ACTIDOTE

ACTIvity as an antiDOTE to illness exacerbation among disabled people

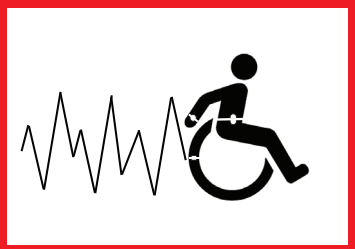
Prof A. Perez Uribe (Heig-Vd) - Prof A. Upegui (hepia)

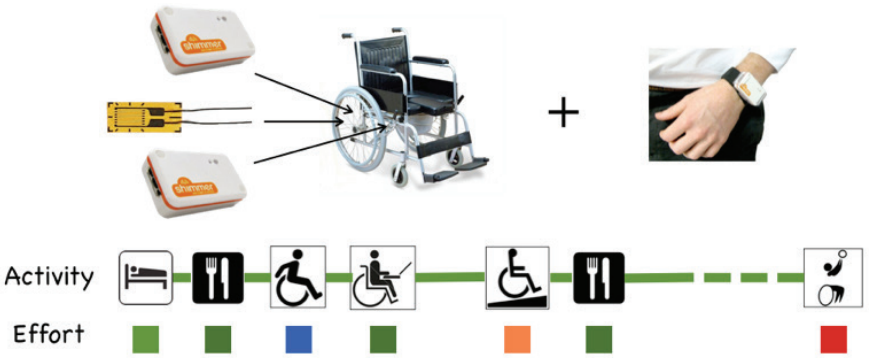
Descriptif

ACTIDOTE is an ongoing multidisciplinary project funded by the University of Applied Sciences Western Switzerland (HES-SO)*.
It gathers together data scientists, embedded systems designers, biomechanics experts and human motricity experts, with the objective of exploiting on-body and wheelchair-mounted wireless sensors (e.g., inertial measurement units and strain gauges; see figure opposite) to come up with a physical activity measurement system for disabled people using wheelchairs.

Points forts

- A prototype of the system integrating wearable and wheelchair-attached sensors.
- A tablet application for feedback visualization.





Demonstrator: a prototype of the system integrating wearable and wheelchair-attached sensors, and a tablet application for feedback visualization.

Physical inactivity has been identified as a major contributor to the exacerbation of physical illnesses. The World Health Organization identified it as the fourth leading risk factor of global mortality after high blood pressure, tobacco use and high blood glucose. Therefore, in recent years, many actions against inactivity have come to the fore. For instance, diverse pedometer devices have been developed to help people reach certain physical activity goals, like walking 30 minutes per day. However, an equivalent clear recommendation for disabled people using wheelchairs is missing and the few studies that have dealt with this issue concluded that current commercial physical activity measurement devices are not appropriate for them.

ACTIDOTE is based on a «divide and conquer» approach, which consists on assessing energy expenditure following physical activity type classification. Activity type recognition contributes to the automatic segmentation of the day into light, moderate and vigorous-intensity activities, which can be used by caregivers to monitor the evolution of mobility during rehabilitation, or by the person herself, as a feedback. The system will also allow the integration of further sensors to monitor hear rate, skin conductance, etc.

* Team: University of Applied Sciences Western Switzerland (HES-SO): Vaud (HEIG-VD), Geneva (hepia) and Lausanne (HESAV) sites. Project coordinator: Prof. A. Perez-Uribe (http://ape.iict.ch), from the Institute for Information and Communication Technologies (http://iict.heig-vd.ch), HEIG-VD.