Optimisation of static posturography

Record number : OPR-1134

Overview

RESEARCH DIRECTION

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ADMINISTRATIVE UNIT(S)

Faculté de génie
Département de génie électrique et de génie informatique
Département de génie mécanique
Institut interdisciplinaire d'innovation technologique (3IT)

LEVEL(S)

2e cycle

LOCATION(S)

3IT - Institut interdisciplinaire d'innovation technologique

Project Description

The aim of this project is to examine the motor behavior of older adults, and to understand the impact that pain can have on this motor behavior. To achieve this, an innovative approach based on optimal control theory, using low-cost cameras and human posture analysis algorithms, will be employed. The ultimate goal of this approach is to provide an accessible solution, in line with INTER's mission, to improve the assessment and management of pain in the older population, particularly those with a fear of movement (kinesiophobia).

The objective of this pilot study is to document the usability of a model based on optimal control theory, using kinematic data from regular RGB cameras to analyze motor response in the context of static posturography.

To achieve this, the following specific objectives will be targeted:

Objective 1: Adapt an inverse double pendulum model developed for dynamic posturography to the static posturography paradigm using an optimal control approach.

Objective 2: Evaluate the performance of the model with kinematic data from RGB cameras combined with human pose detection algorithms.

Objective 3: Assess the potential of the approach to capture emotional modulation induced by painful images in healthy participants and patients with low back pain.

To apply, please send by email at adina.panchea@usherbrooke.ca: CV, cover letter, and transcript.

Feel free to contact us if you need more information!

Discipline(s) by sector

Sciences naturelles et génie

Génie électrique et génie électronique,
Génie mécanique

Funding offered

Yes

The last update was on 24 October 2025. The University reserves the right to modify its projects without notice.