Autonomy Program Scientific Seminar
Technologies for Active Aging

Wednesday, December 5, 2018 in Jussieu from 9:00 to 18:00
In room 106 of the CICSU Bar 44/45

Joint seminar with EIT Health, organized by Kiyoka KINUGAWA, Sofiane BOUDAOUD, Mohamed CHETOUANI and Caroline MOREAU.

The partners

Access to the seminar

By car:
GPS coordinates :
>   Latitude : 48.8464111
>   Longitude : 2.3548468

By transport:
Subway: Ligne 7 ou 10 get off at the station « Jussieu »
Bus: Lignes 67, 89 get off at the station « Jussieu » OR lignes 24, 63 descendre à « Université Paris 6 »
10 mn to Châtelet - Les Halles.
20 mn to Gare de l'Est, Gare de Lyon and Gare du Nord.

In the University:
The seminar will take place in Room 106 of the Sorbonne International Colloquium Center (CICSU) which is located on the XX floor of the bar 44–45. You can access it by taking the lift, or the stairs, from Tower 45 front and left by entering the university side of Jussieu subway (see map below).
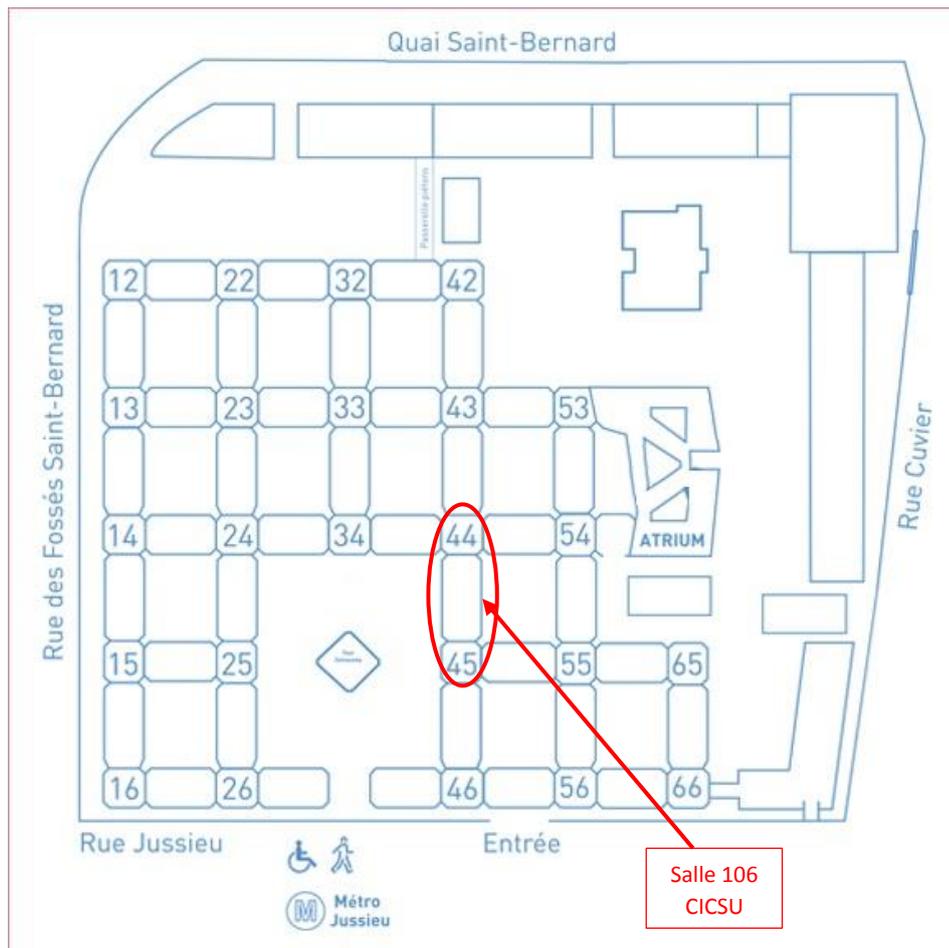
Presentation and contacts

Autonomy Program seminar

The Autonomy Program is one of the flagship programs of the University Institute of Engineering in Health (IUIS) of Sorbonne University. This program aims to bring together clinicians and researchers from various disciplines to address the issue of autonomy. The prevention, evaluation and care of autonomy arise at different stages of life and for different pathologies.

The program organizes a series of seminars on specific themes of prevention, evaluation and empowerment.

Contact:
Mohamed CHETOUANI (Sorbonne University) Autonomy Program Manager
(Mohamed.Chetouani@sorbonne-université.fr)
http://iuis.sorbonne-universites.fr/mission/recherche/autonomie.html

Technologies for active aging

The seminar on silver technologies organized under the Autonomy Program of the University Institute of Engineering in Health aims to foster discussions between disciplines and to draw the outline of future collaborations within Sorbonne Universities, the Francilienne region and beyond around this theme which constitutes one of the pillars of self-reliance.

It brings together practitioners from different specialties, scientists from different backgrounds (engineering, biology, humanities, etc.).

Seminar Organizers:
Kiyoka KINUGAWA (MCU-PH, Hospitalo-University Group La Pitié-Salpêtrière Charles Foix, kiyoka.kinugawa@aphp.fr) ;
Sofiane BOUDAOUD (MCF - HDR, Laboratory BMBI, Compiègne University of Technology, sofiane.boudaoud@utc.fr) ;
Mohamed CHETOUANI (PU, ISIR CNRS UMR 7222, Sorbonne University, mohamed.chetouani@sorbonne-université.fr) ;
Caroline MOREAU (Project Manager of the Autonomy Program, IUIS de Sorbonne University, caroline.moreau@isir.upmc.fr).

Programme de la journée

9h00 - 9h35 **Introduction**
- *Presentation of EIT Health project « CHRONOS »*

Kiyoka Kinugawa - Sorbonne University, APHP, Project Manager CHRONOS
Sofiane Boudaoud - Compiègne University of Technology, co- Project Manager CHRONOS
- *Presentation of IUIS « Programme Autonomie »*

Mohamed Chetouani - Sorbonne University, Autonomy Program Manager

9h35 - 10h05 **Functional decline with aging and its challenge**
Kiyoka Kinugawa, MCU-PH, Functional exploration of the elderly subject, Charles Foix hospital
Sorbonne University /CNRS UMR 8256 Biological Adaptation and Aging

10h05 - 10h35 **Characterization and modelling of the neuromuscular system with aging**
Sofiane Boudaoud, MCF-HDR, BMBI Laboratory of the Compiègne University of Technology / CNRS
UMR 7338

10h35-10h55 Pause

10h55 - 11h25 **Functional evaluation of elderly by mocap analysis**
Frédéric Marin, PU, BMBI Laboratory of the Compiègne University of Technology / CNRS UMR 7338

11h25 - 11h55 **"Sarcopenia, Frailty, Malnutrition: The muscle in question"**
Agathe Raynaud-Simon, PU-PH geriatrics, Head of the Department of Geriatric HUPNVS, site Bichat,
APHP, Faculty of Medecine Denis Diderot, Paris 7.

11h55 - 12h25 **the Silver Technologies at the heart of our health and well-being systems**
Aly Chkeir, Professor-Researcher & Holder of the SilverTech Chair, Troyes University of Technology

12h25 - 14h Lunch

14h00 - 14h30 **« Experiences of implementing orthogeriatrics »**
Jacques Boddaert, PUPH geriatrics, Unit of Peri-Operative Geriatric care, Pitié-Salpêtrière Hospital
Sorbonne University / CNRS UMR8256 Biological Adaptation and Aging

14h30 - 15h00 **Electrical & digital building infrastructure for Assisted Living**
Pascal Doré, Legrand / Innovation & Systems / Technological Research

15h00 - 15h30 **Digital in real life/ focus on Challenge for a nice Life**
Dr Frédéric Prate, geriatrics, CHU de Nice, France

15h30 - 15h50 Pause

15h50 - 16h20 **Distress situations detection and Rehabilitation at home**
Dan Istrate, Associate Researcher Professor, BMBI Laboratory of the Compiègne University of
Technology / CNRS UMR 7338

16h20 - 16:50 **The new age of population level surveillance and remote patient monitoring - IOT, Wearables, and Zero Effort Technologies**
Plinio Morita, Assistant Professor - School of Public Health and Health Systems. University of Waterloo

16h50 - 17h50 **Round table and closing**

Présentation des orateurs

Jacques BODDAERT

Professor in geriatrics at Sorbonne University/AP-HP in Paris, his major interest is in the field of perioperative geriatric medicine. He created and is in charge of the first Unit of Peri-Operative Geriatric care (UPOG) in the Pitié-Salpêtrière hospital. He is member of the Departement Hospitalo-Universitaire FAST (Fighting Against Stress and ageing) focused on acute stress and multimorbidity in elderly patients, and of the INSERM U-1135 team. He is in charge of a cohort of patients in the field of perioperative care, and hip fracture surgery (n=1200 patients). Involved in translational research, the UPOG is centered around a model of acute stress represented by surgery in elderly patients with multimorbidity, mainly orthopaedic surgery and hip fracture, including more than 200 patients per year, which helps to define a new model of care patient and to study clinical and biological factors associated with prognosis and recovery. His unit and team demonstrated an improvement of morbidity and mortality in patients with hip fracture in 2014, and this model of is now considered a reference model, used in more than 15 UPOG in France. He collaborates with French regional agency (ARS Ile de France) to promote UPOG creations, leading to 15 in the region Ile de France in 2017.

Sofiane BOUDAOUD

Sofiane BOUDAOUD is associate professor (HDR) at University of Technologie of Compiègne (UTC). His research is related to the design of signal processing and multiphysics and multiscale modeling methods applied to electrophysiological data with a focus to high-density surface electromyography (HD-sEMG). He has defended his magister, PhD and HDR in 2001, 2006 and 2014 respectively on biomedical signal processing and modelling.

This research aims to a better understanding of the underlying processes in the neuromuscular system during muscle contraction in several physiological contexts and strong interface with biomechanics. The principal objective is to provide new ambulatory and efficient tools for helping practitioners in refining their diagnosis concerning both functional and physiological aspects (as in CHRONOS project, co-lead). The actual clinical application is the characterization and modelling of muscle aging and sarcopenia for monitoring functional rehabilitation programs.

Mohamed CHETOUANI

Prof. Mohamed Chetouani is the head of the IMI2S (Interaction, Multimodal Integration and Social Signal) research group at the Institute for Intelligent Systems and Robotics (CNRS UMR 7222), Sorbonne University. He is currently a Full Professor in Signal Processing and Machine Learning for Human-Machine Interaction. He is also CSO at Batvoice Technologies. His research activities cover the areas of social signal processing, social robotics and interactive machine learning with main applications in psychiatry, psychology, social neuroscience and education. In 2016, he was a Visiting Professor at the Human Media Interaction group of University of Twente (NL). He is the Deputy Director of the Laboratory of Excellence SMART Human/Machine/Human Interactions In The Digital Society. He coordinates the Autonomy Programme of the Institute of Engineering for Health at Sorbonne University. Since 2018, he is the coordinator of the ANIMATAS H2020 Marie Sklodowska Curie European Training Network.

Aly CHKEIR

Aly CHKEIR is an assistant professor and chair holder of "SilverTech" at the University of Technology of Troyes. He completed his PhD. in Bioengineering, Biomechanics, Biomaterials from the University of Technology of Compiegne, France, in 2011. He has worked on the modeling of the propagation of uterine electrical activity with theoretical and experimental approaches.

He is in charge of this Chair of Technological Innovation and Entrepreneurship: "SilverTech", his assignment is to support the development of knowledge applied to silver technological innovation, notably concerning territorial technology transfer.

His main research interests focus on biomedical signal processing and methodologies, especially for decision making, with specific reference to new methods for statistical signal segmentation and classification. His current application field relates to biomedical engineering with a specific focus on solutions for prevention, detection and monitoring of frailty in the ageing populations.

He is responsible for a specialized master's degree program entitled "Expert in Silver Technologies". The objective of this master is to train specialists able to understand the ecosystem of the elderly, to learn the field of Silver Technologies, to evaluate innovations in their socio-medico-economic dimensions, and to manage the deployment of solutions adapted to the wishes and abilities of everyone in the developing framework of the Silver Economy.

Pascal DORE

Born in 1960, Pascal Doré graduated a Master Degree in Orleans University in Electronic, Electrotechnic and Automatic and joined Legrand in 1990. After holding various positions within an electronic manufacturing unit, he joined the Technological Research Department of Legrand. His initial investigations focused on innovation in the electrical systems and electronics for integration into wiring devices. Then, he orientated his activities on assisted living applications, implementing and using the technologies and communication networks to provide safety, comfort and social link to the elderly or frail people. He participated to different projects of collaborative research, carried by the S2E2 cluster of which he is a board member since 2005. He also managed large AAL projects with deployments in Hospitals or Nursing Homes.

Frédéric PRATE

Frederic Prate is responsible for the health / well-being / aging Reference center. After a course at the University of Nice Sophia-Antipolis (Faculty of Sciences, Faculty of Medicine), Frederic Prate specialized in Public Health. Graduated in 2013 at the University Paris XI for Clinical Research, Modeling and Information Processing, he obtained in 2014 the title of Engineer of Health Systems and Autonomy. His interest in the world of digital technology and health led him to work in this field, first at the University Hospital Center of Nice, as a software reference for help with prescription, then at the Center for Innovation and Health. Uses en Santé, where he is currently coordinating clinical research projects and evaluating innovative solutions.

Inscribing its action in a transversal approach, Frédéric Prate contributes to the rapprochement of Industry, Research and Health in order to encourage the emergence of innovation and the Silver Economy. Passionate about new technologies, he puts his skills at the service of the community, thanks to a close collaboration with the City of Nice, in LivingLab Health.

Dan ISTRATE

Dan ISTRATE is teacher and researcher at UTC in the BMBI (Biomechanics and Bioengineering) UMR 7338 laboratory and is in charge of the eBioMed Chair (Connected Biomedical Tools). He has defended his PhD in 2003 on the distress situation identification for elderly people using sound recognition and he has defended his HDR in 2011 on multimodal fusion for daily life activities recognition. Since the 2000s, he has been working on home monitoring applications for elderly people in order to detect distress situations using different types of sensors. Since 2014 he has been working on biomedical themes such as home monitoring of pregnant women at risk of premature birth, functional rehabilitation at home through serious games.

Kiyoka KINUGAWA

Kiyoka KINUGAWA is associate professor in Geriatrics (MD, PhD), at Sorbonne University (SU-CNRS UMR8256 Biological Adaptation and Aging) and at Hospital Charles Foix in Functional exploration unit of older patients (AP-HP). She is member of the academic board of European Geriatric Medicine Society, and member of the scientific board of Gérondif (Gérontopôle Ile-de-France).

Her interests are neuro-geriatrics, sleep disorders and neurosciences.

She is interested in sarcopenia, responsible of many geriatric morbidities, and is leading the EIT Health project CHRONOS in order to tackle this problem as soon as possible, by proposing an innovative device detecting motor functional age.

Frédéric MARIN

Since 2009, Frédéric Marin is Professor in the Laboratory for Biomechanics and Biomechanical Engineering at the University of Technology of Compiègne (UTC), France. He received the Ph.D. degree from Ecole Nationale Supérieure des Arts et Métiers of Paris, France, in mechanical engineering related to biomechanics in 2000. After working in industry, he joined the Institute of Orthopaedic Research and Biomechanics, Medical University of Ulm, Germany, as a researcher. His main research interests are centered on the motion capture and analysis of the human and musculoskeletal modeling.

Plinio MORITA

Smart home technologies have become part of our daily lives and a wealth of untapped data is at our disposal. In this presentation, Dr. Morita will describe the use of smart home technologies for remote patient monitoring and population-level surveillance in the Canadian context and his experience in the development of algorithms for monitoring indoor physical activity and sleep quality using smart thermostats.

Dr. Plinio Morita is an Assistant Professor at the School of Public Health and Health Systems at the University of Waterloo and the J.W. Graham Information Technology Emerging Leader Chair in Applied Health Informatics. Dr. Morita also holds appointments as an affiliated scientist at the Centre for Global eHealth Innovation, Techna Institute, University Health Network; as an Assistant Professor at the Institute of Health Policy, Management, and Evaluation, University of Toronto; and as a Research Scientist at the Research Institute for Aging.

Dr. Morita is the Director of the Ubiquitous Health Technology Lab (UbiLab). The vision at the UbiLab is to leverage mHealth, wearables, and IoT sensors for individual- and population-level public health surveillance. The UbiLab's multidisciplinary team researches, designs, develops, and evaluates health

technology that leverages persuasive design to deliver maximum reliability, minimal user burden, along with an outstanding user experience.

Agathe RAYNAUD-SIMON

Agathe Raynaud-Simon is a professor in Geriatrics and a specialist in Nutrition. Her topic is about nutritional disorders in the elderly, mainly malnutrition. She is the Head of the Geriatric Department in University hospitals Paris Nord Val de Seine, president of the Fedération Française de Nutrition, member of the board of the Société Francophone de Nutrition Clinique et Métabolique and member of the board of Gérondif (Gérontopôle Ile-de-France). She recently participated in the ESPEN Guidelines on Geriatric Nutrition and Hydration (Clin Nutr 2018).