Title (tentative): Wearable technology for mitigating hemispatial neglect after stroke

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Motivation and application domain

Hemispatial neglect is a neuropsychological condition in which attention to and awareness of one side of the body is impaired after damage to one hemisphere of the brain, even though there may be no sensory loss. Although hemispatial neglect is extremely common, it is a challenging condition to understand and to treat.

General objectives and main activities

This project will develop and test wearable technology capable to resolve hemispatial neglect. We are addressing this problem by developing a wearable device that can promote and monitor the recovery of limb motions during the acute and subacute periods of recovery from stroke. Data collection in a small cohort of stroke survivors will be conducted in collaboration with clinical staff of the Medical College of Wisconsin / Froedtert Hospital.

Training Objectives (technical/analytical tools, experimental methodologies)

Engineering tasks related to this study include the optimization of 3D printed hardware implementations of the wearable device, the integration of micro controller circuitry into the wearable, as well as software programming of the wearable and its associated smartphone app (Android). Research skills such as methods design, data interpretation and analysis will also be learned during this project.

Place(s) where the thesis work will be carried out: Marquette University and the Medical College of Wisconsin

Maximum number of students: 1

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