

# Development of novel wearable technologies for clinical outcome evaluation

## PROJECT DESCRIPTION

Human motion measurement during daily activities (such as walking) is like a fingerprint and can distinguish patients with neurological, psychological, or musculoskeletal conditions from able-bodied individuals. Although human motion can be measured in motion measurement labs, patients may not act as naturally as in their home. Wearable sensor technology is an ideal alternative to for human motion measurement out of laboratories. Although smart phones and watches can assess the step count and the general level of physical activity, they are not validated to be precise biomedical devices (imagine a fingerprint scanner) and cannot be used for medical decision-making. The objective of this project is to develop wearable technologies using off-the-shelf sensors such as inertial sensors and force sensors to precisely assess clinically relevant parameters describing typical activities during daily life. Examples of to-be-measured parameters are body joint angles during walking, standing up or sitting down. The motion data might be collected and analyzed from both patients and able-bodied individual groups. Then the efficiency of the developed wearable technology for evaluation of these groups will be investigated.

## FACULTY-DEPARTMENT

Engineering - Mechanical Engineering

## OPEN TO STUDENTS FROM THE FOLLOWING INSTITUTIONS

Chinese universities participating in the [Double First-Class Initiative](#).

## DESIRED FIELD OF STUDENT STUDY

Mechanical Engineering, Electrical Engineering, Computer Engineering, Biomedical Engineering, Computer Sciences

## INTERNSHIP LOCATION

Edmonton Campus

## NUMBER OF INTERNSHIP POSITIONS

2

## INTERNSHIP DATES

Start: July 2, 2019

End: October 2, 2019

## ARE THE DATES FLEXIBLE?

Yes, I am flexible regarding the internship dates. Selected students can contact me to request a date change.