JOURNÉE FEDEV 2017

Le Laboratoire d'Ingénierie des Systèmes de Versailles (LISV) organise sur le campus de l'IUT de Vélizy la prochaine journée Fédération de Recherche Demeny-Vaucanson FEDEV le 9 novembre 2017.

De 9h à 17h
Campus de l'IUT de Vélizy
10-12 Avenue de l'Europe
78140 Vélizy-Villacoublay



La journée FEDEV se tiendra sur le campus de l'IUT de Vélizy et rassemblera autour du

thème de l'**Activité Physique/Mouvement, de la Mobilité/Assistances et les Interactions sociales**, entre 50 et 100 chercheurs de Paris - Saclay.

Les deux conférences plénières qui ouvriront la journée seront assurées par le professeur Olaf Blanke et le professeur Gordon Cheng.

Programme (en construction)
9h30-10h10 : Accueil public / Pause café

10h10 : Discours d'ouverture de la *Journée FéDEV 2017*

10h15-11h00 : Conférence plénière par le Pr. Olaf Blanke

Professor Olaf Blanke
Bertarelli Foundation Chair in Cognitive Neuroprosthetics
Director, Center for Neuroprosthetics
Professor, Brain-Mind Institute, Swiss Federal Institute of Technology (EPFL)

Professor, Department of Neurology, University of Geneva
Campus Biotech, Chemin des Mines 9, 1202 Geneva, Switzerland
http://cnp.epfl.ch/

Ghosts, neuroscience, and robotic psychiatry

Tales of ghosts, wraiths, and other apparitions have been reported in virtually all cultures. The strange sensation that somebody is nearby when no one is actually present and cannot be seen (feeling of a presence, FoP) is a fascinating feat of the human mind, and this apparition is often covered in the literature of divinity, occultism, and fiction. Although it is described by neurological and psychiatric patients and healthy individuals in different situations, it is not yet understood how the phenomenon is triggered by the brain.

I will describe several cases of the FoP in neurological patients, suggesting that the FoP is caused by abnormal processing of sensorimotor signals. Based on these clinical data and recent experimental advances of multisensory own-body illusions, we designed a master-slave robotic system to generate specific sensorimotor conflicts at the trunk enabling us to induce the FoP and related illusory own-body perceptions experimentally in normal participants. Further lesion analysis in neurological FoP patients, supported by an analysis of associated neurological deficits show that the FoP is an illusory own-body perception with well-defined characteristics and associated with sensorimotor loss and caused by lesions in three distinct brain regions: temporo-parietal, insular, and especially frontoparietal cortex. These data show that the illusion of feeling another person nearby is caused by misperceiving the source and identity of sensorimotor (tactile, proprioceptive, and motor) signals of one's own body.

In the last part of my talk I will describe our recent work in patients suffering from schizophrenia. We investigated the effects of sensorimotor robotic stimulation on auditory verbal perception and found that especially patients with so called first-rank symptoms (positive symptoms, hallucinations, delusions) are vulnerable to robotic stimulation, associated with changes in gamma oscillations within a distributed cortico-subcortical network. I will conclude by discussing the subtle balance of sensorimotor brain mechanisms that generate the experience of ‘‘self’’ and ‘‘other,’’ and argue that robotic psychiatry in association with neuroimaging may significantly advance efforts for the diagnosis and also the treatment of positive symptoms in schizophrenia and other neurological diseases.

Olaf Blanke is founding director of the Center for Neuroprosthetics, Bertarelli Foundation Chair in Cognitive Neuroprosthetics at the Swiss Federal Institute of Technology (Ecole Polytechnique Fédérale de Lausanne, EPFL). He also directs the Laboratory of Cognitive Neuroscience at EPFL and is Professor of Neurology at the Department of Neurology at the University Hospital of Geneva. Blanke's research is dedicated to the neuroscientific study of multisensory body perception and its relevance for self-consciousness by using a broad range of methods such as the neuropsychology, invasive and non-invasive electrophysiology, and brain imaging in healthy subjects, neurological and psychiatric patients. Most recently he has pioneered the joint use of engineering techniques such as robotics and virtual reality with techniques from cognitive neuroscience and their application to systems and cognitive neuroprosthetics and neuro-rehabilitation.

11h00-11h45 : Conférence plénière par le Pr. Gordon Cheng

Professor Gordon Cheng
Institute for Cognitive Systems
TUM Department of Electrical and Computer Engineering
Technical University of Munich, Germany
https://www.ics.ei.tum.de/

Sensorimotor interactions in humans and in robots: a prelude to humanoid robotic science

Considerable commonalities can be drawn from the sensorimotor interactions between humans and robots, driving research in both fields. The scientific understanding of human motor control is moving beyond simply being a pure inspiration for the derivation of impressive robot controls, and actually changing the techniques used in robotic systems. Moreover, methods in robotics are providing better models of human motor control science. Recent interactions between the sciences of human sensorimotor control and robotics are taking a new leap to provide new and innovative benefits in both fields. In this talk I will draw on several examples in humanoid robotic science to illustrate some of these new directions, findings and discuss future possibilities.

Gordon Cheng holds the Chair of Cognitive Systems, he is Founder and Director of Institute for Cognitive Systems, Faculty of Electrical and Computer Engineering at Technical University of Munich, Munich/Germany. He is also the coordinator of the CoC for Neuro-Engineering – Center of Competence Neuro-Engineering in the Department of Electrical and Computer Engineering. Prof. Cheng is speaker of the established Elite Master of Science program in Neuroengineering (MSNE) of the Elite Network of Bavaria. Formerly, he was the Head of the Department of Humanoid Robotics and Computational Neuroscience, ATR Computational Neuroscience Laboratories, Kyoto, Japan. He was the Group Leader for the JST International Cooperative Research Project (ICORP), Computational Brain. He has also been designated as a Project Leader/Research Expert for National Institute of Information and Communications Technology (NICT) of Japan. Recently, he is involved in a large number of major European Union Projects (e.g. RoboCub, Factory-in-a-Day, CONTEST-ITN, RoboCom-Flagship).

Over the past ten years Gordon Cheng has been the co-inventor of approximately 20

patents and is the author of approximately 250 technical publications, proceedings, editorials and book chapters. He has been named IEEE Fellow 2017 for "contributions in humanoid robotic systems and neurorobotics".

11h45-12h30: Table Ronde avec les conférenciers invités

sur la complémentarité SDV/STIC autour des questions de "embodiment in human-robot interaction"

En plus de nos deux conférenciers invités (Olaf Blanke et Gordon Cheng), participeront à la Table Ronde également :

- Armelle Regnault, INSERM, Directrice déléguée à la Recherche de l'Université Paris-Saclay
- Eric Brunet-Gouet, Praticien hospitalier en psychiatre adulte du Laboratoire HANDIReSP, UVSQ, Centre Hospitalier de Versailles, http://www.uvsq.fr
- Samer Alfayad, Chaire d'excellence industrielle sur la domestication hydraulique LISV, UVSQ, www.sameralfayad.net
- Aurélien Vauquelin, PDG d'Eraclès-Technology, www.eracles-technology.com, Ingénieur en Mécatronique, Docteur en Sciences de l'UTC
- Gaël Guilhem, Directeur du laboratoire SEP de l'INSEP, www.insep.fr/fr/actualites/lunité-recherche

12h30 – 12h45 : Annonce des posters (« booster »)

12h45-14h00: Déjeuner-Buffet / Posters-Démos

14h00-16h15: Communications orales

16h15-16h30: Pause café / Posters-Démos

16h15-16h30 : Réunion du Comité de Pilotage (Prix Demenÿ-Vaucanson)
16h30?17h00 : Remise des *Prix Demenÿ-Vaucanson* autour d'un cocktail fruité
17h00 : Clôture

INFORMATIONS COMPLÉMENTAIRES

Pour plus d'informations :

- http://fedev.universite-paris-saclay.fr/la-recherche/journee-fedev-2017