Integrated Actuators Laboratory (LAI)

ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

Embedded micromechatronics: key factors to foster innovation

Abstract: The evolution of what is called small mechatronic system took a more and more important dimension for these last ten years. Nowadays, the number of actuators, sensors increases fast in a lot of fields. The development of these future systems requires a sustained research of high level to allow a miniaturization of these elements for one thing and an increased autonomy by means of "smart" electronics on the other hand. Energy saving is also a key issue for our future which is also strongly dependent of devices efficiency, even for small power consumption. Connections with material science and information technology are the key for innovation in this topic. Existing technologies must be used in an unconventional use to create innovation. The proposed keynote intends to show some examples of multi-disciplinary projects and show how to combine some exiting technologies in a smart way. The link with industries will be highlighted as a common thread in all breakthrough innovations. Electro-active polymer actuator for blood pump as well as magnetorheological fluid of diabetic shoese design will be highlighted during this presentation.

Biography: Yves Perriard obtained his Master in ‘Microengineering’ from EPFL in 1989 and his PhD form the Electrical Department in 1992. He became cofounder of the company Micro-Beam SA and had the lead of the company until 1998 doing special electric drives. In 1999 he joined EPFL as Senior Lecturer and in 2003 he was appointed Titular Professor and leader of the Integrated Actuators Laboratory. In 2009 he is also appointed Vice-Director of the Microengineering Institute EPFL Neuchâtel. Senior member IEEE and Member EPE, he is also vice-president of the EPE (European Power Electronics) society board in Brussels.

Yves Perriard is interested in innovating, analyzing and creating new actuators associated with their electronic devices. The multi-disciplinary work of his research makes him strongly in contact with industries in Switzerland and abroad. Yves Perriard has published over 180 papers, 5 patents and is co-author of one book. He is associate editor of several journals. Teacher at the Bachelor and Master level, he received twice the best teacher award of the Engineering Faculty in 2005 and 2007. More information can be found on the Integrated Actuators Laboratory web site http://lai.epfl.ch. In 2018, he launched a brand new center at EPFL on artificial muscles thanks to a donation of the Werner Siemens Foundation.