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Assessing Motor and Cognitive Impairment after Non-traumatic Brain Injury using Smart and Affordable Robotic/Mechatronic Technologies

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Abstract: Non-traumatic brain injuries—including those caused by stroke, hypoxia, infection, or metabolic disorders—frequently result in enduring motor and cognitive impairments that diminish independence and reduce quality of life. Despite the importance of accurate assessment for guiding rehabilitation and monitoring recovery, access to comprehensive evaluation tools is often limited by high costs, specialized clinical requirements, and lack of availability in community or low-resource settings. This study focuses on the development and validation of smart, affordable robotic technologies designed to assess functional impairments associated with non-traumatic brain injury. These systems aim to provide objective, quantifiable data on motor and cognitive performance, enabling more precise tracking of residual deficits. I will describe how my lab designs and implements these technologies to support both assessment and rehabilitation, with an emphasis on accessibility and scalability. Ultimately, this work seeks to expand the reach of neurorehabilitation tools and improve outcomes for individuals affected by non-traumatic brain injury.

Wednesday, December 3rd | 2:00pm-3:15pm | Science Hall 126 & Zoom

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