

Position Description

Clynch Technologies Inc (CTI) has an immediate need to fill a research and development position within its DeltaSystems team. This position involves the research and development of methods for the computer aided design and fabrication of immobilization devices for external beam radiation therapy of patients with cancer.

Overview

External beam radiation therapy is a patient treatment that delivers high-energy x-rays to the patient's tumour. The beam is generated outside the patient and is targeted at the tumour site. These x-rays can deposit their dose deep within the body to destroy the cancer cells and, with careful treatment planning and implementation, spare the surrounding normal tissues. External beam therapy can be used to treat the following diseases as well as many others: breast cancer, colorectal cancer, head and neck cancer, lung cancer, and prostate cancer.

Most patients get external beam radiation therapy once a day, 5 days a week, Monday through Friday. Treatment can last for 2 to 10 weeks, depending on the type of cancer and the treatment goals.

Before external beam radiation therapy the patient is sent by a radiation oncologist and radiation therapist to define the treatment area. Part of this process may involve the creation of a body mold that helps keep the patient from moving during the treatment and also helps make sure that the patient is in the exact same position each day of the treatment.

Research Goals

The overall goal of this research study is to improve care for those patients obtaining external beam radiation therapy. This will require methods for the design and fabrication of immobilization devices in a manner that is easier and quicker for the oncologist and radiation therapist, more comfortable for the patient, and which provides better treatment outcomes.

Research Objectives

- Determine methods of accurately extracting skin surfaces from CT scan data
- Determine methods of constructing body shape from a small set of defined measurements
- Determine the accuracy and repeatability of these methods compared with other methods including plaster/synthetic sock casting and laser imaging,
- Development and implementation of computer aided design methods for designing immobilization devices from laser and CT image data
- Development and implementation of computer aided fabrication methods for immobilization devices from laser and CT image data

Context

This research and development will be conducted as part of CTI's ongoing efforts in the development, diversification, and commercialization of their bio-medical computer aided design and fabrication system called DeltaSystems. DeltaSystems represents a group of commercially available products and services currently targeted at the prosthetic and orthotic industry.



This current work will build on two earlier research & development undertakings that focused on the accuracy and repeatability of laser imaging as applied to volume measurement in oncology and on the feasibility of fabricating immobilization devices from CT data for radiation therapy.

It is hoped that the results of this continued study will form the basis for developing new DeltaSystems products and services that can be offered to oncologists and radiation therapists.

Required Knowledge & Skills

- MSc or PhD in the computing science, engineering, or other related field: The applicant must have or be within three months of completing their degree. Applicants who already hold the degree must have obtained it within the last five years.
- Software development: The applicant must have solid and demonstrated software development experience. Good knowledge of development in C++ in a Microsoft Windows environment using Visual Studio V6.0 is essential. Working knowledge of software development processes and practices would also be a benefit.
- Communication: The applicant must possess excellent English written and verbal communication. The role will involve a significant amount of communication between technical, clinical, and management personnel. The applicant must be capable of communicating potential complex concepts in terms understandable by the various groups involved.
- Working Style: The applicant must be capable of working within a team environment and also of working for long periods in a self-directed/motivated manner. The applicant must have excellent multi-tasking skills.
- Computer graphics: Ideally the applicant would be familiar with 3D computer graphics principles and practices. Preference will be given to applicants with a demonstrated knowledge of OpenGL in a Microsoft Windows environment
- Medical imaging and laser scanning: Although not essential familiarity with medical imaging, specifically CT, and laser scanning will be a benefit

Funding

This position is contingent on continued funding through the Alberta Ingenuity r&D Associate Program. Once a candidate is selected, CTI will make an application for funding. Application deadlines are December 1, February 1, April 1, June 1, August 1, and October 1 with results approximately six weeks after.

Location, Start Date and Term

The successful applicant would be expected to work at CTI's offices in Calgary. CTI would cover some or all of any relocation expenses. The start date would be as soon as possible after funding is obtained but no later than 3 months after this date. The term would initially be for one year with an option to continue for one extra year and with the possibility of a full time position after the second year, contingent on research results, business case, and funding.

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About Clynch Technologies Inc (CTI)

CTI is a bio-medical technology company with a mission to combine the problem solving and design precision of science and engineering with the medical expertise of health care professionals to deliver innovative new products and services to the global health care industry. We strive to be the leading provider of advanced solutions that are easier to use and maintain, that are more adaptable, reliable, and powerful than any other available. We aim to provide our customers with training and support enabling them to provide world class services and improve patient health care and the quality of life of individuals everywhere.

We wish to build a future where health care is individual-specific, customized, made-to-measure and accessible by all; where everyone can receive quality, personalized health care that will work for them and at a cost they can afford. We are developing this future by removing the trial-and-error of providing health care with the knowledge and precision of a scientific and engineering procedure that allows better, customized, patient-specific health care to be delivered efficiently, effectively, at lower cost, and higher quality.

Through the products and services we will develop we are striving to allow health care professionals to deliver the highest quality care possible through deeper understanding, more precise patient specific information, and access to the latest medical and technical knowledge, materials, and capabilities. We are fully committed to a future where patients everywhere recover more quickly and more comfortably and can lead happier, safer, fuller, and healthier lives.

More Information

For more information or to apply for this position please contact:

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