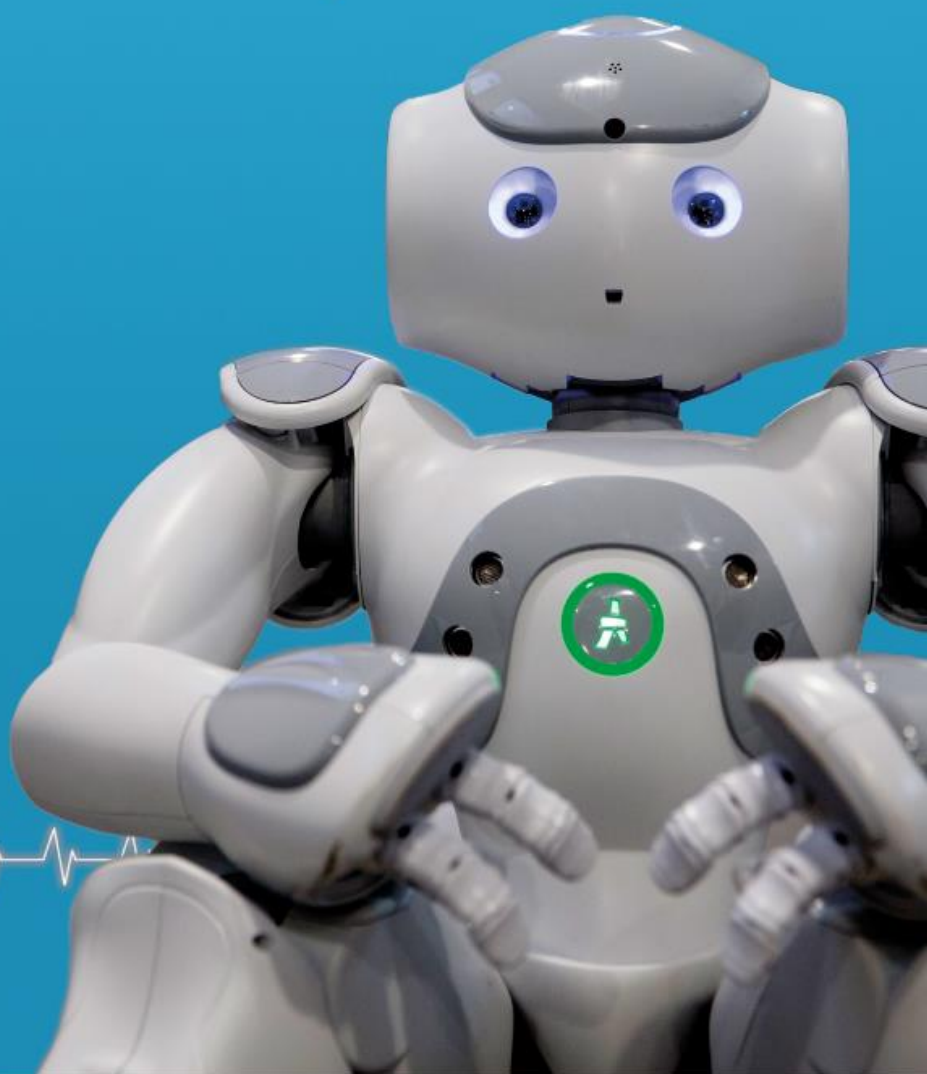


CareTECH²⁰¹⁵

Assistive Technologies for Independent Living:
Implications for Health Care Practitioners

4 JUNE 2015

Old Sessions House
Canterbury Christ Church University
United Kingdom



CareTECH 2015 EVENT

"ASSISTIVE TECHNOLOGIES FOR INDEPENDENT LIVING: IMPLICATIONS FOR HEALTH CARE PRACTITIONERS"

The event is aimed at healthcare professionals to introduce Assistive Technologies (AT) for people with movement difficulties to nurses, occupational therapists, speech and language therapists, clinical scientists, public health and social care practitioners, and to discuss the education and training needs for healthcare workforce development to be able to support the use of AT in services.

The programme includes keynote talks by academics, medical and engineering professionals, user forums, representatives of related EU projects and Health related project Clusters. It also includes presentations of the COALAS project results and developed scenarios, as well as, demonstrations of the implemented technologies, for example, robotic, autonomous and semi-autonomous wheelchairs and a humanoid robot as of the residence helper device.

COALAS is a three year project co-funded by the European Regional Development Fund (ERDF) under the Interreg IVA France-England Channel Programme with an overall budget exceeding 2 million Euros. The UK partners include the University of Kent, the University of Essex, Kent and Canterbury Hospital as part of the East Kent Hospitals University Foundation Trust, and the Health and Europe Centre, and from France ESIGELEC/IRSEEM (Engineering School) in Rouen, Univ. Picardie Jules Verne, and Univ. Le Havre. COALAS is also part of E-UCare, the Strategic Health Cluster of Europe, bringing together 14 Interreg health-related projects and it is separately funded by ERDF through the Interreg IVB North West Europe programme (with partners from UK, France, Belgium, Netherlands, and Germany). COALAS is also related to the SYSSIAS Interreg IVA 2 Seas Project with partners including ISEN in Lille, Ecole Centrale de Lille, Groupement Hospitalier de l' Institut Catholique de Lille, and the Empowerment for Disabled people through Ethics in Care and Technology (EDECT) which is a Cluster of health-related projects as part of the INTERREG 2 Seas capitalisation actions with partners from UK, France, Belgium, and Netherlands.

Dr Konstantinos Sirlantzis,

CareTECH 2015 Chair,

School of Engineering and Digital Arts, University of Kent

For further information: <http://coalas-project.eu/>



PROGRAMME

9:00	REGISTRATION AND REFRESHMENTS (Og12 Hall)
9:30	WELCOME (Michael Berry Lecture Theatre) <i>Professor Rama Thirunamachandran, Vice-Chancellor, Canterbury Christ Church University</i> <i>Debra Teasdale, Dean of Faculty of Health and Wellbeing, CCCU</i> <i>Dr Konstantinos Sirlantzis, CareTECH 2015 Chair, School of Engineering and Digital Arts, University of Kent</i>
10:00	MORNING SESSION 1 (Michael Berry Lecture Theatre)
Chair: Dr Konstantinos Sirlantzis, University of Kent	Plenary: Assistive technologies and workforce development in the collaborative era <i>Professor Kate Springett, Head of School, Allied Health Professions, Canterbury Christ Church University</i> Plenary: Assistive Technology Research for Neuro-disability: Challenges in diffusing that innovation <i>Dr Mohammed Sakel, Director / Consultant Neurorehabilitation Physician East Kent Hospitals University NHS Foundation Trust (EKHUFT)</i> Plenary: The Challenge of the Ethical Provision of Assistive Technology <i>Dr Matthew Pepper, Emeritus Consultant Clinical Scientist Medical Physics Department, Kent and Canterbury Hospital</i>
11:15	REFRESHMENT BREAK (Og12 Hall)
11:30	MORNING SESSION 2 (Michael Berry Lecture Theatre)
Chair: Dr Gareth Howells, University of Kent	Presentation of COALAS Project: Cognitive Assistive Living Ambient System (COALAS): An Overview <i>Dr Nicolas Ragot, ESIGELEC/IRSEEM, Rouen</i> COALAS Social Survey: Goals, Methodology, Results and Recommendations <i>Professor Patricia Sajous, UMR CNRS IDEES, Le Havre University</i> COALAS Development Framework: Assistive Robotic Technologies for Independent Living <i>Dr Konstantinos Sirlantzis, School of Engineering and Digital Arts, University of Kent</i> <i>Dr Nicolas Ragot, ESIGELEC/IRSEEM, Rouen</i> <i>Professor Huoseng Hu, School of Computer Science and Electronic Engineering, University of Essex</i> <i>Dr Guillaume Caron, Laboratoire Modélisation, Information et Systèmes (MIS), Université de Picardie Jules Verne</i>

13:00	LUNCH (Og12 Hall) TECHNOLOGY DEMONSTRATIONS (Og12 Hall) ❖ Assisted Navigation for Electric Powered Wheelchairs (EPW) ❖ Autonomous Navigation for Electric Powered Wheelchairs (EPW) ❖ Alternative Navigation Devices for Electric Powered Wheelchairs (EPW) ❖ NAO Humanoid Robot: People tracking in a cluttered environment ❖ NAO Humanoid Robot: People fall detection ❖ NAO Humanoid Robot: Face Recognition and following ❖ NAO Humanoid Robot: Object recognition ❖ NAO Humanoid Robot: Social Interaction and Companionship (Story telling)
14:00	AFTERNOON SESSION 1 (Michael Berry Lecture Theatre)
Chair: Dr Farzin Deravi, University of Kent	From SYSIASS to EDECT: assistive technology driven by primary users <i>Professor Jean–Marc Capron, Institut Supérieur de l'Électronique et du Numérique (ISEN-Lille)</i> Empowering Disabled users and carers through the Ethical development and Care provision of assistive Technology (EDECT) <i>Ladan Najafi, Head of Service, East Kent Adult Communication and Assistive Technology (ACAT), Kent and Canterbury Hospital</i> HandiViz project: a low-cost driving assistance for electrical wheelchair <i>Professor Marie Babel, Computer Science Department, INSA Rennes, IRISA/Inria – Lagadic Team</i> EU Mapping Assisted Living Capability Over La Manche (MALCOLM) Project: Results and Future Opportunities <i>Dr David Parry, CEO, South East Health Technologies Alliance (SEHTA)</i>
15:30	REFRESHMENT BREAK (Og12 Hall) TECHNOLOGY DEMONSTRATIONS
16:00	AFTERNOON SESSION 2 (Michael Berry Lecture Theatre)
Chair: Dr Matthew Pepper, EKHUFT	Assistive Technology: Feedback from a patient's representative <i>Tanesh Bhugobaun, Chair Kent Brain Injury Forum (KBIF)</i> Panel discussion: Future of Assistive Technologies in Health Care: key priorities for practice <i>M. Sakel, T. Bhugobaun, D. Parry, P. Sajous, C. Jackson, P. Neily</i>
17:00	CLOSE OF CONFERENCE

INVITED SPEAKERS

Professor Kate Springett



Kate Springett is Professor of Health Professions Studies, Head of School of Allied Health Professions, International Lead for Faculty of Health and Wellbeing, Canterbury Christ Church University. The School of Allied Health Professions is a leader in inter-professional education, has international and national reputation in areas of AHP specialism and works in strong partnerships with local NHS Trusts and other health and care providers. I am the strategic, academic lead for our large School. With an internationalisation role for the Faculty, I am also committed to research capacity building locally with colleagues in the Kent and Medway Health Partners to benefit our local population, and nationally with the NMAHP Clinical Academic Careers Development Group. My research interests include the diabetic foot and tissue viability, ultrasound skin imaging, for people with long term conditions who have difficulty moving around and interprofessional education.

Dr Mohammed Sakel



Dr Mohamed Sakel FRCP (UK), PG Dip Rehab Medicine (UK) leads the East Kent Neuro-Rehabilitation Unit at Canterbury City for East Kent University NHS Hospital as its Director & Consultant Physician since 2003. He was the Director for R & D and Board Member of the East Kent University hospital and an executive member of the Kent County regional Research network Board from 2008-2012. He advises the NHS England and Clinical Support Unit for neuro-rehab service provision for a Kent & Medway County. His clinical and research interest includes rehabilitation and Neuro-modulation of brain injury, stroke, spasticity, Brain Computer Interface, Minimally Conscious State, and Brain Computer Interface. He has completed several multi-national researches with UK US, Canada & EU countries. Three of his projects were in 2013 UK Parliamentary report on R & D in Assistive technology by Health Secretary (UK). He is a Steering Committee Member of International Rehab Forum, Kent Brain Injury Forum and a Fellow of American Congress of Rehabilitation Medicine. He was elected twice as member (National Committee) of the Medical Academic Staff Committee of British Medical Association (UK) for 2012-14. Through his role as Global Ambassador in SWBF, he wish to contribute to service and research development and influence policy for Dementia care in UK and UN.

Dr Matthew Pepper



Dr Pepper initiated and ran the Clinical and Rehabilitation Engineering Section of Medical Physics from 1990 - 2013. This section provide integrated services to the user, their families and their carers in the areas of Specialised Seating, Specialised Powered Chair control systems and Communication and Assistive Technology. The section works as a member of the multidisciplinary team, which includes the user, their family and carers. The goal is to help improve the quality of life of the user and their care network through technical innovation. Dr Pepper also has a joint appointment as a Senior Lecturer with the School of Engineering and Digital Arts, The University of Kent, where he is a member of the Instrumentation Research group, specialising in Medical Instrumentation. Research interests are focussed in the area of Rehabilitation Engineering. This includes the development of

intelligent wheelchairs to improve the mobility and independence of the user (SYSIASS, COALAS and EDECT EU projects), a facial gesture recognition system to enable computer access and the monitoring of upper limb recovery during rehabilitation using inertial sensors.

Professor Patricia Sajous

Patricia SAJOUS is Associate Professor of Geography and Planning at UMR CNRS IDEES, Le Havre University. She has extensive experience and publications in the research fields of daily mobility of persons, spatial dynamics in urban areas, and urban sprawl. She led the team which performed the user and carrier survey and interviews for the use of assistive and robotic technologies within the technology design framework specified in the COALAS Interreg IVA France (Channel) England project.

Professor Jean-Marc Capron

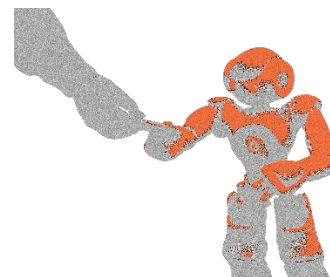


Jean-Marc Capron is an engineer in electronics, graduated from ISEN-lille (Institut Supérieur de l'Electronique et du Numérique – Lille – France) and has a PhD in Electronics, from Lille University. He is currently researcher and professor at ISEN, where he teaches digital systems (microcontrollers, FPGA, VHDL) and analog electronics (power electronics, wireless system). He is responsible for the “Embedded Digital Systems” professional domain. His research activity was formerly in the field of integrated circuit design (continuous filters, sample and hold circuit for medical imaging). Nowadays, he works on electronics systems, for instance in the context of assistive technology for powered wheelchair. He was involved in the design of the first wheelchair prototype used for clinical tests with primary users, and keeps a strong interest for subsequent steps of the project.

Ladan Najafi



Ladan is a registered Clinical Scientist and a Chartered Engineer with a degree in Medical Engineering and MSc in Bio-Medical Engineering. Ladan is specialised in Electronic Assistive Technology (EAT) and Postural Management. She worked in Chailey Heritage Clinical Services for 6 years supporting children with complex physical disabilities. Ladan joined the Adult Communication and Assistive Technology (ACAT) Service in 2011 as the head of the service where she currently works. The service is part of the department of Medical Physics in Kent and Canterbury hospital. The service provides specialist assessments and EAT equipment to its service users with complex disabilities using a multidisciplinary approach. The service intervention is mostly to support the service users in communication and computer access using alternative methods of access.



Professor Marie Babel



Within the IRISA/Inria lab, Marie Babel's research works tackle robotic vision issues, and more particularly assistive robotics. In this context, she actively participate to the Inria Large-scale initiative action PAL (Personally Assisted Living). In particular, she proposed semi-autonomous navigation solution of a robotized wheelchair with the help of dedicated vision embedded systems together with visual servoing frameworks. These works include visual feature detection and tracking. In addition, she was the leader of the APASH project (2012-2014) that aimed at designing a driving assistance for wheelchair: the resulting technology is currently under transfer towards Ergovie company (Rennes) within the HandiViz maturation project. Current research works are oriented towards multimodal sensor based servoing, as well as haptic feedback that leads to an intuitive assistive wheelchair navigation.

Dr David Parry



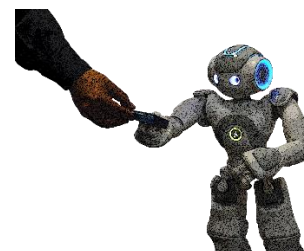
David has been CEO of SEHTA since 2006 and prior to that he has had a career in business support, business development and life-sciences research both as an academic and in government funded research organisations. He has a long track record of developing and delivering a range of projects mostly in life sciences secured both from public and private sectors.

Dr Parry has published over 50 referred papers and written 2 books. He successfully supervised 12 PhD students and has been an external examiner (PhD) at 5 universities. David is a graduate of Imperial College and obtained his PhD from Imperial College at Wye.

Tanesh Bhugobaun



Tanesh Bhugobaun is skilled and had experience in strategic healthcare planning. He has worked in the NHS and the Independent Health Care Sector at senior managerial level in the UK and overseas. He has recently developed business planning for a major independent health care provider. He worked as a consultant with UK Universities and British Council overseas in promoting Higher Education. He was part of the advisory research team at the Faculty of Integrative Medicine at the University of Arizona in Tucson USA. He now works as a case management consultant for organisations and supporting people who have mental health and neuro-disability needs. Since 2009 Tanesh has chaired Kent Brain Injury Forum (KBIF) and spearheaded the programme for the development of holistic neuro-rehabilitation in Kent and Medway. He represented patient associations in the launch of Brain Injury manifesto at the House of Lords in 2014. He believes in the importance of engagement as a central pivot for sustainable integrated care planning and delivery.



ABSTRACTS

Assistive technologies and workforce development in the collaborative era

Professor Kate Springett

Assistive technologies (AT) is a multi-faceted field requiring multidisciplinary team (MDT) working, for AT often outside the usual MDT requiring trans-disciplinary understanding. The 'human interface' to a IT-focused person may mean a joystick or keyboard, a health professional may understand this to refer to accessibility and ease of use, a service user could view an assistive device as friend or foe. Whether low tech (notice boards) or high tech (assistive living technology - telehealth, telecare; AT devices), this language needs clarifying to support education in AT, to ensure outcomes are attributed to appropriately and that the evidence base is understandable.

The Public Health perspective, shifting therapeutic intervention from being solely reactive to being proactive, planned and preventative for populations as well as individuals continues to be developed in HEI education. However, learning in practice settings remains a major influence on students' understanding of their roles whether pre-registration or for continuing professional development. Service provider staff have mixed views on whether AT is a specialist role and/or a broadening of existing roles. Nevertheless, health and care provider organisations are responsible for providing the means for qualified professionals to enable implementation, HEIs for providing time for real-life exploration of AT education and together creating a broad workforce that includes AT within its practice.

As well as identifying the appropriate AT in collaboration with the service user for individualized personalized care, health professionals require competences in QA, audit, outcome measures and ability for trans-disciplinary communication that includes carers, teachers, IT technicians, non-NHS services, Acute and Community NHS Trusts, industry. They may need to develop policies, and apply these. This is in addition to good knowledge of the range of technologies relevant to individuals' needs as well as application of the evidence base to support selection, and mindful of AT that is readily accessible, may require support from a charity or private funding. Services are under pressure to provide reactive care, so planning is needed to support staff in practice settings who will cascade-educate AT with the new workforce while Universities support evidence based practice and encourage research.

Assistive Technology research for neuro-disability, challenges in diffusing that innovation

Dr Mohamed Sakel

Assistive Technology (AT) is any product or service designed to enable independence for disabled and older people. To address the growing need and cost of caring for people with neuro-disability, Royal Colleges and policy makers in UK and EU advocated deploying innovative AT. Here in Canterbury, we have pursued a wide AT research programme supported by EU colleagues. We now need to address the challenge of diffusing these innovations into real life care practices. That will require all multi-disciplinary professionals to adopt a model of practice that best reflects the agenda for healthcare and consumer expectations. We need to generate a shared vision amongst the public, academics, clinicians and policymakers to agree upon the optimum developments of AT and the pace of its implementation.

The Challenge of the Ethical Provision of Assistive Technology

Dr Matthew Pepper

The provision of assistive technology can significantly improve the quality of life of users and their families/carers. However the provision of Assistive technology can also be a significant source of stress for the user and their carers/family. For successful provision, the Assistive Technology must not only be fit for purpose but the users and carers may also require training and long term support. But what long-term support is required, how can we best provide it and who will provide the resources to do so? If we develop/provide Assistive Technology but do not provide sufficient support, is this ethical? Examples of assistive technology and the challenges associated its use will be presented to illustrate these points.

COALAS Social Survey: Goals, Methodology, Results and Recommendations

Professor Patricia Sajous

Our presentation deals with interdisciplinary collaboration between Social Human Science and Engineers teams for 8 months in the first phase of the project COALAS. During this collaboration, a social survey was realised in France and has allowed to specify the social environment in which COALAS systems will have to integrate.

From SYSIASS to EDECT: assistive technology driven by primary users

Professor Jean-Marc Capron

This presentation starts with an overview of the SYSIASS Interreg project and shows how it was driven, starting from a survey with primary users, and finally leading to the development of assisted wheelchairs prototypes used for clinical and pilot tests. It will be seen that the result of the first tests influenced the subsequent prototypes. This first step gave birth to EDECT, another Interreg project: it focuses on the methodology to follow when developing assistive technology which involves stakeholders (users, health professionals, policy makers, technology providers).

Empowering Disabled users and carers through the Ethical development and Care provision of assistive Technology (EDECT)

Ladan Najafi

EDECT cluster is a cross boarder collaboration between UK, France, Netherlands and Belgium that brings together partners from System Intelligent et Autonome d'aide aux Soins de Sante'/Autonomous and Intelligent Healthcare Systems (SYSIASS) and Dignity In Care (DIC) projects. These two projects share a similar aim: the underlying principle of educating and motivating the care network through dignity, empathy and experience, all to strengthen a patient's autonomy. DIC aims to reinforce the principle of dignity in care and its importance in nursing (through the development of the Stimul care sessions), while SYSIASS reinforces the importance of a person's autonomy, even if their mobility is extremely limited (such as through an autonomous wheelchair).

The overall purpose of the cluster is:

- To inform stakeholders from the four countries on our earlier project results
- To educate and motivate users, families and the care network through empathy and experience
- To explore the ethical implications of user-centred provision of assistive technology

This talk will include a background on the project and the findings from two sets of workshops, one focusing on mobility and one on communication, that were run in all four countries.

EU Mapping Assisted Living Capability Over La Manche (MALCOLM) Project: Results and Future Opportunities

Dr David Parry

The South East Health Technologies Alliance (SEHTA) and its French partner Pole-TES based in Lower Normandy recently completed an EU-funded Interreg project called MALCOLM (Mapping Assisted Living Capability Over La Manche). The project researched, mapped and compared the needs and capabilities of the e-health sector in the coastal counties of South East England and in Lower Normandy. The project concluded that policies associated with e-health in the two regions were similar, but implementation was different. It was also concluded that there are considerable cross-border opportunities for knowledge sharing and commercial development. Finally, new insights were made into the health and care journeys in both regions which highlighted layers of care needed by ageing populations, who might provide the care, and identified opportunities for companies producing assisted living products and services in support of care needs.

Assistive Technology: Feedback from a patient's representative

Tanesh Bhugobaun

This talk presents the patient's perspective in using Assistive Technologies. Tanesh will present KBIF's user needs within the SYSIASS and COALAS Assistive Technology projects' development frameworks, expressing the lay people's experience and perspective on technology like the intelligent wheelchair and robotic assistants.



NOTES



Assistive Technologies for Independent Living



THE PROJECT:

Cognitive Assisted Living Ambient System



Co-FUNDING:



PARTNERS:



HOSTED BY:

