Brain Computer Interface in Human-Autonomy Teaming

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Abstract:

BCI is widely considered a 'disruptive technology' for the next-generation human-computer interface in wearable computers and devices. In particular, there are incredible potential real-life applications of BCI in augmenting human performance for people in health and aged care. Despite this, there are limitations. Human cognitive functions, such as action planning, intention, preference, perception, attention, situational awareness, and decision-making, although omnipresent in our daily lives, are complex and hard to emulate. Yet, by studying the brain and behaviour at work, a BCI plays an incredibly important role natural cognition.

Discover the latest thinking in the realm of the Brain-Computer Interface in this lecture. Listen the current status of BCI and discusses its three major obstacles: the shortage of *wearable* EEG devices, the various forms of noise contamination that hinder BCI performance, and the lack of suitable adaptive cognitive modelling. This talk will introduce the fundamental physiological changes of human cognitive functions in the interaction with autonomous machines (autonomy) and explain how to combine the bio-findings and AI techniques to develop monitoring and feedback systems to enhance the cooperation of human and autonomy.

About the Speaker:

Chin-Teng Lin received the B.S. degree from the National Chiao-Tung University (NCTU), Taiwan in 1986, and the Master and Ph.D. degree in electrical engineering from Purdue University, West Lafayette, Indiana, U.S.A. in 1989 and 1992, respectively. He is currently a Distinguished Professor, Co-Director of Centre for AI, and Director of CIBCI Lab, FEIT, UTS. He is also invited as the International Faculty of the University of California at San Diego (UCSD) from 2012 and Honorary Professorship of University of Nottingham from 2014.

Prof. Lin's research focuses on machine-intelligent systems and brain computer interface, including algorithm development and system design. He has published over 320 journal papers (H-Index 66 based on Google Scholar), and is the co-author of Neural Fuzzy Systems (Prentice-Hall) and author of Neural Fuzzy Control Systems with Structure and Parameter Learning (World Scientific). Dr. Lin served as Editor-in-Chief of IEEE Transactions on Fuzzy Systems from 2011 to 2016, and has served on the Board of Governors of IEEE Circuits and Systems Society, IEEE Systems, Man, and Cybernetics Society, and IEEE Computational Intelligence Society. Dr. Lin is an IEEE Fellow, and received the IEEE Fuzzy Pioneer Award in 2017.