Imagine you are in need of an ultrasound but live in a rural or remote area where medical staff do not have the capacity to make an accurate diagnosis. As a patient, you would need to travel far and potentially treacherous distances to reach the appropriate medical personnel and get an imaging exam. Fortunately due to advances in tele-robotics and medical imaging technology this may soon be an issue of the past for these populations. A patient will soon be able to receive a diagnosis from anywhere in the world with the help of an internet connection and a cutting-edge ultrasound robot.

Researchers at the University of Orleans (Bourges) and the company AdEchoTech in France have spent the past fifteen years developing a remotely manipulated ultrasound transducer positioning device—essentially a robot—that can be controlled by an individual on the other side of the world. A joystick instrument controls the robot, which transmits images of the patient’s organs. The patient’s ultrasound is seen in real time and a diagnosis can immediately be made.

On June 8, a demonstration of the ultrasound robot was performed at Instrumentation and Technical Services (ITS). ITS’ longtime partnership with University of Orleans project collaborators at CENGETS – Pontificia Catholic University in Lima, Peru, led to the University of Vermont’s participation in this global experiment. Professors Cyril Novales and Laurence Josserand of the University of Orleans traveled to ITS to prepare and facilitate the demonstration over the course of two days. The experiment was also covered in the Burlington Free Press, “Looking for a Gallstone on the Internet.” In the first phase of the test, ITS connected to the Maternity Hospital of Lima, Peru. The robotic system, known as Melody, was controlled in Lima on an examinee at ITS. The device worked perfectly and clear images were sent to Lima to be viewed on a large screen. The only issue considered in the demonstration was the potential difficulty to get a satisfactory image if a patient is overweight or obese. The weighted pressure on the robotic device may not be enough to discern a clear ultrasound from a heavy individual. This obstacle will likely be addressed while producing the next generation of the robot.

Later, several medical professionals from Fletcher Allen Health Care had the opportunity to test the robot themselves on examinees at the Cyprus University of Technology. Dr. Kristen DeStigter, Vice Chair of Radiology, Dr. Brendan Banyon, Radiology Resident, and Douglas Sutton, Ultrasound Manager, participated in controlling the robot. The demonstration with Cyprus had a few challenges. The images were initially difficult to see. Some robot readjusting and additional application of gel was needed to fix the problem. Once the issue was resolved, the examinee’s heart, gallbladder, and liver were viewed. While looking at the ultrasound Dr. DeStigter stated, “I can say with 99 percent certainty that he does not have a gallstone.” She also commented on the health of the patient’s liver and was very satisfied with the images on the screen. The demonstration with Cyprus was concluded as an overall success. The Melody system was also tested between Peru and Cyprus with great results.

The possibilities for Melody and robotic ultrasounds are extremely exciting. Providing this technology in rural, remote, and developing regions has the potential to save lives and be a cost-efficient model for preventive healthcare and proper diagnosis of the patient. This includes reducing maternal and newborn mortality by detecting potential issues before they become life-threatening, as well as catching anomalies and tumors so the patient can be treated as soon as possible. People will not have to travel miles to get the diagnosis they need, saving them precious time and money.