

## Dr Kianoush Nazarpour

School of Electrical and Electronic Engineering, Newcastle University



### Myoelectric Prosthesis Control: The gap between academia and industry

**Abstract:** An artificial arm, or prosthesis, is an example of technology that can be used to help somebody perform essential activities of daily living after a serious injury that results in the loss of their arm. Such activities might include eating, washing, opening doors, or shaking hands with a friend. Many artificial arms on the market these days are highly sophisticated, offering individual finger movement, and even movement of segments within a finger, that resemble the natural arm and hand. These prosthetic arms are often controlled by sensing the contractions in the muscles of the remaining arm to which the prosthesis is attached, allowing the user to operate the arm by flexing their muscles. However, still some everyday tasks, e.g. tying a shoe-lace, are currently challenging with prosthetic hands. In this talk, I will introduce the state-of-art of prosthesis control in academia and industry and discuss how the gap between what is possible in the laboratory and what is available in clinic could be reduced.

**Biography:** Dr Kianoush Nazarpour is a Lecturer in Biomedical Engineering at the School of Electrical and Electronic Engineering and the Institute of Neuroscience in Newcastle. He is the Director of the Biomedical Signal Processing Laboratory and currently leads a research group of 4 PhD students. His research is motivated by the potential of prosthetics to restore function to individuals with sensorimotor deficit, by transforming thought into action and sensation into perception. Dr Nazarpour's work has received funding (total: £2.1m, FEC) from the EPSRC (EP/M25977/1), Leverhulme Trust (RPG-128), the Wellcome Trust (090195/Z/09/Z) and the Royal Society (IE110901). He has authored over 60 articles in top journals and in international conferences. He has been the recipient of a number of awards and scholarships including the best paper award from the 3rd International Brain-Computer Interface Conference (Graz, 2006), the David Douglas award from the South Wales Institute of Engineers (2006) and a VIP fellowship (Wellcome Trust, 2008). Prior to his current employment, he was with Touch Bionics, UK as the technical leader of a TSB-funded project (CRD 101248, £0.77m) and filed one patent (WO2014122455). He was the lead Guest Editor of a special issue in IEEE Trans Neural Sys Rehab Eng (July 2014) on Control of Upper-Limb prostheses and is an editor of the Medical Engineering and Physics journal. He is a Senior Member of IEEE.