Big Healthcare Challenges
in chronic disease

ULTROMICS
- Advanced Ultrasound Analysis Made Simple

By simplifying the way echocardiographers and doctors are able to extract complex information from echocardiograms, we can increase their confidence in image interpretation.

If a doctor wants to look at the structure or function of your heart, the first test they request is an echocardiogram. Thousands are performed, in every hospital, every year.

Ultrasound images are rich in detail but, because of the time taken to extract quantitative data from the images, most of this detail is ignored: diagnosis is instead based on visual assessment, supported by a minimal set of measurements.

Simple ways to extract the complex information contained in ultrasound images are therefore needed.

We have developed such techniques and compared the information we extract against reference datasets of large numbers of people with known diseases.

The measures appear to have the potential to identify a range of heart problems. Placing the techniques into clinical practice should therefore help technicians and doctors reach clinical decisions faster and with greater confidence.

The first, proven application of the system is in stress echocardiography. This is a test, performed widely within the NHS, to decide the significance of chest pain symptoms in different patients. It notoriously requires a Consultant Cardiologist to supervise the test, having developed specific skills in visual interpretation of a series of images collected at rest and after stress.

We have shown that, with a simple data extraction from stored images, the tool works as well as the Consultant Cardiologist: it can even identify some tests that were incorrectly classified by the doctor.

We have also been able to adapt the methods to work on large, stored, echocardiogram archives. As the process is relatively simple, we can now quickly re-evaluate datasets from pharmaceutical clinical trials, academic research groups or clinical departments. Retrospective, re-examination of studies using the complex image analysis metrics captured by the technique, has the potential to provide a ‘second look’ at a drug or clinical research finding.

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