Artificial intelligence for mobility assistance robots

Record number : OPR-773

Overview

RESEARCH DIRECTION

Alexandre Girard, Professeur - Department of Mechanical Engineering

INFORMATION

alexandre.girard2@usherbrooke.ca

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
3e cycle
Stage postdoctoral

LOCATION(S)

3IT - Institut interdisciplinaire d'innovation technologique

Project Description

Arjo and Université de Sherbrooke are partnering to develop collaborative-robotic technologies for the next generation of transfer devices used in hospitals and long-term care units. The goal of this Alliance project is to develop lifting robot assistants and an eco-system of devices for a smart hospital room concept that would release caregivers of time-consuming, low-value tasks and empower patient with mobility assistance features. The proposed assistance technology aims to address these two societal problems: 1) improving the caregivers' health and work-conditions with assistance scheme limiting the physical efforts during patient transfers and 2) improving the patients' care quality by facilitating occasions for them to move out of their bed.
The first step in the project, which will be entrusted to a graduate student supported by an engineering team at 3IT, is to develop various algorithms to make the robot assistants smart and proactive. First a perception system to locater users in the room will be developed. Then several axes of intelligence will be explored, for example 1) a smart button-free human machine interface where the system automatically interpret the user intents and act accordingly, 2) adaptive rehabilitation programs and 3) progress monitoring tools to assist therapists in their assessment of patients.
Keywords: motion planning, sensors, autonomous systems, AI
Website: www.alexandregirard.com

Discipline(s) by sector

Sciences naturelles et génie

Génie électrique et génie électronique,
Génie mécanique

Funding offered

Yes

The last update was on 24 July 2026. The University reserves the right to modify its projects without notice.