisoning and the Management of Emergency clinical system. She has published more than 20 papers in reputed journals and has been serving as an editorial board member of Chinese Journal of Emergency Medicine journals (China), Journal of Clinical Emergency Medicine(China) and Journal of Internal Medicine Critical Care(China),etc.

Luis Garcia-Castrillo Riesgo



Born 1951 (Spain), trained Intensivist as medical specialty, Doctor in Medicine, MD, PhD, Associated Professor, Cantabria University. President EUSEM (2018-2020)

Professor Lyu Chuanzhu, Chairman of Chinese Society of Emergency Medicine, P.R. China



- Professor, Chief Physician, Doctor's supervisor
- Chairman of Chinese Society of Emergency Medicine
- Director of Key Laboratory of Emergency and Trauma of Ministry of Education
- Director of Research Unit of Island Emergency Medicine, Chinese Academy of Medical Sciences
- Secretary of the Party Committee of Hainan Medical University
- Vice President of Emergency Physicians Branch of Chinese Medical Doctor Association

S1.5 Errors in medicine: Technology as support for the doctor of the future?

Since the landmark report "to err is human" in 1999, human errors have become more and more the focus of attention. Misdiagnoses contribute to a large extent to these errors. One possible solution to this problem of "human errors" could be the use of technical aids for diagnoses and triage in emergency settings where resources are limited and quick decisions must be made often on a basis of

uncomplete facts. In reality, digital decision aids and triage tools are being used more and more widely by doctors and patients. But what about the evidence of these tools? Can these tools contribute to the fight against the COVID-19 pandemic? Can these technical aids support the doctor of the future or will they even replace him?

Thomas Sauter, University of Bern, and European Society of Emergency Medicine



Thomas Sauter is a trained emergency physician, medical educator with a master's degree in medical education and initiator and chair of the EUSEM working group "Digital Emergency Medicine". He was recently appointed to the endowed professorship in emergency telemedicine at the University of Bern, Switzerland. His research interests are digital decision support and triage as well as virtual reality in application in emergency medicine and education.

S1.6. Construction of an intelligent multi-point trigger and early warning system for emerging and unexpected infectious diseases based on big data of emergency medicine

The COVID-19 pandemic has highlighted the loopholes in the prevention and control systems of infectious diseases in various countries, especially for emerging and unexpected infectious diseases. How to use the intelligent multi-point trigger mechanism to prevent and control emerging and unexpected infectious diseases has become a public issue of great concern to governments and people in various countries. Actively capture big data from emergency department and social institutions, and automatically and real-time mining, analysis, monitoring, and early warning of big data, forming a sentinel system based on comprehensive research and judgment of data, so as to realize ultra-early warning, automatic triggering and reporting functions, will be one of the hotspots of medicine in future, especially emergency medicine.

S1.C1. Collaboration ePoster Pitch: Pandemic Preparedness: AI-driven Syndromic Surveillance of ILI using EMS data: A research proposal

Respiratory virus surveillance relies on sentinel reporting and laboratory-confirmed cases, requiring adequate recognition of clinical manifestations, testing and sufficient reporting. This harbours serious weaknesses, especially in case of emerging diseases. Further, traditional surveillance takes time, arguably the largest threat to containment.

All recent pandemics were characterised by respiratory infections and early warning of ILI outbreaks is of paramount importance for future public health emergencies. Syndromic surveillance of ILI in pre-hospital emergency medical service (EMS) data has been reported as timelier than monitoring hospital and laboratory data. Therefore, AI-driven syndromic surveillance of ILI using emergency medical dispatch call (EMDC) data and non-emergency medical call (NEMC) data is a unique, timely and cost-effective early warning solution augmenting conventional surveillance. Our research partner Corti developed a functional AI system for emergency medical services. Remarkably, they successfully tested an AI to detect patients at high risk of COVID-19 based on audio patient interviews. Our research aims to develop this technology into a syndromic surveillance tool to identify ILI outbreaks using EMDC and NEMC data.

Approach: Our proposed surveillance system combines the strengths of AI, geographic information systems, EMDC data and NEMC data into the singular opportunity to recognise EMS demand patterns and unexpected deviations thereof in near real-time. It localises outbreaks across administrative borders using spatial analysis and smoothly communicates alerts to public health authorities.

Cooperation with China: With NIDRIS and CIDAR, China has developed one of the most sophisticated early warning systems globally. Under the Sino-Dutch MoU Health Cooperation China CDC, Beijing CDC, the Chinese Academy of Sciences, RIVM and Maastricht University have a longstanding, flourishing collaboration. Learning from the Chinese surveillance experience would greatly enhance our proposal. We are therefore proposing to initiate a research project involving EU and Chinese EMS centres.

Role of Beijing Center for Disease Prevention and Control, P.R. China: Following the outbreak of severe acute respiratory syndrome (SARS) in 2003, a series of infectious disease surveillance systems including national notifiable infectious disease reporting system, enhanced infectious disease surveillance system, vector surveillance, laboratory-based surveillance and syndromic surveillance were launched in China. These systems have potential to provide timely analyses and early detections of outbreaks. Identifying early, accurate, and reliable signals of health anomalies and disease outbreaks are the main objective of public health surveillance. However, there are two main technical challenges: the data sourcing challenge and the analysis challenge. Passive surveillance system relies on accumulated cases, data which are often delayed and sometimes incomplete; thus, opportunities to contain the spread of diseases are often missed. In addition, traditional early warning models have challenges to trigger timely and accurate abnormal signals. In recent decades, artificial intelligence (AI) technologies, especially deep learning, have been widely applied to infectious disease outbreak detection and early warning, trend prediction, and public health response assessment. They have made positive impacts on timeliness, sensitivity, accuracy, and cost-effectiveness of early warning systems, augmenting traditional surveillance. Surveillance in this field has been enhanced significantly from these recent AI advances. Thus, we believe AI-driven surveillance will mitigate challenges both from the origin of data sources and analytics. Early warning surveillance systems for influenza in Beijing consist of influenza-like illness (ILI) cases surveillance and virological surveillance. Recently, AI has been exploratorily applied in the early warning analysis of influenza and hand-foot-and-mouth disease. However, it has not been used in the data collection. We had collaborated with Maastricht University in the field of early-warning and disease burden estimation of influenza for several years. We would like to build a deeper collaboration in AI-driven surveillance for influenza.

Role of the Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences (IGSNRR), P.R. China. The pandemic of COVID 19 sweeping the world brings unprecedented loss, reminding us to collaborate strongly particularly in public health (ie. infectious disease control). The Geo-technique (ie. GIS and spatial modelling) functions as powerful method in terms of epidemiological investigation, outbreak prediction, resources allocation and visualization during the COVID 19 in China comparing with SARS in 2003, and provides very helpful guidance for authorities to control the disease in China. As a powerful technique that can integrating multi-source heterogeneous data, geo-technique can be more useful for disease early warning, prevention and control, in particular combining with AI technologies. However, in China and in many countries in the world, due to the lack of data sharing from multi-sources (ie, health department, transportation) and the lack of suitable modellings, the timeliness and the accuracy for disease surveillance are still low. Combining geo-technique and AI, integrating multi-source data, the timeliness and the accuracy for Influenza surveillance can be largely improved. IGSNRR has The National Key Lab of Resource and Environment Information System, with deep experience in geo-modelling and multi data (incl. big data) integration,

and has worked years with health authorities on disease prevention and control. We believe we can provide technique support for the project, and definitely, the result of the project can be tested and furtherly used in China for influenza surveillance. Based on our previous collaboration and good track records, we would like to cooperate deeply with Maastricht University in combining Geo-technique and AI for influenza surveillance.

Research team

- *Thomas Krafft, Maastricht University,*
- *Eva Pilot, Maastricht University,*
- *Simone Doreleijers, Maastricht University,*
- *Jonas Hansen, Corti,*
- *Lu Chen, Corti, Helle Collatz Christensen, Copenhagen Emergency Medical Services,*
- *Mette Wenøe, Copenhagen Emergency Medical Services,*
- *Liselotte van Asten, Institute of Public Health the Netherlands,*

Professor Quanyi Wang, Director, Institute for Infectious Disease and Endemic Disease Control, Beijing Center for Disease Prevention and Control (China)

Quanyi Wang is Professor of Epidemiology and Director of Institute for Infectious Disease and Endemic Disease Control at the Beijing Center for Disease Prevention and Control. Since 2002 he is Deputy Director and then Director at the Institute for Infectious Disease and Endemic Disease Control. He research interests are in the area of early –warning, disease burden estimation, effectiveness evaluation of vaccine or prevention measures of infectious diseases (COVID-19, plague, cholera, influenza, avian influenza, and new emerging infectious diseases).

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Professor Dr Yang Lin Sheng, Director Department of Environmental Geography and Human Health, Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences, P.R. China

Born on 1966, Prof. Yang is the Director of Department of Environmental Geography and Human Health, Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences. He has coauthored more than 150 papers and 9 books. His main research interests are about chemical elements in environment and human health, climate change and health, GEC and human health, and environmental health risk assessment. Prof. Yang has been and is in charge of several project, including Natural Science Foundation, National Support Program, Institutional Directional Project and etc. Prof. Yang now is the number of the board directors of the Geography Society of China, the deputy director of Medical Geography committee of the Geography Society of China, the committee member of Environmental Medical and Environmental Health committee of the Chinese Society of Environmental Sciences, the committee member of Heavy Metal Pollution Prevention committee of the Chinese Society of Environmental Sciences, and the director of Youth committee of the Chinese Medical Association.

Keynote 2: A patient and engineering perspective on digitalization, data and AI for strengthening health

21.10.2020 – 12:00-12:30 Brussels/ 18:00-18:30 Beijing

For citizens, one of the most important things is their health and their loved ones' health. Efficient and adequate health care is essential to reach this goal, but it is far from sufficient. Studies show that healthcare is only a minor part of creating health. In this speech, aspects of self-care will be highlighted,

focusing on digitalization, artificial intelligence, and informatics. Self-care is today an essential part of the care, from everything to understanding symptoms, to taking the actual medication. During self-care and activities, a person collects a lot of health data. The speech will discuss a systematic review of this kind of data and present what health data is for patients. Knowledge and wisdom are built upon information and data, how we define data and its source will change what kind of knowledge and wisdom we can build; therefore, the definition of health data is important in this context. For people living with long-term conditions, it is vital to living a good life in the presence of illness. This implies a need for good self-care with digital tools and informatics in the area. I Will give a new perspective on this subject and suggest how patients' work can be eased without losing autonomy or increasing healthcare costs.

Keynote Speaker: Hanna Svensson, Engineer and Patient Advocate, Sweden



Hanna Svensson is a data scientist and engineer in Applied physics, Swedish e-patient, and lecturer on self-care and health data, always with the patient perspective. For 31 years, Hanna has lived with type 1 diabetes and for the last four years with rheumatoid arthritis. Both autoimmune diseases, but with very different kind of self-care. Hanna has worked in a broad field within electronic and software development. She has developed signal processing devices for wireless transmission. She was one of the developers behind the Volvos self-parking concept-car and later developed a different kind of active safety functions. Today, she works at Rise, Research institute of Sweden, with the development of methods for measuring soft variables such as well-being.

S2: Digital health for nursing and rehabilitation - Citizen Engagement with Digital Health Technology

21.10.2020, 12:30-15:00 Brussels / 18:30-21:00 Beijing

S2.1 Nursing Now! Digital health service co-creation and co-design

The European Federation of Nurses Associations (EFN) represents 3 million nurses in the EU and about 6 million nurses in Europe. Its mission is to promote and protect nurses and the nursing profession with reference to the EU, by lobbying the European Institutions, like the European Commission, the European Parliament and the Council of Europe. As part of this mission, the EFN is the Europe regional leader of the Nursing Now Campaign – this campaign aims to improve health globally by raising the profile and status of nurses worldwide. For the EFN, one of the objectives included in achieving the campaign's goals was to foster among EU policymakers and IT developers the co-creation and co-design of new digital health tools with the frontline nursing workforce. "Co-design" means putting both the developer and the end-user (i.e., the nurses) at the same level with the view to come up with solutions that address actual frontline needs and expectations. Co-creation is the process by which co-design is implemented, in which developers and end-users engage in a continuous and bi-

directional dialogue on what the formers need and expect, and what the latter can develop and how. In this dialogue of mutual understanding, in which all stakeholders are at the same level, is where the value of co-creation and co-design lies. As they are the only path towards ensuring that nurses at the frontline of home and hospital care have access to new digital health tools that are fit-for-purpose. And by doing so, achieving end-user impact, deployment, and, ultimately, a better quality of care for patients. To bring these goals closer into the reality, the EFN has joined as end-user partner two EU-funded projects named InteropEHRate and Smart4Health. Both of these are putting citizens at the centre by developing a platform/system of EU-wide interoperable Electronic Health Records. The EFN is participating by providing nursing sensitive data and fostering nursing data collection. It is essential to make sure that the outcome of these projects address the nursing needs, to achieve impact at the healthcare frontline.

Speaker: Paul De Raeve, Secretary General European Federation for Nurses



Paul De Raeve has been a registered nurse since 1984. He obtained a master's degree in nursing science at the Free University of Brussels, a Master degree in Statistics from the Catholic University of Brussels, and a PhD degree from the Kings College University of London. Paul holds an Adjunct Professorship at the John Hopkins University in Baltimore (US) since 2018. On Work experience, Paul was appointed as staff manager at the Free University hospital of Brussels, part-time delegated to the Belgium Ministry of Health and Environment. He was responsible for developing a national comparable data warehouse for nursing, introducing qualitative indicators within the hospital financing system and providing data for the political decision-making process. In 2002, Paul De Raeve was appointed as General Secretary of the European Federation of Nurses Associations (EFN) and in 2015 EFN members asked him to establish and develop the European Nursing Research Foundation (ENRF). EFN EU lobby activities relate to the promotion and protection of nurses and the nursing profession with particular reference to the EU political agenda, especially the European Social Pillar priorities, including the digitalisation of the health and social care ecosystem. Working towards this mission includes ensuring that nursing is central in the development, implementation and evaluation of the European Health and Social Policy in the field of education, workforce, and quality and safety. Nursing informatics in Palliative care for Cancer

S2.2 Nursing informatics in Palliative care for Cancer

TBA

Speaker: Yuan Changrong, Ph.D, Ph.D supervisor, Professor of School of Nursing, FuDan University, Director of Research Center of Patient Experience



Yuan Changrong, Ph.D, Ph.D supervisor, Professor of School of Nursing, FuDan University, Director of Research Center of Patient Experience. She is the Fellow of American Academy of Nursing (FAAN), honorable professor of New York University (NYU), and she was appointed by PROMIS Health Organization (PHO) the position of official representative in China (PNC-China). Prof. Yuan also is Vice Chairman of Chinese Association for Life Care, Humanity Nursing Society; Vice chairman of Chinese Health Information and Big Data Association, Committee of Nursing; Vice Chairman of Shanghai Anti-Cancer Association, Committee of Cancer Nursing. Prof. Yuan held more than 20 funded research projects related to cancer nursing, nursing informatics and long-term care, including National Natural Science Foundation of China, Foundation of American Oncology Nursing Society and International Science and Technology Cooperation Program. 241 papers had been published by Prof. Yuan's research team, including 43 SCI papers and she was a winner of 2012 Nobuo Maeda International Research Award of America Public Health Association (APHA), 2019 SUMMER AT CENSUS Scholar of U.S. Census Bureau and CANCER NURSING's Annual Research Award for 2019. Prof. Yuan is the editorial board member of CANCER NURSING and expert of peer review of other 7 SCI journals. More than 40 Master, Ph.D and post-doctoral students had been successfully graduated with the guidance of Prof. Yuan. In 2018 and 2019, she was selected as a High-citation Scholar in China published by Elsevier.

S2.3 Digital health literacy for nursing & rehabilitation

Keywords: Digital health literacy for nursing, nursing education, digital knowledge areas.

One of the core objectives of the European Union (EU) is to improve the health of European citizens. eHealth has the potential to empower citizens to better manage their health and disease, improve prevention, enable more accurate diagnosis and treatment and facilitate the communication between healthcare professionals and patients. It can also contribute to a more equal access to healthcare while facilitating access to health information.

This requires a sufficient level of health literacy for both patients and nurses. The nurses have to be aware of Digital Health literacy and how the digitalization can either impose a barrier or be a facilitator in the provision of care. To understand the digital aspect the nurses also need to have an understanding of the patient's digital literacy and eHealth Literacy (1). Education plays a significant role in the understanding of health literacy among nurses. In particular, nurses need new competencies they take on new roles and responsibilities related to digital health transformation and re-orientation of healthcare and help patients navigate between allied health professionals.

Consequently, over the past decade, universities and colleges worldwide have increasingly had a focus on awareness among nurses of the importance of patients as well as aspects of nursing students and digital competences addressing these aspects as part of the curriculum.(2)

The Danish National Steering Group for the national follow-up groups in health education has set five benchmarks for the development of a technology focus on health education. The benchmarks are set on the basis of the significant changes that the technological development and implementation will bring to the health sector in the coming years, and which will change conditions and opportunities for health professionals and citizens. Relevant benchmarks for the development are:

- The healthcare professional uses technology safely and competently in his practice.
- The health professional supports the citizen's use of technology.
- The healthcare professional adapts to technological changes.
- The healthcare professional is part of technological innovation.
- The healthcare professional reflects ethically and critically on technology acquisition and use. (3)

These topics are to be discussed in my talk.

1. European citizens' digital health literacy
https://ec.europa.eu/commfrontoffice/publicopinion/flash/fl_404_en.pdf
2. Health literacy, digital literacy and eHealth literacy in Danish nursing students at entry and graduate level: a cross sectional study .Holt, Overgaard, Engel et al. BMC Nursing 2020
<https://bmcnurs.biomedcentral.com/articles/10.1186/s12912-020-00418-w>
3. Benchmarks for health education technology focus in Denmark. The Danish National Steering Group for the national follow-up groups in health education

Speaker: Inge Madsen, RN., MI (Master of Healthcare information.) Aarhus, Denmark.



Inge Madsen is a Registered Nurse (1988) and holds a master in Healthcare Informatics at University of Aalborg in 2008. She is currently Associate Professor at VIA Faculty of Health Sciences, Aarhus, Denmark, where Inge teaches at the Bachelor of Nursing programme. She also teaches health informatics at Healthcare Technology Engineering, University of Aarhus, Denmark. Inge is also teaching in Masters programs in China. Inge has participated in several national and international steering and working groups in Nursing and Health Informatics. She has an extensive background in informatics working in numerous roles such as leader of EHR implementation at the University Hospital in Aarhus, CEO of Health informatics and Clinical Quality at Horsens Hospital in Denmark. Inge has published several articles and textbook chapters for health care professionals. She is the former chair of the Danish Nursing Society and a former board member of the Danish Medical Informatics Society. Inge is one of the founders of the Danish Clearing House and Center of Systematic Reviews where she was a professor until November 2015

S2.4 Hospital Informatics in China

Speaker: Professor Yusheng He, Former Director of Medical Informatics Center, People's Hospital, Peking University



Professor Yusheng He, former Director of Medical Informatics Center, People's Hospital, Peking University and former member of Health Information Standard Committee for Ministry of Public Health, China. He has two knowledge training backgrounds on medicine and computer science in Beijing Medical University and Peking University and studied medical informatics and medical expert system in medical school of Pittsburgh University and Carnegie Mellon University as a visiting scholar in 1987-1988. He was a CIO for 14 years and in 1995, set up the first large scale hospital information system (HIS) in China for People's Hospital. His research interesting is in HIS, system integration, intelligent system, the standardization of medical informatics, RHIO and NHIN in China. His research projects are the RHIO implementation and the intelligent electronic medical record. From 2013 to 2014, He was a visiting professor at Claremont University in Los Angeles to cooperate in scientific research with the Stanford Center for Biomedical Informatics Research and the China Academy of Traditional Chinese Medicine, engaged in medical ontology study. We are currently being carried out on the study of ontology based electronic medical records templates.

S2.5 CEN-ISO/DTS 82304-2: How labelling health apps can contribute to a healthier global community

There are thousands and thousands of health and wellness apps: to quit with smoking, to help recognise skin cancer, to monitor symptoms, to provide cognitive rehabilitation, to track sporting activities, etc. etc. However it's hard for consumers, patients, healthcare providers and care insurers to establish which health app fits their requirements and indeed contributes to their health needs and health issue management. CEN-ISO/DTS 82304-2 was commissioned by the European Commission to help address this challenge. The initiative went global in the cooperation with ISO. An international project team with experts from 14 countries spanning 4 continents has developed a health app quality requirements conformity assessment, building upon existing standards, health app assessment frameworks and a Delphi study with 90 international experts and stakeholders from 6 continents. With the inspiration of the EU Energy label, which has been adopted in full or part by 59 countries outside of Europe, including China, and is also maintained by ISO CEN and IEC, a health app quality label was designed. The label was subsequently tested with low health literates for adequate understanding. CEN-ISO/DTS 82304-2 also comprises a Covid tracing apps - , ethics - and use cases annex, was already referenced in the EU's Covid tracing apps toolbox and tested with 11 Covid symptom apps. This technical specification is expected to be published early 2021, following a formal vote by ISO member bodies this year.

Speaker: Petra Hoogendoorn, Patient Advocate



Petra Hoogendoorn is an industrial engineer and change manager. She initiated two health apps in oncology and does research at the National eHealth Living Lab (Leiden University Medical Center The Netherlands). She coordinated the development of CEN-ISO/DTS 82304-2 quality requirements conformity assessment and health app quality label, which is to enable consumers, health professionals and insurers in deciding what health app suits their needs, and tested Corona symptom apps with 82304-2.

S2.6 New Patterns of Rehabilitation Service in China in the Internet Era

Rehabilitation medicine is an important part of modern medicine. Public demand for rehabilitation has been an explosion in China not only because the growth rehabilitation needs of outpatients and discharged patients, but also because the accelerating population ageing further boosts the demand. Nevertheless, current system of rehabilitation in China is facing some problems, including the shortage and uneven distribution of medical resource, lack of standards, difficulty of inter-agency information sharing and lag in equipment and facilities. With the prosperous of the Internet Era, China has developed 3 patterns of “Internet+ Rehabilitation” services. The first one is the regional network pattern which is usually initiated by a regional government to establish a network of rehabilitation services including 3-tier medical institutions in its administrative area. The second one is the hospital-centered pattern which refers to a network of rehabilitation services with a large official general hospital as its core, and some other rehabilitation institutions of lower levels as the subordinate institutions. Its management and operation are generally market-oriented and only the involved medical institutions can share their patients’ health information. And lastly, just as its name implies, the third-party Internet platform pattern means that a third-party company offers its Internet platform to integrate rehabilitation service resources from different places and to efficiently match targeted services to patients who make their appointments in advance. Each pattern already has its mature cases after years of exploration and development in China. More innovations of “Internet+ Rehabilitation” are still on the way.

Speaker: Shu Ding, Nursing Supervisor at Beijing Chao-Yang Hospital, Capital Medical University (China)



Shu Ding is a Nursing Supervisor at Beijing Chao-Yang Hospital, Capital Medical University. He earned his bachelor's and master's degree in nursing at Capital Medical University, Beijing, China. His doctoral project mainly focuses on testing individually tailored interventions implementing mHealth technology to promote health and well-being of patients with cardiovascular disease, particularly by understanding how mHealth guided health behaviors affect clinical outcomes. Mr Ding's research interests include cardiovascular nursing, clinical nursing quality control and improvement, especially using information technology and nursing knowledge to benefit both clinical practice and patient safety. Ding helped to improve nursing information system in Beijing Chao-Yang Hospital and co-create a structured electronic nursing record system for venous thromboembolism care. One of his research projects entitled with Visual Intelligent Management of Nursing Safety Based on Data Mining was funded by Capital Medical University. In addition, he served as an invited translator for NI2016 International Conference in Geneva Switzerland and 2016 CMIA Conference in China, and a reviewer for the MedInfo 2019, the 17th World Congress on Medical and Health Informatics. He is the Secretary of Male Nurse Committee of Chinese Nursing Association and helped to establish the first national committee. Mr Ding was awarded research grants from Beijing Hospitals Authority Youth Programme, Beijing Municipal Commission of Education, etc.

S2.C1 Collaboration ePoster Pitch: Can we use Patient Summaries to strengthen medical documentation in nursing homes?

ePitch Speaker: Robert Van Der Stichele, Professor Emeritus, University of Ghent, Belgium (Europe)



Professor Robert Van Der Stichele is a practicing family physician in Ghent, Belgium, since 1978. He combines his clinical practice with research projects since 1982. He obtained his PhD (in medical sciences) in 2004, and was appointed as teaching professor in the department of Pharmacology in the University of Ghent, where he is today professor Emeritus.

Thursday 22 October 2020, Day #2: Medical Imaging, Robotics and Standards

Keynote 3: Orphanet – Taking the next step in the management of Rare Diseases

22.10.2020, 08:00-08:30 Brussels/ 14:00-14:30 Beijing

Rare diseases (RDs) are numerous (~6,000), heterogeneous in nature, and geographically disparate. Few are preventable or curable, most are chronic and many result in early death. Despite their heterogeneity, RDs share commonalities linked to their rarity that necessitates a comprehensive public health approach. The challenges arising from their low prevalence, have led to RDs emerging as a public health priority in Europe. Indeed, while each disease represents less than 1 out of 2,000 inhabitants, RD prevalence altogether is estimated to be 3.5-6%. Point prevalence is the most appropriate indicator for RDs as it provides a measurement of the population burden of disease, and can thus inform focused service delivery targeted at the specific needs of RD patients, pharmaco-economic evaluation of orphan drugs, appropriate health and social service commissioning, and facilitation of clinical trials. It is also essential for current orphan drug legislation objectives to stimulate the development of RD treatments by incentivizing to compensate for the small market size. However, RD are underrepresented in currently used coding systems, so hampering data generation for evidence-based policy making and research. Orphanet, the currently most comprehensive knowledge base on RD, produces a specific codification system: Orphanet nomenclature of RD (ORPHAcodes), that is progressively being implemented in EU member states health information systems and in ERNs' registries. A specific EC-funded project, RD-CODE (www.rd-code.eu), delivers guidelines and tools supporting implementation. Orphanet is at the crossroads of the RD data ecosystem, bridging healthcare and research settings, and delivering a comprehensive, standardized, evidence-based, interoperable, versioned, computable and free nomenclature specific for RD.

Keynote Speaker: Ana Rath, Director of INSERM US-14 Orphanet



Ana Rath is a medical doctor with a background in general surgery and a Masters degree in Philosophy. She oriented her career to medical information and terminologies in 1997 and joined Orphanet (www.orpha.net) in 2005, where she was Manager of the Orphanet Encyclopaedia, then Scientific Director, and Director of Orphanet and Coordinator of the Orphanet network since 2014. Ana was the coordinator of RD-ACTION, the EU Joint Action for rare diseases (2015-2018) and of the IRDiRC's Scientific secretariat until 2017. She chairs the Orphanet Rare Disease Ontology (ORDO), and was member of the WHO's ICD11 Revision Steering Committee. She currently coordinates the RD-CODE on implementation of RD codification in EU member states project and co-chairs the EJP RD Pillar 2 on data and resources ecosystem for RD research in Europe.

S3: Findable Accessible Interoperable Reusable (FAIR) Health Data Sets - Health technology standards and interoperability

22.10.2020, 8:30-11:00 Brussels/ 14:30-17:00 Beijing

S3.1 Interoperability Standards Developments in China

TBA

Jingdong Li, HL7 China (CN)

TBA

S3.2 HL7 supports large-scale COVID-19 testing in the Netherlands

As of June 1st, all people in the Netherlands with mild symptoms of COVID-19 can get tested. On June 30th the national association of regional health centers announced that 250,000 tests had been administered. For a population of a mere 17 million, that is quite impressive. How did we achieve testing at this unprecedented scale? HL7 plays an essential role. Testing for infectious diseases in the Netherlands is the responsibility of regional centers for public health (GGDs). Across the country we have 25 such organizations, jointly represented by their national association, GGD GHOR Nederland. Under normal circumstances, testing for infectious diseases is not such a big deal. The Centers for Sexual Health, part of the GGDs, report 150,000 visits annually. The number of active cases of tuberculosis has not risen above 1000 for the last couple of years. Suddenly the GGDs were told to prepare for 30,000 tests per day, with a possible increase to 70,000 per day in the fall. This meant opening over 60 drive-thru testing locations, educating personnel to properly conduct the test, and opening a call-center to schedule appointments. The national number was called over 300,000 times on the first day alone. All of these are major achievements in their own right. But where do you find the labs that can actually carry out the analysis at this scale? The required tests are so-called PCR tests, which call for rather advanced equipment. During the early stages of the pandemic, some 60 labs were accredited for SARS-CoV-2 virus detection, using the PCR test. And in order to fill the projected numbers, all these labs were needed to pitch in.

So how do you process that many tests on a daily basis? GGD GHOR Nederland has chosen to develop one national solution for COVID-19 diagnostics, called CoronIT. The rationale behind this decision is that the available testing capacity needs to be allocated to the places where it is most needed. That won't work when you have to connect existing 25 regional solutions with 60 different labs across the country. Even with one national solution, connecting 60 different labs is already quite a challenge. Fortunately, we have HL7 well established in our labs in the Netherlands. A dedicated first group of so-called pandemic-labs (normally working in other fields, such as veterinary labs or cervical cancer screening) had already established connections to the national CoronIT system, using a highly simplified version of HL7 version 2.5 messaging. Being pandemic-labs, they were only commissioned to run the PCR analysis, and hence did not receive any patient information. In times of crisis, regular labs also assist the regional GGD in epidemiological analysis, so they go well beyond the technical analysis of the swab. They need fully functional clinical information exchange based on the full scope of HL7 version 2.5 lab ordering and results reporting. In the middle of April, a pilot implementation was started to connect a COVID-19 lab to the national CoronIT solution. People at the lab, their LIMS vendor, and the team behind CoronIT worked closely together to make this happen. Luckily they could build upon all the work on lab information exchange that had been done in the past by LIMS vendors, professional lab associations, HL7 Netherlands, IHE Netherlands, and Nictiz (the national competence center for electronic exchange of health and care data). Combined with recent experiences on routine reporting of antibiotics resistance data to the national Center for Infectious Disease Control and

Lab2lab communications for national genetic typing of resistant bacteria, a solid community of expertise and trust could be engaged. The common understanding was: we can do this!

Before the pilot was actually in operation, other labs started to join already. Early May, the pilot was operational, and by the end of May the first phase of 20 labs was connected to the national CoronIT system, ready for the big-bang of June 1st. Together with the dedicated group of pandemic-labs the testing capacity was sufficient to serve the needs of the population. Luckily, the numbers didn't rise to the predicted 30,000 tests per day, but have stabilized around 10,000 per day. However, as the country is lifting more and more of the lock-down measures, preparations for an increase up to the predicted 70,000 tests per day in the fall is ongoing. The next phase consists of another 20 labs that are working hard to get their connection up and running in the course of July. In all, we will have connected 50 of the 60 accredited labs, including the pandemic-labs, within the course of 4 months.

It is still a lot of hard work on all levels, from firewalls and character sets, using OML, ORU, OBR and OBX, by coding LOINC and SNOMED CT, all the way to contracts between regional GGDs and labs and the national funding of COVID-19 diagnostics. But without the dedicated community of expertise around IHE/HL7 lab information exchange in the Netherlands, we would never have been able to pull this off. Good old HL7 version 2.5 has proven to be indispensable in the fight against COVID-19 in the Netherlands, because it has united people around a common purpose. In times of crisis these people will roll up their sleeves and get the job done.

Robert Stegwee, Chair CEN TC251/ European Standards Institute



Robert Stegwee is a consultant for Health Informatics, based in the Netherlands. His passion is in *meHealth*: improving the healthcare experience from a healthcare consumer and professional perspective. He has been involved in healthcare IT in different capacities since 1993, starting in a hospital environment and consulting in different sectors of healthcare, including at a national and international level. In addition, Robert has held a professorship in eHealth Architectures and Standards at the University of Twente. He is currently an independent consultant with his own consulting firm Trace-Health. Healthcare interoperability standards form a topic that is at the heart of effective multivendor architectures, as appropriate in healthcare. Robert started to participate in the development and implementation of the Health Level 7 standards in 1995 and currently serves as member of the board of HL7 The Netherlands, chair of CEN Technical Committee 251 on Health Informatics, and member of Joint Initiative Council on Global Health Informatics Standardisation. With this collaborative spirit in mind, he has contributed to a number of European projects in this area and continues to do so.

S3.3 Interoperability in Electronic Medical Records

TBA

Dongsheng Zhao

TBA

S3.4 Translating FAIR principles to Health Care

Data-driven technologies are shaping the landscape of our daily lives and healths. Predictive and prescriptive analytics methods change how health care is delivered, precision and personalized medicine require more and more data, including real-world data generated by patients or collected from the routine care system. Although health care has a long-lasting experience in interoperability, reusing data in another context than it is produced, exposes additional challenges. FAIR principles provide guidelines for improving data reuse, specifically in a machine-actionable way. Implementing these guidelines in the context of health care will lead to many opportunities, including supporting the development, testing, and validation of machine learning and artificial intelligence. The RDA FAIR Data Maturity WG [1] introduced a model for guiding researchers for FAIR data transformation. Also RDA Reproducible Health Data Services WG is exploring how level of FAIRness of curated data sets in health care institutions can be improved [2]. However translating the FAIR guidelines in the health care context is not straightforward. First, the sensitive nature of personal data hinders data sharing and requires advanced solutions such as analyzing FAIR data in a distributed manner. Second, the difference between metadata and data gets blurred, sharing a meaningful level of metadata for discovering relevant data sets, might expose personal information. In this talk, I will highlight health care specific challenges for FAIR data and explore potential solutions.

[1] <https://www.rd-alliance.org/groups/fair-data-maturity-model-wg>

[2] <https://www.rd-alliance.org/group/reproducible-health-data-services-wg/case-statement/reproducible-health-data-services-wg-case>

Oya Beyan, Researcher, Fraunhofer Institute for Applied Information Technology, RWTH Aachen University



Oya Beyan is a researcher at Fraunhofer Institute for Applied Information Technology and at the Department of Computer Science at RWTH Aachen University. Her research focuses on methods of data reusability and FAIR data, data-driven transformation and distributed analytics. Her area of expertise is in the semantic web technologies and application of them in health care and life sciences. She actively contributes to the national and international initiatives to enable the adoption of FAIR principles and develops tools and infrastructures supporting FAIR data. With her interdisciplinary background in informatics, medical informatics and sociology, she developed a focus on societal reflections of data-driven change. Oya is a partner in H2020 IMI FAIRplus project and

develops a FAIR Maturity Model to guide organizations to improve their data processes delivering reusable and machine actionable data.

S3.5 FAIR Health Data: A European Perspective

FAIR is a great acronym that everybody uses happily to refer to the applicable principles to research data (and any other kind of data) Findable, Accessible, Interoperable and Reusable. However, to apply these principles and to make Research Data FAIR, implies a lot of technical work, standardization and will by the research performance institutions, the researchers and research supporters. In this talk they are going to be reviewed the FAIR principles from the European perspective, targeting in one hand, one of the main Open Science challenges in Europe (FAIR data) and in the other hand the eInfra that will make Open and FAIR data to flourish (EOSC, the European Open Science Cloud). We are going to reflect other particular circumstances affecting health data sharing and health data FAIRification, like the current rules (GDPR) or technological tradition.

Dra. Eva M. Méndez Rodríguez, Associate professor. Library and Information Science Department, Universidad Carlos III de Madrid



Ms. Eva Méndez holds a PhD in Library and Information Sciences (LIS) and is an expert in metadata. She is Deputy Vice President for Scientific Policy-Open Science at Universidad Carlos III de Madrid and professor of the LIS department. She is the chair of the [EU Open Science Policy Platform \(@euospp\)](#) and [RDA ambassador for Interdisciplinary Research](#). She defines herself in Twitter (@evamen) as an 'open knowledge militant'.

S3.6 Open Science Cloud for sharing of health data for research

S3.C1 Collaboration ePoster Pitch: Tools for the support of data workflows in Health Research to make them Findable, Accessible, Interoperable and Reusable

[FAIR4Health](#), which has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824666, promotes the application of FAIR principles in data derived from publicly funded health research initiatives to share and reuse them in the European Union Health Research community, defining an effective EU-wide strategy for the use of FAIR in Health. FAIR4Health has designed a workflow to apply the [FAIR Principles](#) to health research data, based on the [FAIRification process of GO FAIR](#), but addressing the ethical, legal and technical aspects that health data includes due to its nature. These aspects have been analysed for sensitive data and [FAIRification tools](#), based on the use of the HL7 FHIR standard, have been developed to obtain FAIR data from data resulting from biomedical research. To apply the FAIRification workflow designed in FAIR4Health, data-curation-tool and data-privacy-tool have been developed and are in the testing phase. Likewise,

graphical user interfaces of the FAIR4Health platform have been developed and the latest technical developments are being completed. Subsequently, the FAIR4Health platform will be validated with the two pathfinder case studies that have already been designed: 1) Identification of multimorbidity patterns and polypharmacy correlation on the risk of mortality in elderly; and 2) Early prediction service for 30-days readmission risk in COPD patients. Cooperation opportunities with China will be addressed through two lines: a) [RDA WG](#) on 'Raising FAIRness in health data and health research performing organisations' that has been recently endorsed, aiming to define and implement global guidelines for Health Research Performing Organizations to implement a FAIR data policy; and b) FAIR4Health open community, whose membership is being finalized and will be published on the FAIR4Health website.

ePitch Speaker: Celia Alvarez, Andalusian Health Service

Keynote 4: Innovation of 3D Medical Imaging, Processing and Visualization for Intelligent Minimally Invasive Diagnosis and Therapy

22.10.2020, 12:00-12:30 Brussels/ 18:00-18:30 Beijing

Medical imaging, processing and visualization play a fast-growing role in high precision minimal invasive diagnosis and therapy. Medical images are expected to present an intuitive and accurate real-time guidance for surgeons or therapeutics systems, making it efficient to reduce invasiveness in surgical treatment. In the field of intra-operative imaging and processing, integrated diagnosis and therapeutic systems, which combines preoperative and intraoperative images have been established for precision tissue identification, tumor resection during surgery. The accuracy of the intraoperative detection of the tumor is improved by using high-precision dynamic optical analysis. We study novel image processing and multimodality image fusion methods in the field of quantitative and automatic analysis of lesions and anatomic structures to guide accurate diagnosis, efficient implant determination and radiation-free intraoperative soft catheter navigation. The separation issue between guidance information and surgical area may cause surgeon's hand-eye discoordination problem. We develop a naked-eye three-dimensional (3D) medical image visualization method called integral videography with a full parallax and high geometrical accuracy. The novel 3D medical display method has performed significant advantages in augmented reality image guided surgery. We further design a real 3D see-through surgical navigation system that enables surgeons to see the images of internal structures merged in the surgical scene. The systems have been evaluated in the area of neurosurgery, orthopedic, and dental implantation. The future works include the better integration of multi-module diagnosis and therapeutic techniques under the guidance provided by high-precision and intuitive medical images.

Keynote Speaker: Professor Hongen Liao, Department of Biomedical Engineering, School of Medicine, Tsinghua University, Beijing, China



Dr. Hongen Liao is Professor and Vice Chairman of the Department of Biomedical Engineering, School of Medicine, Tsinghua University, China. He received his Ph.D. degrees in biomedical precision engineering from the University of Tokyo, Tokyo, Japan in 2003. He was a Research Fellow of Japan Society for the Promotion of Science (JSPS). From 2004, he was a faculty member at the Graduate School of Engineering, The University of Tokyo, where he became an Associate Professor in 2007. He has been selected as National “Thousand Talents” Distinguished Professor, National Recruitment Program of Global Experts, China since 2010. He is Director and Founder of the Advanced Theranostics and 3D Imaging Laboratory, Tsinghua University. Professor Liao’s research interests include 3D medical image, image-guided surgery, medical robotics, computer-assisted surgery, and fusion of these innovative healthcare technologies for minimally invasive precision diagnosis and therapy. He has also been involved in long viewing distance autostereoscopic display and 3D visualization. He is the author and co-author of more than 250 peer-reviewed articles and proceedings papers, as well as over 50 patents, 290 abstracts and numerous invited lectures. Dr. Liao was distinguished by receiving multiple government awards and various Best Paper Awards from different academic societies. Prof. Liao is an Associate Editor of IEEE Engineering in Medicine and Biology Society Conference, the General Chair, Program Chair and Organization Chair of multiple international conferences including MIAR, MICCAI, and ACCAS. He has served as a President of Asian Society for Computer Aided Surgery and Co-chair of Asian-Pacific Activities Working Group, International Federation for Medical and Biological Engineering (IFMBE).

S4: Medical Imaging and Robotics of health and social care

22.10.2020, 12:30-15:00 Brussels/ 18:30-21:00 Beijing

S4.1 Accident and Emergency Informatics (A&EI) to Establish Inter-Machine Communication in the Early Rescue Chain.

Accident & emergency informatics (A&EI) is the trans-disciplinary science of systematically collecting and managing environmental, behavioral, physiological and psychological data in order to forecast, prevent, or lower the impact of such events on the subject. Smart homes, vehicles, or clothes can be turned into diagnostic spaces recording A&EI data. Furthermore, the rapid dissemination of smart devices bears the potential of automatic emergency alerts, which are transmitted between machines without any human in the loop. However, there is not yet any interconnection between the – so far – stand-alone information and communication technology (ICT) systems involved in accidents and emergencies, namely alerting systems (e.g., smart home/vehicle/wearable), responding systems (e.g., ambulance), and curing systems (e.g., hospital). We define the International Standard Accident Number (ISAN) as a unique token for interconnecting the ICT systems. Based on business analytics in the emergency care, we derive technological, syntactical, and semantical requirements for the ISAN. We propose a compact alphanumeric representation that is generated easily but worldwide uniquely by the alerting system. Furthermore, an ISAN embeds time and position of the event and an identifier of the alerting system) As an example, we show how the ISAN is used by a smart home to establish machine-to-machine communication. The smart home detects a fall of an elderly person that lives alone, creates the ISAN, and transmit it with the alert to the responding system, which in turn uses the ISAN to get access to the smart home’s internal data: medical records of the affected subject, floorplan indicating event and fastest way to the event location, etc. Also, ISAN is used to inform the smart home on arrival of the rescue team, and to transfer the fingerprint of the emergency physician such than she can open the door immediately.

Thomas M. Deserno, Peter L. Reichertz Institute for Medical Informatics of TU Braunschweig and Hannover Medical School, Brunswick, Germany



Prof. Dr. Thomas M. Deserno (born as Lehmann) studied electrical engineering and medical informatics at RWTH Aachen, Germany, before becoming the CEO of Campus Braunschweig at the Peter L. Reichertz Institute for Medical Informatics of TU Braunschweig and Hannover Medical School. His research interests include medical image processing applied to quantitative measurements for computer-assisted diagnoses, medical research in controlled clinical trials, as well as seamless workflow integration of image and signal analysis, in particular for applications in accident & emergency informatics. He is Senior of IEEE and Fellow of SPIE, and associated editor of many journals such as PLOS ONE, European Journal for Biomedical Informatics, Methods of Information in Medicine, or SPIE Medical Imaging. Furthermore, Dr. Deserno is the German representative in the International Medical Informatics Association (IMIA).

S4.2 Robotics Assisted in Spine Surgery: Practice and Trends

Robotic assisted surgery techniques, which have the potential to extend surgeon's physical capabilities with advanced image guidance system, have been used step by step in spinal surgery in recent years. This study focus on the development and application of robot techniques in spine surgery in our hospital. It starts with an overview of the definition and development history of various robots, including the first medical robot which based on the industrial platform designed for stereotactic brain surgery. The advantages and disadvantages of typical orthopaedic robots such as Acrobot precision surgical system, the RIO robotic arm interactive orthopaedic system and SpineAssist were also discussed. In robotic assisted spine technology, there were some technical difficulties related to safety issues, such as how to minimize the system error of the robotic system and how to present a virtual relevant anatomy to the doctors, and some difficulties related to surgical procedures, such as how to integrate these techniques into the already exist procedures. For the questions which orthopaedic robots were facing, we shared our own experiences in design and current applications of orthopaedic robotic system. In our strategies, we firstly improved navigation accuracy based on 3D images, then integrated the navigation system and robotic arm into a more complex orthopaedic robotic system. This orthopaedic robotic system was approved by CFDA with independent intellectual property rights. This robot system includes a 6-degree of freedom (DOF) robotic arm and a real-time navigation system, the clinical error was smaller than 1.0 mm. We have done multiple random study both on lumbar spine and cervical spine , which shows the accuracy of robot assisted spine pedicle implantation is much better than free hand method. The application for the robot were not only limited in spinal surgery but also can be used in the traumatic surgery. Several cases assisted by this robotic system were shared. The challenges and research areas for the future progress in this field were also discussed.

Professor Da He, Spine surgery department, Beijing Jishuitan Hospital, Peking University.

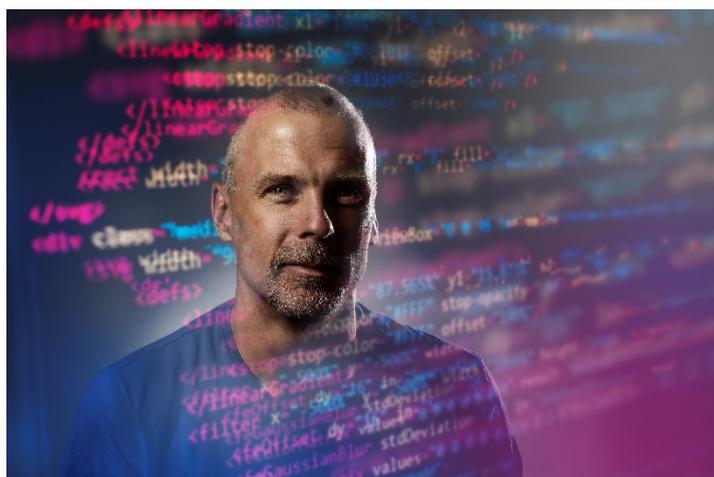


Dr. Da He is an associate professor of spine surgery department, Beijing Jishuitan Hospital, the 4th clinical college of Peking University. Beijing Jishuitan Hospital is nationally renowned for its achievement and attainment in orthopaedics, and it ranks at 1st place for over 10 years in China, and spine surgery department is an acclaimed component of Jishuitan. Dr. Da HE receives over 6000 outpatients and completes 500 cases of spine surgery every year. His research interests include navigation and robot assisted spine surgery, none fusion technology in spine. Da HE is a committee member and secretary of spine group in Chinese Orthopaedic Association, the 10th Vice President of Youth Committee in Chinese Orthopaedic Association, Executive Member of Asia-Pacific Cervical Spine Society.

S4.3 When your best co-worker is a Robot? I Have one!

At the hospitals, much of the workload consists of administrative and repetitive tasks. This is mostly done by clinical staff and takes time from the patient's actual meeting and doesn't need any medical expertise. Some of the repetitive tasks done by administrative staff, but don't require any expertise, are time-consuming, repetitive, and boring. How about employing an administrative robot instead? Södra Älvsborgs Sjukhus (SÄS) has done precisely that. Today SÄS has five robots that work around the clock to support repetitive administrative work. Besides, they also have five backup robots that assist when called on, at any time during the hour. Our robotic co-Workers have reduced the time needed in these processes by thousands of hours per year. Created a faster flow of information, reduced waiting time for the patients, and increased the quality (reduced the number of errors in the administrative systems, thereby improving the quality in the meeting between patient and care staff). During the first years, it was a slow process to create robots due to the innovative way of using them. Considerations were taken to legislation questions as well as adapting to the existing IT-environment. Today the time needed to automate a process using RPA is a matter of weeks. They were especially proven to be useful when the Covid-19 pandemic increased pressure on the hospital and our staff. We could use our previous knowledge to quickly use more robots to help us out in the Pandemic situation. That saved meaningful time for staff that could better use this time for patient support.

Fredrik Hansson, development leader at Södra Älvsborgs Sjukhus (SÄS)



Fredrik Hansson is a development leader at Södra Älvsborgs Sjukhus (SÄS). He has a Msc in mechanical engineering. His primary role as a development leader at the hospital is to assist in the overall development of the hospital and participate and achieve changes in specific areas or teams at the hospital. For the last three years Fredrik has focused on developing innovative solutions at SÄS. This include Robotic Automation Process (RPA) and AI. He has both worked to create the existing solutions but also with the implementation of the robots in daily practice. This includes change management, day-to-day support, and present guidelines for working with a robot in your team.

S4.4 Applications of Robotics and AI in Surgery

TBA

Professor Yu Wang, Vice Director of Medical device Research Institute, Director of Zhongguancun Open Laboratory of Medical Devices and Rehabilitation Technical Aid, Beihang University



Dr. Yu Wang, associate Professor & Assistant Dean, School of Biological Science and Medical Engineering, vice Director of Medical device Research Institute, and director of Zhongguancun Open Laboratory of Medical Devices and Rehabilitation Technical Aid, Beihang University. He participated in the development of the first domestic orthopedic surgical robot system of China, completed the first domestic robot-assisted orthopedic surgery and the first remote orthopedic surgery. This achievement has successfully achieved industrial transformation. It is now the only domestic orthopedic surgical robot that has obtained CFDA product registration. This robot system has been widely used in 35 hospitals in 3700 cases of surgery covered around 17

provinces/municipalities/autonomous regions. He jointly applied for the Hong Kong Innovation Technology Fund project and developed the active and passive hybrid orthopedic surgical robot with the Chinese University of Hong Kong. The system has been successfully applied in clinical practice and has been granted one US patent. He participated in the NIH RO1 project of the United States, and cooperated with Johns Hopkins University to carry out the research on hard tissue cutting technology based on continuum robot, and the related results were jointly published at the top international conference of robotics and biomedical Engineering.

S4.5 Social Robots for Independent Living

Robots come in many different flavors. Apart from industry robots that have dedicated tasks without human interference, service robots are being developed that need to operate together with people. One example of such a robot is the social robot for independent living. As these social robots are becoming increasingly autonomous, they will require meaningful interaction capabilities to ensure efficiency and performance. We argue that understanding human intentions and communicating a robot's own intentions are necessary requirements for fluent and efficient interactions. In this presentation, we will discuss three themes that are central for social robots for independent living. The first theme is navigation. When robots are applied in settings where they share a physical space with humans, they need to not only be able to navigate autonomously, but also do this in a socially acceptable manner. They need to take personal space into account and understand other social conventions. The second theme is social cues. When navigating in an environment in which humans are present, robots need to be able to communicate where they are going to make their behavior predictable. While interacting with people, they also need to be able to communicate that they understand what the human wants and respond appropriately. Robots can make use of social cues to achieve this. The third theme is social bonding. When having daily interactions with humans, robots need to be able to keep a record of their previous interactions, refer to them, and show that they remember what happened the previous day. This makes people more likely to attribute emotions and a personality to the robot, gives them the feeling that they are understood, and allows them to create a social bond with the robot that is helping them to live independently at home for longer.

Peter Ruijten, Assistant Professor on Social AI at Eindhoven University of Technology (TU/e).



Peter's research topics include: Social HRI, Perceptions of human-likeness in technology, Trust in Autonomous Vehicles, and Conversational Interfaces.

Raymond Cuijpers. Associate Professor of Cognitive Robotics and Human-Robot Interaction at Eindhoven University of Technology (TU/e).



Raymond's research topics include: Socially intelligent robots, Artificial intelligence for cognitive agents, Visual and haptic perception, and Human Motor Control.

S4.6 New Technologies in Medical Robotics

TBA

Dr. Shuangyi Wang Associate Professor at the Chinese Academy of Sciences, Institute of Automation (CASIA) (China)



Dr. Shuangyi Wang, associate Professor at the Chinese Academy of Sciences, Institute of Automation (CASIA). He received his PhD from King's College London (KCL) on developing the world's first robotic trans-esophageal ultrasound system. He continuously worked as a Post-doctoral researcher in KCL on developing advanced intelligent fetal diagnostic robots. He is supported by the CAS Talents grants and has been working on the projects funded by the EPSRC, Wellcome Trust, HTC, NSFC across UK and China and took the leading role in developing several robotic systems used in different medical scenario. Meanwhile, he has been actively involved in scientific research and published research papers on medical robotics in top journals and conferences, e.g. IEEE RA Magazine, IEEE TBME, Micromachines, MICCAI, IROS, TAROS. His current research interests include medical robotics, robotic ultrasound, computer-assisted interventions, and robotic-assisted diagnosis.

S4.C1. Collaboration ePoster Pitch: Guardian: Social robots in long term care

With a decreasing workforce of care professionals and to support an active and positive working life of informal carers, there is a need for assistive technologies at home such as social robotics. The GUARDIAN project introduces a social companion, which aims to be of direct benefit for three groups of end-users; frail seniors, informal carers (at work) and formal carers. A major challenge is that informal caregivers find it increasingly difficult to continue their work in addition to the care tasks they already have. And when you also consider the increasing shortages in healthcare, the burden can become even higher. With Guardian, we therefore want to develop a robot companion with which the district nurse and informal caregiver can monitor his client, family or neighbour remotely. The GUARDIAN project follows from the start a unique iterative design, research and development methodology with 3 streams, focusing on: 1. Co-creation & Personalization; 2. Ethical and responsible innovation & design; 3. Business Modelling & Cost-effectiveness.

Herman Nap, Senior research, eHealth, Vilans, Visiting Senior Researcher, Human-Technology Interaction, Technical University of Eindhoven, The Netherlands



Mr. Henk Herman Nap, PhD, MSc is an expert on eHealth at Vilans and has a visiting research position at the Human-Technology Interaction group at Eindhoven University of Technology (TU/e). Vilans is the leading expertise centre on long-term care in The Netherlands. Henk Herman has a background in cognitive ergonomics, with a MSc degree in Psychology (Utrecht University), a PhD in Gerontechnology, and a Postdoc in senior gamers from the TU/e. Currently, Henk Herman works as a project coordinator and senior researcher in innovation & research, specifically in the field of eHealth and long-term care policies. At Vilans, Henk Herman is coordinator of the GUARDIAN Active and Assisted Living (AAL) research project on social robotics for people with dementia and (in)formal carers, the eWare AAL project on lifestyle monitoring and social robotics for people with dementia and their (in) formal carers, the MagicTABLE project (ToverTafel) and worked/s in other AAL projects such as Palette and FreeWalker as a workpackage manager of co-design and user evaluation. Furthermore, i-evAAlution, Certification-D and POSTHCARD are also AAL projects he supports in co-creation and research. Henk Herman is the WP3 leader of the H2020 ME-WE project on young carers. In the WP, a European Delphi study is performed in 6 countries and a systematic literature study. Henk Herman lead the research on the evaluation of the long-term care act in The Netherlands for the Ministry of Health. Besides these projects, Henk Herman is project leader of multiple eHealth implementation and evaluation projects in The Netherlands, such as 'Anders Werken' in the province of Noord-Brabant. In addition, Henk Herman is supervisor of several MSc students and is involved in the Human In Technology course at the TU/e. He is the co-promotor of Sandra Suijkerbuijk (PhD student TU/e & Vilans) on co-creation with people with dementia and Dirk Lukkien (PhD student UU & Vilans) on responsible AI in long-term care.

Friday October 23, 2020: AI and Data –Medical Innovation

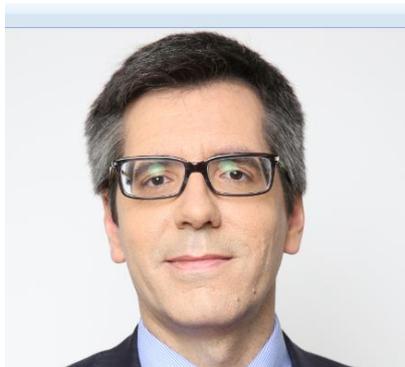
Keynote 5: AI and New Medical Paradigm. Making it happen through KIWI Hospitals and Organizations

23.10.2020, 08:00-08:30 Brussels/ 14:00-14:30 Beijing

AI is promising to change healthcare. Care with AI is nonetheless problematic. Carefulness is key. Carelessness can be legally is costly. This presentation will explore some implications of AI in medicine, particular public liability issues, as well as changes to medical paradigm. Finally, the concept of KIWI organizations is proposed and explained. This can frame and help better prepare hospitals and other organizations to harvest the benefits of digital health and AI in particular without neglecting the basics: knowledge, interoperability and wisdom.

Referenced paper translated in Mandarin: https://3fda73f1-2df5-4662-91b3-54ccfc1d068d.filesusr.com/ugd/4e713b_0341ed7e3b9544268a7701a14cd34f52.pdf

Henrique Gills Martins, Past President SPMS, Portuguese eHealth Agency, Ministry of Health



Henrique Martins has a Medical Degree, Internal Medicine Speciality a Master and PhD in Management, and is finishing his Masters in Law, studying Public Liability implications of AI in Health. He is a Medical Doctor and University Professor at a Medical School and two Business schools, teaching and researching in Digital Health, Leadership and Management education for Medical Students and Health Professionals. He is the past president of SPMS, Portugal's Digital Health Agency, where he led National eHealth efforts for close to 7 years, and the former Member States co-chair of the EU eHealth Network, the highest policy body on eHealth in the Union. He now works as an Academic in two high-ranked business schools and one medical school, as CMIO of Hospital Fernando Fonseca, Lisbon and on individual consulting projects in Healthcare Transformation and Digital Health (www.henriquemartins.eu).

S5 – Health technology in Living environments and the Internet of Things - Privacy, ethics, and Cyber-security

23.10.2020, 08:30-11:00 Brussels/ 14:30-17:00 Beijing

S5.1 The GATEKEEPER project: European-led platform for Smart and Healthy Living at home

GATEKEEPER is one of the Large Scale Pilots for innovative digital solutions addressing early detection of risks and medical interventions for age-related conditions and diseases. The project pursues an open innovation approach fostering uptake of digital health solutions making use of artificial intelligence, big data and internet of things technological paradigms involving ca 50.000 users in 8 European and 3 Asian regions.

Giuseppe Fico, PhD, Assistant Professor in Biomedical Engineering, LifeStech research group, Universidad Politécnica de Madrid



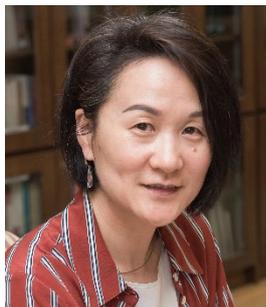
Giuseppe is working with the most important stakeholders in healthcare (research academies and institutions, to large industries, SMEs and startups, public and private institutions, associations and societies) in flagship research, innovation, strategic and policy initiatives, aiming to improve outcomes in health and social care systems, such as the European Innovation Partnership on Active and Healthy Ageing, the European Institute for Innovation & Technology on Health, - the Health Technology Assessment and Clinical Engineering Divisions of the International Federation of Medical and Biological Engineering and the Alliance for Internet of Things Innovation. Currently he is the technical manager of the ACTIVAGE and GATEKEEPER (H2020, 857223) Large Scale Pilots (LSP), of the BD4QoL project on head and neck cancer (H2020, 875192), and coordinator of the EIT Health Living Labs and Testbeds programme. He is co-Chair of the WG5 Smart living environment for ageing well in the Alliance for Internet of Things Innovation (AIOTI) and Councilor for Entrepreneurship and Innovation of the European Alliance for Medical and Biological Engineering & Science. He is lecturer of courses in Biomedical Engineering and Telecommunication Engineering at UPM. He is author of more than 60 research work in internationally recognized journals and conferences, committee member of scientific conferences of biomedical engineering societies and associate editor of the IEEE Journal of Biomedical Informatics and Frontiers in Digital Health for the Connected Health section.

S5.2 Importance of Risk Stratification Strategy and Glocal Agile eHealth Development

Lou VWQ⁽¹⁾⁽²⁾, Cheng CYM⁽¹⁾ ⁽¹⁾ Sau Po Centre on Ageing, The University of Hong Kong, ⁽²⁾ Department of Social Work & Social Administration, The University of Hong Kong, China

Background: Hong Kong will become a super-aged society with more than 21% of its total population will be aged 65 or above by 2024. With the longest life expectancy in the globe and advanced medical conditions, population ageing bring grand challenges as well as opportunities for sustainable development. In order to organise an open, value-driven and trust-based arena, it is time to bring together older adults, their family caregivers, healthcare professionals, service providers, start-up entrepreneurs and the business sector to achieve optimal independency of older adults. As a leading ageing research centre in Hong Kong, Sau Po Centre on Ageing took the lead to join the GATEKEEPER Project in 2019 as one of the Asian Pilots. **Methods:** Aiming to garner and steer eHealth development, four user cases have been formed using risk stratification strategy. Risk stratification is an ongoing process of screening and assigning patients according to their risk status and/or clinical complexity. The four user cases including i) a mobile app that serves as digital coach targeting ageing population with risk factors such as high-blood pressure, ii) a sensor-based digital monitoring station targeting older adults living alone, iii) a community-based interoperable platform to analyse health characteristics and patterns of older adults via big data analytics, and iv) a team-based mobile app targeting stroke families, comprising with stroke literacy education and personalised rehabilitation and social support planning. **Results:** All the user cases were under development but impacted by COVID-19 pandemic, we acknowledge the importance of following a combination of glocal management and agile development to ensure a smooth progress. As one of the Asian Pilots, we believe the user cases can set good references to local as well as global evidence-based eHealth research.

Vivian WQ Lou, Sau Po Centre on Ageing, The University of Hong Kong, and Department of Social Work & Social Administration, The University of Hong Kong, HK, China



Dr Lou Vivian W. Q. is an Associate Professor at the Department of Social Work & Social Administration, The University of Hong Kong. She is also the Director of Sau Po Centre on Ageing, an Honorary Clinical Associate in the Centre on Behavioral Health, The University of Hong Kong. Dr Lou has studied widely on family caregiving, active aging, and their health impacts. Examining Chinese family caregivers' mental health and financial impacts were pioneer studies that generated high impact publications. Recently, Dr Lou's study extended to examining positive and/or resilient capacity of the family caregiving in Chinese context including studying secondary caregivers, social support, roles of domestic helper, and effective intervention strategies. Dr Lou also pioneered three mobile applications targeting volunteers, social workers, and stroke families respectively. She is now teaching social gerontology, clinical gerontology, and human development for both undergraduate and postgraduate students. She had publications in journals such as *Aging and Mental Health*, *Family Process*, *Research on Social Work Practice*, *Journal of Human Behavior in the Social Environment*, and *Social Indicators Research*. Dr Lou is presently a member of Society for Social Work Research, Hong Kong Social Workers Association, Hong Kong Association of Gerontology, and an international affiliate of American Psychological Association.

S5.3 CyberSec4Europe - Aiming to safeguard values through excellence in cybersecurity

TBA

Kai Rannenber, Chair of Mobile Business & Multilateral Security at Goethe University Frankfurt



Kai Rannenber holds the Chair of Mobile Business & Multilateral Security at Goethe University Frankfurt since 2002 and a Visiting Professorship at the National Institute for Informatics (Tokyo, Japan) since 2012. Until 2002, he was working with the System Security Group at Microsoft Research Cambridge on „Personal Security Devices & Privacy Technologies“. 1993-1999 Kai coordinated the interdisciplinary “Kolleg Security in Communication Technology”, sponsored by Gottlieb Daimler &

Karl Benz Foundation researching Multilateral Security. In parallel he did his PhD at Freiburg University on IT Security Evaluation Criteria and the protection of users and subscribers. Before Kai had completed an Informatics-Diploma (Master) at TU Berlin with a focus on privacy, security, and distributed and real-time systems. Since 1991 Kai is active in ISO/IEC standardization in JTC 1/SC 27/WG 3 “Security evaluation criteria”. 2007 he became Convenor of SC 27/WG 5 “Identity management and privacy technologies”. In 2015/16 Kai Rannenber served as the Chair of the Strategic Advisory Group on Industry 4.0/Smart manufacturing of the ISO Technical Management Board. Since October 2015 Kai is an IFIP Vice President; before he was an IFIP Councillor since 2009. Since 2014 he is Chair of the IFIP Publications Committee and Editor-in-chief of the IFIP Advances in Information and Communication Technology. From 2007 till 2013 Kai chaired IFIP TC-11 “Security and Privacy Protection in Information Processing Systems”, after having been its Vice-Chair since 2001. Kai is also active in the Council of European Professional Informatics Societies (CEPIS) chairing its Legal & Security Issues Special Interest Network (LSI) since 2003 and serving in its Board of Directors since 2019. From 2004 till 2013 Kai served as the academic expert in the Management Board of the European Network and Information Security Agency, and from 2013 till 2022 in ENISA’s Advisory Group (till 2019 named Permanent Stakeholder Group). Kai has been coordinating several leading EU research projects, e.g. the Network of Excellence “Future of Identity in the Information Society” and the Integrated Project “Attribute based Credentials for Trust” (ABC4Trust) and is coordinating CyberSec4Europe, a pilot for the European Cybersecurity Competence Network the EU is aiming for.

S5.4 New Technologies and Innovation: Current Status and Directions in Beijing

TBA

Professor Shanhong Mao, Capital Medical University of Beijing



S5.5 AI-driven Innovation

TBA

Robbert Fischer, President, Knowledge for Innovation (K4I)

TBA

S5.6 AI+lung computer-aided diagnosis, fundamentals and technologies

TBA

Professor Yao Lu, Sun Yat-sen University, Guangzhou



Professor Yao Lu received the bachelor's degree in mathematics from the University of Science and Technology of China, Hefei, China, in 2000, the master's degree from the Institute of Mathematics, Chinese Academy of Sciences, and the Ph.D. degree in mathematics from Syracuse University, Syracuse, NY, USA, in 2009. He is currently a Full Professor with the School of Data Science and Computer Science, Sun Yat-sen University, Guangzhou, China. Prior to joining Sun Yat-sen University, he was a Research Investigator with the Department of Radiology, University of Michigan, Ann Arbor, MI, USA. His research interests are in medical imaging, image processing, medical image analysis, and ill-posed problems. His research has been supported in part by the National Science Foundation of China, Department of Education of China, and the Department of Science and Technology of Guangdong Province, China. He has published over 90 journal papers and conference proceeding papers. He has received awards from the Recruitment Program of Global Youth Experts of Chinese Department of Organization and the Hundreds Talents Program of Sun Yat-sen University.

S5.C1 Collaboration ePoster Pitch: Gatekeeper: health technology for living environments and the Internet of Things

Gatekeeper was born from the necessity of providing a full standard and certified approach for data governance in healthcare, designed for the enhancement of data economy, providing solutions for data interoperability and re-use in machine learning (ML) and artificial intelligence (AI) algorithms ensuring data quality, protection, privacy and security.

Based on standards like Web of Things and FHIR, Gatekeeper aims at providing a trustable digital platform centered on data and AI for healthcare that will be validate in different pilots in the EU and Asia. Furthermore, along with web technologies (such as REST-API and Web Socket), blockchain containerization and orchestration technologies (suck as Docker and Kubernetes) are used to build a resilient, scalable, secure and certified digital platform designed for data governance in the healthcare domain.

At the current state within the Gatekeeper project there has been already defined a first release of the Gatekeeper digital platform, and a standard and common data space based on FHIR standard that will be populated by 8 pilot sites in Europe and 3 pilot sites in Asia. Furthermore, within the pilots, Gatekeeper aims to create an artificial intelligence ecosystem based on the concept of the Gatekeeper data space that will contribute to the HealthCare Data Space foreseen at European level, with the objective of providing services for early prevention and intervention in 7 Medical Reference Use Cases (RUCs) in order to improve the accessibility, effectiveness and sustainability of the healthcare systems.

The aim of Gatekeeper project is to enhance collaboration worldwide, by promoting a collaborative environment based on fully standard, interoperable and open source solutions.

Eugenio Gaeta, Gatekeeper platform lead, Universidad Politécnica de Madrid, Spain

Giorgio Cangioli, Technical Lead, HL7 Europe and Chair HL7 Italy



Keynote 6: AI in Nursing: Future Outlook

23.10.2020, 12:00-12:30 Brussels/ 18:00-18:30 Beijing

TBA

Dr. Ying Wu, Dean and Professor of Capital Medical University in Beijing, China



Dr. Ying Wu, Dean and Professor of Capital Medical University in Beijing, China. She is appointed by the China Ministry of Education as the Chair of the Working Committee for Accreditation of Nursing Education and Vice Chair of the Steering Committee for Higher Nursing Education. She is currently serving on the Board of Directors of the International Council of Nurses and as the Vice President of the Chinese Nursing Association. She created and serves as the founding Chair of the Nursing Informatics Sub-Associate, Standardization Committee for Nursing Care, and Consortium of Nursing Innovation and Industrialization under the umbrella of the Chinese Health Information and Big Data Association. She created and serves as the founding President of the Sub-Association of Smart Care for the Elderly under the umbrella of the Aging Well Association. She is the Past Vice President and past Regional Vice President of the International Medical Informatics Association and past President of the Asia Pacific Association for Medical Informatics. She has more than 30 years of cardiovascular (CVD) experience in nursing practice, Education and research. Her research areas include CVD acute care and behavior changes for CVD patients as well as elderly care, especially using mobile health technology. She is the principal investigator of four projects, one International (Regional) Collaborative Project, and one Key Project funded by the Natural Science Foundation of China and more than 10 projects from other funding sources with a total funding of over 8 million (approximately over one million US dollars). She is also the PI of a big research project "Development of a Virtual Hospital for Nursing Training and Performance Assessment" from the Beijing Municipal Education Commission with a funding of 40 million RMB (approximately 6 million US dollars). She has more than 160 publications and is the editor or vice editor for 15 books and author of more than 20 books. She is the deputy editor or member on the

editorial board of eight nursing professional journals including the Journal of Nursing Scholarship (ranked #3 in terms of impact factors among all 118 SCI indexed nursing journals worldwide).

S6: AI in the Hospital of the future / Health and Wellness Technology

S6.1 Collaboration between business, healthcare and academia for the future health- some reflections!

TBA

Charlott Gummerson, CEO Sahlgrenska Science park, Sweden

TBA

S6.2 Natural Language Processing in EMR

TBA

Professor Ji Wu, deputy director of the Department of Electronic Engineering, Tsinghua University



Professor Ji Wu is deputy director of the Department of Electronic Engineering, Tsinghua University, Beijing, China. He received his B.S and Ph.D degrees from Tsinghua University, in 1996 and 2001, respectively, both in electronic engineering. He is heading the Multimedia Signal and Intelligence Information Processing Lab at Tsinghua University, and also the director of Clinical big data Center, Institute of Precision Medicine, Tsinghua University. Since 2006, he has been the director of Tsinghua-iFlyTek Joint Lab. He won the second prize of National Science and Technology Progress Award in 2011 and the first prize of Beijing Science and Technology Award in 2014. His research interests include speech recognition, natural language processing, pattern recognition, machine learning and data mining. He has been elected a Senior Member of the Institute of Electrical and Electronic Engineers in 2015.

S6.3 The journey towards smarter hospital workflows: A BigMedilytics perspective

There are currently several converging trends in the healthcare sector that threaten the future of the quality of healthcare provided by hospitals: an aging population, increasing incidence of chronic disease, dwindling number of care providers and shrinking healthcare budgets. One way to address this problem is to optimize workflows in hospitals. This will help improve the utilization of resources in the healthcare sector and thus improve productivity. Both patients and staff will be positively impacted and healthcare costs can be kept in check. The BigMedilytics EU Lighthouse project aims to demonstrate how Big Data can have a transformational impact on the healthcare sector. The project has three main themes: Population Health, Oncology and Industrialization of Healthcare. The talk will provide an overview of the BigMedilytics project and focus on the third theme. After describing the present-day challenges of characterizing workflows, it will then describe how data from real-time locating systems can be used (in combination with other data sources) to provide accurate insights

about workflows in a variety of use cases. This information can then be used to identify bottlenecks and subsequently optimize workflows. Such techniques are foundational building blocks for eventually helping hospitals make the transition to a future where reliable and trustworthy AI solutions play a greater role in supporting key stake holders (e.g. care providers, departmental managers and the C-suite) make (real-time) decisions to optimize workflows.

Supriyo Chatterjea, Senior Scientist, Philips Research, NL



Dr. Supriyo Chatterjea is a Senior Scientist at the Data Science group at Philips. After graduating from Nanyang Technological University, Singapore with a Bachelor's degree in Electrical Engineering in 2001, he obtained a Master's degree with distinction in Computing and Internet Systems from King's College London, U.K., in 2002. He obtained his PhD in Computer Science from the University of Twente, the Netherlands in 2008. His thesis focused on the distributed data management aspects of wireless sensor networks. He is currently involved in multiple machine learning and big data analytics projects in the area of Real-time Workflow Analytics for Hospitals. He is also the project leader of the H2020 BigMedilytics EU project.

S6.4 Diagnostic Imaging for the Hospital of the Future

TBA

Professor Zhi Yang, Capital Medical University of Beijing

TBA

S6.C1 Collaboration ePoster Pitch: AI Enhanced Person-Centred Care in Stroke Rehabilitation

The person-centred care (PCC) in health care has been shown to advance concordance between care provider and patient on treatment plans, improve health outcomes and increase patient satisfaction¹. Since stroke is a chronic condition, the recommendations have to embrace the whole cycle of recovery, from the early treatment in the acute care hospital through reintegration into the community till the long term maintenance and prevention including social reintegration, health-related quality of life, maintenance of activity, and self-efficacy². Key challenges are in designing, developing and planning of PCC services for stroke rehabilitation in order to provide support to *patient narratives, shared decision making, consistent evaluation framework*. The potentials of using AI techniques/methods/approaches in PCC by exploring well-known approaches coming from different fields of applications and research communities, such as:

- Domain-specific knowledge representation with evidences from different resources, different representations and roles; adoption of well-known algorithms to support decision making;

¹ I.Ekman et.al., *Person-centred care- Ready for prime time*, European Journal of Cardiovascular Nursing, 10(4):248-51, 2011

² Winstein CJ et al., *Guidelines for Adult Stroke Rehabilitation and Recovery: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association*, Stroke 47 (2016).

- AI use for exploring data (data centric)- Despite the increasing availability of medical data from different sources, most of the applications of AI in the medical field are still mono-modality (utilizing one type of data at the time).

The Project is funded by Ministry of Science of Montenegro, period: 2019-2021. Currently, we applied model-driven approach³ for specification of commonalities and variabilities in domain, showing the following advantages: (i) re-use of the model for PCC service design in different institutions, (ii) measure changes over time due to the factors, having impact to the delivery of care (iii) measure impacts to quality of care and delivery of services to stroke patients, (iv) respecting patient's and family's opinion about his/her health and suggested health services. The created model is elaborated by using the database for experimental research which consists of registered stroke cases of patients (944 records of different patient, age from 13 to 96 years).

Opportunities for Cooperation with China can be focused on sharing experience and collaborative work on designing PCC services, refining the model, as well as applying some of alternative concepts/approaches.

Associate Professor Ivana Ognjanović, Univeristy of Donja Gorica, Montenegro



S6.C2 Collaboration ePoster Pitch: European Electronic Health Record Exchange Format: Prospects for the hospital of the future in X-eHealth

Catherine Chronaki, Secretary General, HL7 Europe and Vice President of EFMI



³ I Ognjanović, R Lewandowski, R Šendelj, D KRIKŠČIŪNIEN, J Eraković, *Model Driven Approach for Development of Person-Centred Care in Stroke Rehabilitation*, Studies in Health Technology and Informatics 272, 338-341