Biomedical Engineering
MAE Centered
MEng Projects 2012-2013

Professor Daniel Fletcher project (Vet College) project:

Title: High fidelity dog and cat simulators for veterinary training

Training of veterinary students in the area of emergency and critical care medicine poses many practical and ethical challenges. Although didactic lectures have traditionally been used to teach the concepts of the management of these types of cases, it is often difficult to allow students to transfer that knowledge into practice in a clinical training environment due to the time sensitive nature of the diagnostic and treatment decisions that must be made. In human medicine, high fidelity simulators have been developed to address this deficit in clinical training. These devices provide feedback of many types, including pulses, heart sounds, lung sounds, input to clinical monitors, and responses to physical interventions that allow the development of realistic, timely clinical scenarios for training without risk to an actual patient. Such devices are programmable, and can be used to simulate a multitude of clinical scenarios and procedures. Numerous studies have been published showing enhanced and accelerated clinical competence among medical students trained with these simulators when compared to students trained with the didactic approach. However, these technologies have not successfully been adapted for training of veterinary students in the context of the types of clinical diseases common in veterinary species.

Dr. Dan Fletcher, an Emergency and Critical Care Medicine specialist at Cornell's College of Veterinary Medicine, has a PhD in Biomedical Engineering and is interested in developing a cost-effective simulator for clinical training of veterinary students. The project includes development of open-source, cross-platform control software, as well development of interfaces to microcontrollers, sensors, and actuators within the mannequin. The end product will be made available for use at veterinary training facilities around the world.

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