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Pre-conference Workshop 2
Advances on Brain Signal Processing

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Title: Recent Studies on Artifact Removal of EEG Signals

Abstract: EEG signals have been widely used in clinical diagnosis, human-computer interaction, cognitive science research, etc. However, due to the weakness, EEG data are quite susceptible to various noise interferences, including electrooculogram (EOG), electrocardiogram (ECG), electromyogram (EMG), and motion artifacts. In this talk, we will first review the literature for EEG denoising issue. Then, we will present the near future trends and needs for EEG acquisition devices. In particularly, we will focus more on the challenging EMG artifact removal issue, considering its inevitability in the mobile situation. Subsequently, we will introduce an emerging technique, i.e. joint blind source separation (JBSS), based on which, we proposed a series of denoising frameworks for EEG in multichannel, few-channel and single-channel settings. We also explored the relationship among the three distinct denoising strategies and obtained interesting findings. Finally, according to our experience, challenges and recommendations will be given.

Biography: Xun Chen received the B.Sc. degree in the Department of Electronic Science and Technology at the University of Science and Technology of China (USTC), Hefei, China, in 2009, and received the Ph.D. degree in the Department of Electrical and Computer Engineering at the University of British Columbia (UBC), Vancouver, Canada, in 2014. He became a postdoctoral fellow at UBC in 2014. From October 2014 to April 2018, he was a professor in the Department of Biomedical Engineering at the Hefei University of Technology. Subsequently, he joined the Department of Electronic Science and Technology at USTC, where he is currently a Professor. His research interests include the broad areas of statistical signal processing and machine learning in biomedical applications. He has published over 60 refereed journal/conference papers, e.g. IEEE SPM, IEEE TBME, IEEE JBHI, IEEE TIM. He is serving as associate editor for IEEE Access, and also serving as guest associate editor for Frontiers in Aging Neuroscience and Sensors. He has served on a number of committees of international conferences, e.g. IEEE MMSP2018 and Global SIP2017. He is also the reviewer for over 30 prestigious IEEE/Elsevier/Springer journals.