Comprehensive Research Experience for Medical Students
Summer Research Program 2018

Supervisor/Project Information Form
Due February 14 2018 by email to crems.programs@utoronto.ca

Supervisor Name: Dr. Azad Mashari

Hospital/Research Institution: Toronto General Hospital – University Health Network

Email: azad.mashari@uhn.ca

Field of Research (2 keywords): Cardiac Ultrasound, Perioperative Care

Department: Department of Anesthesiology and Pain Management, Toronto General Hospital

School of Graduate Studies Appointment (IMS, LMP, IHPME etc)? Yes:

Project Title: 3D on-Line/Virtual Reality Learning Module for Focused Cardiac Ultrasound Image Acquisition and Interpretation

Brief Project Description (<300 words):
Focused Cardiac Ultrasound (FoCUS) is known to provide critical, life-saving information to guide management in a variety of critical and sub-critical situations including cardiac arrest, hemodynamic instability and the assessment of patients about to undergo major surgery. Most of these diagnostic questions are answered by FoCUS in a dichotomous fashion of "yes or no" and "rule in, rule out". The exam is non-invasive and consists of 4 standard US cardiac views that can be easily acquired on most patients by any physician with short training. Interpretation of acquired images requires more experience. Current guidelines recommend approximately 50 supervised examinations.

The objective of the e-module is to provide the necessary tools for physicians to learn the indications, goals and limitations of the exam; how to acquire the images; and how to interpret these US images to guide their clinical decisions. These tools will include a review of the subject with additional references for further study; an explanation of the technique; an on-line/virtual reality 3D digital simulator for reviewing the anatomy and practicing image acquisition; and a review of images from 50 cases covering the most common normal variants and pathological findings, to facilitate the perceptual training required for reliable interpretation.

The role of the medical student in this project will be to assist in the development of the e-module, by gathering, cataloguing and preparing the images and clips from 50 prior studies and developing the interpretation training module. The students will be trained in the basics of FoCUS and image interpretation. As time permits the student will be able to assist with other aspects of module development including 3D modeling and programing of the virtual reality interface to the simulator.