

Scientific/Educational Workshop

Workshop title

Innovative technologies to monitor health and function in home and community settings

Workshop organizer

Jose Zariffa (Toronto Rehabilitation Institute - University Health Network)

Speakers

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Workshop goals

- Familiarize attendees with novel technologies being developed to bridge the gap between healthcare institutions and the community. Application areas will include neurorehabilitation, dementia, and sleep-related breathing disorders.
- Foster interactive discussion around the role of technology in extending rehabilitation care in the community. The primary focus will be on the collection of health and function indicators outside of clinical settings.

Abstract

To promote long-term population health, healthcare institutions must effectively take into account the challenges that vulnerable individuals face in their homes and communities. Innovative technologies are playing a key role in collecting information about the health and function of patients in these settings. This workshop will be centered around an interactive discussion of the role of technology in this context. Illustrative examples of novel wearable and ambient technologies will be presented, based on work at the Toronto Rehabilitation Institute in three areas:

- **Neurorehabilitation:** Monitoring functional independence in the community is a major challenge. The ability to use impaired upper extremities in functional tasks is of particular interest, given its central importance in activities of daily living. Computer vision techniques applied to video from wearable cameras (egocentric video) are being used to quantify hand function at home.
- **Aging:** Behavioral and psychological symptoms of dementia, such as aggression and agitation, can cause enormous suffering for people with dementia and stress on caregivers including actions that disrupt care and safety, such as wandering, physical and verbal aggression, and treatment refusal. Ambient and wearable technologies are being developed to detect and predict aggressive behaviour in older adults with dementia.
- **Sleep disorders:** Sleep-related breathing disorders, including obstructive sleep apnea, have several consequences that affect independence and well-being, especially in the elderly. Sleep apnea increases the risk of heart disease, stroke and high blood pressure, impairs memory function, results in poor sleep quality and fragments sleep. Sleep apnea also leads to excessive sleepiness during the day, increasing the risk of car and work related injuries. A novel wearable device, the Patch, unobtrusively monitors cardiorespiratory and motion signals in order to diagnose sleep apnea and its consequences.