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Automatic Control and Systems Engineering

The Department of Automatic Control & Systems Engineering
is pleased to announce the following seminar:

Progresses and Challenges in Control of Brain-computer Interface Systems

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Wednesday, 17 February 2016 at 14:00
LT02, Sir Henry Stephenson Building

Abstract

A brain-computer interface (BCI) provides a direct communication pathway between a human brain and an external device. Using appropriate sensors and data processing algorithms, a BCI maps patterns of brain activity associated with a volitional thought onto signals suitable for communication and control. The BCI technology holds great promise as a basis for assisting people with severe communication and motor disabilities by providing a new pathway for interacting between human and robots. In this talk we will provide an introduction about the BCI technology and brain patterns that can be potentially used as control signals for driving a BCI system. Thereafter, we will introduce main challenging issues in controlling BCI systems which is noise and non-stationarity. A number of possible solutions including adaptation techniques are introduced and future directions are discussed.

Biography

Dr. Arvaneh received her Ph.D. in Computer Science from Nanyang Technological University (NTU), Singapore in 2013. From 2009 to 2013, she was also an attached researcher at Institute for Infocomm research, Agency for Science, Technology and Research, Singapore. Thereafter, she moved to University College Dublin where she worked as a lecturer in Biomedical Engineering in 2013. From 2014 to 2015, she worked as a research fellow in Trinity College Institute of Neuroscience. Since September 2015, she has been a Lecturer in the Department of Automatic Control and Systems Engineering at the University of Sheffield, and an honorary research fellow in Trinity College Institute of Neuroscience. She has visited Centre for Medical Science at Albany, NY, USA, BCI labs in Tsinghua University and Beijing Institute of Technology, China, School of Electrical Engineering and Computer Science in Queen's University of Belfast, and Intelligent Systems Research Centre at University of Ulster. She is a technical member of Asia-Pacific Signal and Information Processing Association (APSIPA) and reviewer in several journals and conference paper. Her current research interests include biomedical signal processing, brain-computer interfaces, machine learning, pattern recognition and cognitive process with applications to neuro-rehabilitation and cognitive training.