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KEY DATES

Deadline For Submission:

27th March 2015

First Reviews Due:

10th May, 2015

Revised Manuscript Due:

12th June, 2015

Final Decision:

6th July, 2015

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J-BHI Special Issue on “Enabling Technologies in Parkinson’s Disease Management”

Parkinson’s Disease (PD) is a chronic disorder of the nervous system that leads to progressive loss of motor function, including shaking, rigidity, reduced range of motion, and abnormal movement patterns. It is estimated that by 2050, 8.7 million people worldwide will suffer from PD. Individuals residing in low-income countries and remote rural areas are most vulnerable to the late diagnosis and inadequate treatment of the disease.

Early diagnosis of PD is clinically challenging due to the lack of a gold-standard test for the condition. Impaired motor function and behavior are the key clinical manifestations of the disease. The recent years have witnessed intense growth in the development of engineering solutions for both the assessment and management of patients with PD. Medical monitoring technologies have the potential of improving disease management by providing real-time health status feedback, by allowing early adaptation of intervention and pharmaceutical treatment, and by re-guiding motor deviations toward normal patterns. Such innovative solutions constitute a timely and cost-effective addition to healthcare to compensate for the shortage of movement disorder specialists who can provide personalized treatment for patients presenting with impaired motor function. Besides these hallmarks, behavioral changes such as apathy and depression are important non-motor manifestations of PD that can be identified by activity recognition and monitoring. Notably, technologies that measure activity-based changes in health status are relevant not only to PD, but also to other neuro-musculo-skeletal illnesses of unknown origin presenting similar clinical manifestations. Therefore, advances for enabling technologies in PD management serve as a model for other movement disorders.

In this context, real-time monitoring of locomotion and biosignals, signal processing and machine learning provide an excellent non-invasive basis for detecting normal and abnormal motor function. The purpose of this special issue is to address key topics in wearable sensor development, sensor data processing and novel analytical tools relevant to the diagnosis, prognosis and long-term quality of life assessment of PD patients. Our focus centers on the employment of synergistic approaches including engineering, mathematics, physics, medicine and biology. The following topics are covered in this Special Issue of IEEE Journal of Biomedical and Health Informatics:

- Novel approaches in real-time machine learning with wearable and home monitoring technologies for the assessment of Parkinson’s disease progression.
- Advances in minimally invasive and less intrusive technologies for continuous monitoring.
- New assistive devices and systems for self-management.
- Novel predictive strategies for early detection of prodromal PD based on the analysis of fine motor changes.
- Advances in sensor-based gait assessment of Parkinson’s Disease.
- Telemedicine systems.
- Novel approaches in Machine-Machine interaction applied to diagnosis and treatment of Parkinson’s Disease.
- Biobanking of large samples of clinically annotated movements from everyday activities.

Submission of manuscripts

Submitted articles must not have been previously published or currently submitted for journal publication elsewhere. As an author, you are responsible for understanding and adhering to our submission guidelines (<http://jbhi.embs.org/for-authors/>). When submitting, **authors are requested to choose “Enabling Technologies in Parkinson’s Disease Management” in the manuscript type to indicate that the paper is intended for this special issue.** The managing editor for coordinating this special issue is **Dr Benny Lo**.