Special Issue on
# Wearable Sensing and Computational Methods in Rehabilitation of Stroke and Other Movement Disorders

## CALL FOR PAPERS

Stroke and other neurological movement disorders such as Parkinson's diseases and cerebral palsy have a major impact on life. Capturing and understanding impaired movement is vital to develop novel interventions, facilitate recovery, and improve quality of life. The advancement in wearable sensing technologies and computational methods make it feasible to precisely capture impaired movement, allow objective assessments, facilitate movement quantification, and study the effects of rehabilitation.

The special issue seeks novel state-of-the-art contributions in wearable sensing and computational methods for capturing and understanding impaired movement. It aims to provide a medium for publishing multidisciplinary studies on human movement, focusing on conditions such as stroke, Parkinson's disease, and other neurological movement disorders. The rationale underlying the special issue is to explore novel measurement and computational tools for clinical rehabilitation settings and in-home environments. This is particularly relevant and important given the recent proliferation of wearable sensors and inexpensive computing, allowing us to generate clinically relevant information in an objective, precise, and user-friendly manner. Consequently the umbrella of research will include contributions to wearable sensors, kinematic and anatomical measures, computational tools (e.g., machine learning, signal processing, and compressive sensing), and methodological contributions to improve rehabilitation outcomes.

We seek research at the intersection of clinical research and engineering systems that promise to vertically advance research in recovery from neurological movement disorders, inform rehabilitation practices, and reduce the burden of disability. The nature of the research reported may vary from theoretical to more applied studies on rehabilitation with the provision that all studies have a theoretical bearing.

Potential topics include but are not limited to the following:

▶ Wearable, mobile and implantable sensors, and sensing principles in stroke rehabilitation

▶ Application of machine learning and deep learning methods in assessment and rehabilitation

▶ Computational methods (including signal processing algorithms, data fusion approaches, compressive sensing, probabilistic state estimation, and graphical models) and their application in rehabilitation

▶ Pervasive computing to support independent living: u-, p-, m-, and e-Health solutions

▶ Novel research designs, statistical procedures, and outcome measures for rehabilitation

▶ Physiological and biomechanical models for interpreting medical sensor data

▶ Validation of reliability and validity of sensor data and novel methods for rehabilitation outcomes

▶ Review articles

Authors can submit their manuscripts through the Manuscript Tracking System at https://mts.hindawi.com/submit/journals/jhe/wscmsr/.

Papers are published upon acceptance, regardless of the Special Issue publication date.

**Lead Guest Editor**
Avinash Parnandi, NYU School of Medicine, New York, USA
*avinash.parnandi@nyulangone.org*

**Guest Editors**
Oonagh Giggins, Dundalk Institute of Technology, Dundalk, Ireland
*oonagh.giggins@dkit.ie*

Chandrasekaran Jayaraman, Shirley Ryan Ability Lab, Chicago, USA
*cjayaraman@ricres.org*

Diana Trojaniello, IRCCS Ospedale San Raffaele, Milan, Italy
*trojaniello.diana@hsr.it*

**Submission Deadline**
Friday, 19 April 2019

**Publication Date**
September 2019