

# Movement and mobility

RESEARCH  
THEME



Many of UVATT's projects and research activities relate to the detection, quantification, enhancement and translation of movement. Projects are wide ranging. They include the development of a self-balancing exoskeleton brace, and the development of devices that translate movement into sound.

As well as having immediate practical applications, our technology and devices will allow us to undertake fundamental research into the nature of specific neurodevelopmental disorders. As an example, we have developed a class of devices that accurately detect head and eye movement. These have enabled investigators to separate motor from cognitive impairment in patients with extreme disabilities (for example, patients with Rett Syn-



drome). Thus, some of these patients, for the first time, by using our laser pointing and detection system and our sophisticated eye-tracking systems, are able to clearly demonstrate a choice, allowing unbiased assessment of cognitive function. In other movement-related work, we are developing state-of-the-art lightweight wireless position and motion sensors that allow unobtrusive monitoring of movement. A set of 16 devices can be used to measure the complete movement and articulation of a subject. These devices are already being used by a research

team at Children's Hospital of Eastern Ontario to quantify the major limb movement of children with spinal muscular atrophy, with a view to assessing and developing novel therapies. These same devices are being used to monitor non-ambulatory and non-verbal children at night and alert parents and caregivers when they wake or turn over in their sleep.



