Title: Virtual simulation for advanced motion capture laboratory

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The Hotel Dieu and Kingston General Hospital will shortly receive an extension to the existing gait analysis lab, to investigate complex function of diarthrodial joints, including those in the foot, the patellofemoral joint, and the wrist. An essential component of this lab will be a biplanar videoradiography, en emerging technology that captures six-degree-of-freedom skeletal motion during dynamic activities, absent of soft-tissue artifacts.

To minimize the ionizing radiation for the patient, research objects and researchers optimal patient-specific setup is required. The goal is to investigate and develop simulation options for equipment positioning for real-time x-ray measurements.

Objectives of this project are to develop a virtual lab simulation environment and to investigate how the result of the simulation can be used to accurately positioning equipment and patient in the real lab.

Required for this project is an interest in 3D modeling, visualization and software development (preferable in C++). Development will be in close cooperation with kinematic motion analysis researchers from the Department of Mechanical and Materials Engineering (Dr. M. Rainbow).