PhD position in Augmented Reality for Ultrasound Imaging

Location of work: École de Technologie Supérieure (ETS), Montreal, Quebec, Canada

Work Schedule: Full-time.

Funding: 30,000 $CAN/year during 4 years.

Background: Ultrasound (US) imaging is rapidly becoming a cornerstone of modern healthcare, delivering fast, safe, and accessible imaging at a fraction of the cost of traditional technologies. Yet, the usability of US is often undercut by operator skill, variability of image quality, and the unfamiliar orientation and 2D nature of the image. The proposed PhD project will aim at improving US imaging usability by integrating a US device with an augmented reality (AR) display, enabling a more intuitive, in-situ visualization of the patient's anatomy.

Project description: A doctoral research position is available at ETS. The successful candidate will work with a team of engineers, computer scientists and clinicians to develop advanced AR visualization methods that will improve 3D ultrasound interpretation. The project will involve combining advanced computer vision techniques to track the US probe and the patient, advanced machine learning methods to analyse US images and provide real-time feedback during ultrasound exams, and computer graphics concepts to ensure that the AR display is easy to interpret and perceptually sound. The development of the novel AR-US system will be done in close collaboration with medical teams at University of Montreal Hospital Center (CHUM) to ensure clinical relevance.

Requirements: Candidate should have a master's degree in Computer Science, Electrical and Computer Engineering, Biomedical Engineering or related field (or be graduating shortly) with strong analytical and programming skills (C, C++, Python), ability to work independently, good communication skills and research experience in computational image analysis methods. Previous experience with medical image processing, image-guided surgery, OpenGL, DirectX, Vulkan, Unity, iOS/Android, VTK, ITK and/or 3D Slicer is a plus.

Application deadline: June 15, 2026

Application: Interested candidates should submit a single PDF file (do not zip it) to Dr. Houssem Gueziri (houssem.gueziri@teluq.ca) including:

- A cover letter detailing their research interests and explaining how their qualifications align with the specific requirements of the position.
- A CV, including a full list of publications.
- A copy of academic transcripts.
- Contact information for 2 references.