



Offre n°2025-09491

Evaluation of different exoskeletons on work-related tasks

Contract type : Internship

Level of qualifications required : Master's or equivalent

Fonction : Internship Research

Context

Context and funding:

This position is funded by the LUE EXOSIM project.

Within this framework, the HUCEBOT team is engaged in:

- 1) Conducting in-the-field data collection of workers at the logistics center of the Centre Hospitalier Régional Universitaire (CHRU) of Nancy (Unité de production culinaire, blanchisserie);
- 2) Performing kinematic and dynamic analyses to identify the parts of the human kinematic chain most affected by the movements;
- 3) Testing different exoskeletons to determine which solutions provide the most effective assistance to users.

About the team:

The candidate will join the Human Centered Robotics team (HUCEBOT) in the Inria Center of the University of Lorraine in Nancy, France.

The team HUCEBOT develops control, learning, and interaction skills of human-centered robots, such as humanoid, mobile manipulators and exoskeletons. The team develops learning and control algorithms for teleoperated / supervised / autonomous robots, involved in complex manipulation tasks in man-made environments. It also develops AI-based control for wearable exoskeletons designed to assist humans at work, drones and quadrupeds to explore complex environments. The team has excellent robotics facilities, including several humanoid robots (Talos, iCub, G1), manipulators, drones, passive and active exoskeletons, wearable sensors, force plates etc. Its laboratory has a 3D printing facility and a mechatronic workshop for prototyping and maintenance, and a motion capture room with Qualisys and Xsens sensors.

The team consists of many research scientists, postdocs, PhD and has the support of 1 software and 1 mechatronics engineer. The team is international - English and French speaking. French is not required, although free French classes are available in the institute for non-French speakers.

About the laboratory and Nancy:

The Inria Center of the University of Lorraine, is co-located with the Loria laboratory, in the Science and Technology Campus of the University of Lorraine (Nancy, France), next to the Botanical Gardens, at 20 minutes by public transportation or bike from the Nancy train station and City Center. Several student residences and facilities are at walking distance. Nancy is a University town, with a high quality of life and a vibrant student, Erasmus and expat community. Life in Nancy is very affordable compared to Paris, it is easy to find a student residence or apartment. Team members can also access to SUAPS, the University's sports facilities.

About Nancy in France:

Nancy is the capital of the Grand Est region in France. It is well connected by train to Paris (90 min), Strasbourg (90 min), Luxembourg and Germany. There are direct trains from Nancy to the Paris airport CDG and the Luxembourg airport LUX.

The region around Nancy is ideal for outdoor activities: there are many country trails, long bike trails, forests, mountains, lakes, ski in winter too.

Assignment

This internship will be conducted as part of the EXOSIM LUE project, which aims to develop a digital tool to select and evaluate exoskeletons for employees. The project focuses on analyzing the common movements performed by these professionals, assessing their biomechanical characteristics, particularly in relation to posture and load handling. This project is in collaboration with the Nancy Regional University Hospital (CHRU), and the experiments will be related to the mansions carried out at the Unité de production culinaire (UPC – Culinary production unit) and the blanchisserie (Laundry).

The goal of this internship is to design and conduct an experimental protocol to evaluate the impact of different exoskeletons during work-related tasks. As part of the EXOSIM project, a preliminary study has already been carried out to identify the tasks (at UPC and Blanchisserie) that would benefit most from exoskeleton assistance. A simplified version of the selected workstations will be recreated in the

laboratory to reproduce realistic working conditions. During the internship, the candidate will be responsible for collecting human motion capture data of participants performing object manipulation tasks — such as pick-and-place and box carrying — both with and without exoskeleton assistance, in double stance and while walking. In addition, participants' subjective preferences regarding the evaluated exoskeletons will be assessed through dedicated questionnaires. Following data collection, the intern will be responsible for analyzing both objective and subjective measurements, with the aim of comparing conditions without exoskeleton assistance to those with different types of assistance using appropriate statistical analyses.

The internship is for a 4 to 6 months period and must terminate before mid-July.

The candidate will collaborate with Serena Ivaldi (researcher), Pauline Maurice (researcher) and Anna Bucchieri (postdoc).

Main activities

- Review state of the art in occupational exoskeletons and approaches to estimate human biomechanical quantities.
- Design an experimental protocol to test exoskeletons in a simulated working station in the lab.
- Carry out experiments with people wearing different type of exoskeletons.
- Analyze results (objective and subjective) to determine which exoskeleton would be the best fit during work-related tasks.
- Write report
- Collaborate with the team on the current experiments and developments
- Participate in the team and the project's relevant activities and events

Skills

- Technical skills:
 - Excellent skills and/or experience with data collection using motion capture systems (Xsens, Qualysis) and EMG sensors
 - Interest and preferably experience with exoskeletons
 - Experience in statistical analysis
- Soft skills:
 - Excellent communication skills at work, and ability to report progress
 - Not afraid of challenging projects.
 - Rigour and intellectual honesty
 - Curiosity and desire to learn
 - Practical mindset and ability to develop robust and reliable solutions
 - Autonomy and organizational skills
 - Love working in a multi-cultural environment
 - Team player

Benefits package

- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours) + possibility of exceptional leave (sick children, moving home, etc.)
- Possibility of teleworking (after 6 months of employment) and flexible organization of working hours
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training
- Social security coverage

Remuneration

€4.35/hour

General Information

- **Theme/Domain** : Robotics and Smart environments
Scientific computing (BAP E)
- **Town/city** : Villers lès Nancy
- **Inria Center** : [Centre Inria de l'Université de Lorraine](#)
- **Starting date** : 2026-02-02
- **Duration of contract** : 5 months
- **Date limite pour postuler** : 2025-11-24

Contacts

- **Inria Team** : [HUCEBOT](#)
- **Recruiter** :
Ivaldi Serena / serena.ivaldi@inria.fr

About Inria

Inria is the French national research institute dedicated to digital science and technology. It employs 2,600 people. Its 200 agile project teams, generally run jointly with academic partners, include more than 3,500 scientists and engineers working to meet the challenges of digital technology, often at the interface with other disciplines. The Institute also employs numerous talents in over forty different professions. 900 research support staff contribute to the preparation and development of scientific and entrepreneurial projects that have a worldwide impact.

The keys to success

Excellent communication in English, French is a plus.

The candidate must like to work with exoskeletons and carry out experiments with human participants.

Ideal profile: Bachelor / Master Degree studies in Robotics, Control, Engineering, Bio-engineering, STAPS, Human Movement and Biomechanics, or relevant fields.

***** IMPORTANT *****

We will only consider applications with the following attachments (add them in PDF when you do the application):

1) Transcripts of your University classes (Bachelor, Master, Engineering School...)

2) Your CV should mention all the places where you studied, starting from the High-School: so please list High-School, University, Bachelor/Master, College, Engineering School, Classe Préparatoires, etc. Mention their city and country.

Warning : you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.

Instruction to apply

Defence Security :

This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST). Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

Recruitment Policy :

As part of its diversity policy, all Inria positions are accessible to people with disabilities.