



## BIO Symposium

### Advanced Bio-Signal Processing & Machine Learning for Assistive and Neuro-Rehabilitation Systems

#### IMPORTANT DATES

**Call for Papers Deadlines**

**June 27, 2019**

Paper submission due

**July 15, 2019**

Notification of Acceptance

**August 15, 2019**

Camera-ready paper due

By providing affordable and accessible technologies that are powered by advanced Bio-Signal Processing (BSP), Machine Learning (ML), and Artificial Intelligence (AI), the world will look and feel very different in the next decade. Despite recent advances in BSP, ML, and computational technologies, however, our brain remains invincible and the most intriguing signal processing unit with unique capabilities to analyze/fuse different streaming and multi-modal signals in an adaptive and real-time fashion. Neuromuscular channels, which are deployed by the brain to communicate with the external environment could be disrupted by numerous disorders, including but not limited to amyotrophic lateral sclerosis (ALS), brainstem stroke, brain or spinal cord injury, muscular dystrophies, and multiple sclerosis. According to previous studies, nearly two million people in the United States and far more across the globe suffer from such diseases. In late stages of the aforementioned diseases, a patient may lose the ability to control voluntary muscles, including eye movements and respiration placing the patient in a locked-in situation and being unable to communicate properly. Although the emerging life-support technologies enable such patients to live a longer life, even for those who are in the locked-in state, the personal, social, and economic burdens of their disabilities will continue.

The spirit and wide scope application of advanced BSP and ML solutions in neuro-rehabilitation and assistive systems calls for novel and innovative techniques to further advance recent developments. The objective of this symposium is to bring together and investigate new techniques and technologies that augment the capabilities of conventional neuro-rehabilitation and assistive systems using advanced BSP and ML solutions. Advanced and real-time processing of physiological signals (such as: EEG, EMG, eye gaze, body movements, and speech) can open new doors to not only enhance the effectiveness of neuro-rehabilitation and assistive systems, but to also enable alternative treatments for patients who cannot use conventional technologies and techniques due to the severity of their condition.

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#### TOPICS OF INTEREST

- » Assistive and Neuro-Rehabilitation Systems
- » Advanced Bio-Signal Processing & Machine Learning
- » Intelligent Assistive Mechatronic Technologies
- » Bio-Robotic Rehabilitation Systems
- » Multi-modal Sensing for Mobile Health
- » Bio Deep Learning: Biomedical Signals/Images
- » Wearable Assistive Systems
- » Intelligent Robotic Rehabilitation
- » Physical Human-Robot Interaction
- » Bio-Robotic Rehabilitation Systems
- » Brain Computer Interfacing (BCI)
- » Biomedical Data Fusion

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Note: Accepted papers that are not PHYSICALLY presented at GlobalSIP'19 will be excluded from the IEEE Xplore.