

Job Description

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| Job Title: | Human Motion Laboratory Manager, CERC HCRMI |
| Department: | Systems Design Engineering |
| Reports To: | CERC HCRMI Principal Investigator |
| Jobs Reporting: | CERC HCRMI Lab Staff |
| Salary Grade: | USG 10 |
| Effective Date: | November 2021 |

Primary Purpose

The Lab Manager is responsible for the management and operation of the CERC Human Motion Lab for both day-to-day protocols, as well as independently facilitating its activities to meet the long-term visions and goals of the CERC Principal Investigator. The Lab Manager recruits and supervises lab staff, co-op, and graduate students to ensure smooth and safe operation of the Human Motion Lab so that all users of the lab, including CERC students and researchers, as well as affiliated and external collaborators, are able to carry out their research tasks. Beyond equipment maintenance, acquisition, and supervision, the Lab Manager is also directly involved in academic research by independently designing and carrying out experiments under the mandate of the CERC directive, as well as consult, supervise, and facilitate projects overseen by other CERC graduate students and faculty. Lastly, the Lab Manager also supports other research groups and spaces under the CERC HCRMI umbrella in a similar fashion.

Key Accountabilities

Equipment Management and Operations

- Maintain the operational functionality of the research lab at all times
- Propose and execute on long-term directions of the research lab
- Responsible for the quoting, acquisition, and maintenance of research equipment (valued <\$300k)
- Formulate and update best-practice guidelines for all research equipment via in-depth in-lab testing and regular correspondence with equipment vendors. These include both safety-related, as well as equipment usage and post-processing guidelines
- Train and enforce all lab users on the proper and safe usage of the lab and equipment
- Develop and construct hardware and software to improve the ease of use of lab equipment
- Coordinate and facilitate experiments with both CERC members and external research groups
- Coordinate with the Safety Office and the Office of Research to ensure lab and experimental operations conform to the University's safety and ethics guidelines
- Coordinate with Procurement, Plant Operations, and Central Stores to ensure equipment purchases as well as lab maintenance/upkeep projects are done quickly and accurately

Lab Staff and User Management and Supervision

- Oversee the day-to-day responsibilities and provide quality control to the lab staff in various specialized technical tasks, including equipment maintenance and software design
- Facilitate hiring interviews and the training of new lab staff to support the various research groups under the CERC HCRMI research umbrella. This includes permanent staff, contractors, co-op students, and URAs
- Assume the technical responsibilities of any lab staff as required
- Supervision and mentoring of undergraduate and graduate students in the design, facilitation, analysis, and dissemination of their research projects

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- Facilitate hiring interviews and the training of new graduate students and postdoctoral researchers to conduct research under the CERC HCRMI mandate
- Conduct lab presentations and tours for academic, industrial, and community visitors

CERC HCRMI Group-wide Administration

- Maintains and reinforces safety and operational protocols over the entire research team, in accordance with University of Waterloo guidelines
- Support and assist in the drafting of research funding applications
- Purchase and maintain student equipment that are not associated to a specific lab space
- Facilitate and maintain data security and management requirements of the research lab
- Organize and chair research progress meetings
- Liaison between research staff and students and the University administration
- Assist with general administration support for the PI
- Maintain the CERC HCRMI website

Human Motion Academic Research

- Perform independent research without direct PI supervision
- Coordinate research efforts relating to human motion analysis in the lab
- Design and facilitation of experimental design, data collection, and analysis
- Participate in research dissemination via conferences and journal papers and presentations

**All employees of the University are expected to follow University and departmental health and safety policy, procedures and work practices at all times. Employees are also responsible for the completion of all health and safety training, as assigned. Employees with staff supervision and/or management responsibilities will ensure that assigned staff abide by the above, and actively identify, assess and correct health and safety hazards, as required.*

Required Qualifications

Education

- PhD degree in Engineering or Applied Science.

Experience

- 3+ years of experience with lab operations and standard operating procedures in lab environments
- 3+ years of experience designing experiments and conducting research in an academic setting
- 3+ years of experience in technical and academic writing
- 3+ years of administrative and customer service experience in an academic setting
- Proven high-quality customer service interactions with faculty, staff, and students
- Demonstrated ability to maintain strict confidentiality
- Operational knowledge of University of Waterloo administration, policies, and procedures relating to research, ethics, safety, human resources, and procurement is an asset
- Experience with supervision of research and/or student projects is an asset
- Experience in safety policy and guideline development is an asset
- Experience in serving on university service committees
- Experience with working with vulnerable populations, such as senior citizens

Knowledge/Skills/Abilities

- Comprehensive knowledge of various human movement and motion capture equipment, including infrared retroreflective motion capture, inertial measurement systems, force and pressure systems, and electromyogram systems. In addition to knowing how and when to certain equipment in experiment planning and execution, the knowledge of common processing methodologies and the appropriate situations to use them is also essential.

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- Strong background in computer programming skills in languages that are common to a research setting (ie Matlab, Python, Java, C++), development administration software systems (ie Git), technical writing software (ie Latex), and operating systems (ie Windows, Ubuntu)
- Robust understanding of critical research concepts required to conduct biomechanics and robotics research. This includes but is not limited to human kinematics and dynamics modelling, robotics modelling, anthropometrics, inverse kinematics, inverse dynamics, sensor fusion, signal processing and filtering, stochastic modelling, statistical regression, user interface design, time alignment, motion segmentation, time series analysis, feature selection, feature extraction, imitation learning, machine learning, reinforcement learning, affective modelling, optimal control, and inverse optimal control
- Demonstrated ability to be organized and independently make sound decisions with minimal supervision within a fast-paced, deadline driving environment
- Demonstrated ability to adjust to a changing environment, such as safety issues, broken equipment, or unexpected experimental results, and adjust to the situation accordingly
- Excellent oral and written communication skills
- Ability to build and maintain interpersonal relationships with various members of the University of Waterloo and the community

Nature and Scope

- **Contacts:** Internally, providing research and administration support to faculty and research teams both within and outside of the CERC HCRMI itself, as well as University administrative teams such as Engineering Research, Engineering Dean's Office, Office of Research, Office of Research Ethics, Safety Office, Central Stores, Plant Operations, IST, and Procurement. External contact includes corresponding with vendors for purchasing and product support, funding agencies, external research labs, and industrial organizations for research collaboration.
- **Level of Responsibility:** Responsible for day-to-day staff, student, and lab management. Ensure that any major barrier to research and team coherency are addressed in a rapid fashion. Independently be able to make decisions and respond to issues that require thorough understanding of technical specifications, established policies, and safety protocols. Be able to adequately consider risk factors and delays associated with the proposed plan of action and mitigate them as much as possible. Functionally responsible for all small to medium sized purchases for the lab.
- **Decision-Making Authority:** Responsible for making decisions regarding equipment purchase, maintenance, repair, safety, and lab access, as well as experimental design and direction
- **Physical and Sensory Demands:** Demands typical of working in an office, as well as lab environment, including use of equipment and potentially lifting and moving equipment up to 50 lbs; potentially standing, sitting, or crouching for long periods of time. Attention to detail essential.
- **Working Environment:** Majority of time spent in a lab environment with researchers and students. Possible hazards include possible high impact kinetic motion from robotic systems and high-density batteries. Must be alert to potentially dangerous situations during lab operations at all times. May also require extended work hours to meet deadlines, communication with international collaborators, to facilitate experiments with people/equipment of limited availability, or to ensure staff safety in Work Alone situations.