1 Coronary artery stenoses detection & quantification and lumen segmentation in CTA images

The objective of this evaluation framework is to demonstrate the feasibility of dedicated algorithms for:

1) (semi-)automated detection and quantification of stenosis on computed tomography angiography (CTA), in comparison with quantitative coronary angiography (QCA) and CTA consensus reading.

2) (semi-)automated coronary lumen segmentation on CTA, in comparison with manual annotation.

48 multi-center multi-vendor (i.e. different acquisition settings) datasets of symptomatic patients will be used:

- 16 datasets, acquired with a 64-slice dual-source CT scanner Siemens Somatom Definition, Erasmus Medical Center Rotterdam (NL)
- 16 datasets, acquired with a 64-slice single-source CT scanner Philips Brillance 64, University Medical Center Utrecht (NL)
- 16 datasets, acquired with a 320-slice single-source CT scanner Toshiba Aquilion ONE 320, Leiden University Medical Center (NL)

Two reference standards (QCA and CTA consensus) are available.
Comprehensive and dedicated evaluation tools will be employed to target each individual application for an objective assessment of the algorithm performance.

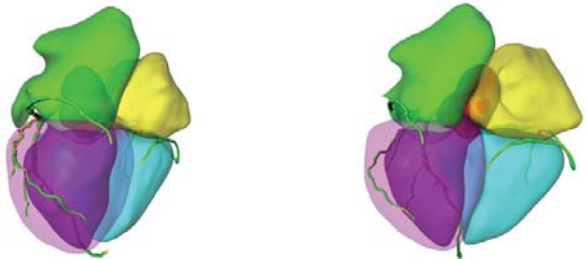
http://coronary.bigr.nl/stenoses

The evaluation framework will be launched during a **workshop** at the 15th International Conference on Medical Image Computing and Computer Assisted Intervention (**MICCAI**), which will take place on October 1st, 2012 in Nice Sophia Antipolis (Côte d'Azur, France).

Important dates

These dates are approximate and subject to changes
Please visit our website: http://grand-challenge2012.bigr.nl/

Training data ready for download	March, 19th 2012
Webiste open for submissions	May, 7th 2012
Testing data ready for download	June, 4th 2012
Testing results & (max.) 8-page paper describing the method	June, 29th 2012
Notification of acceptance to participants	July, 6th 2012
On-site testing data ready for download Workshop	**October, 1st 2012**



2 Right Ventricle Segmentation in Cardiac MRI

The objective of this evaluation framework is to demonstrate the feasibility of dedicated algorithms for automatic right ventricle segmentation in short-axis MRI images.

754 short-axis cardiac MR images, acquired on 47 patients with diagnosed pathologies.

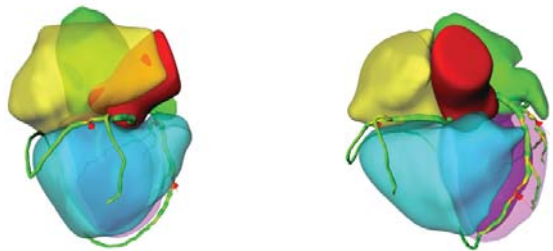
- 47x9 images (or slices) acquired at end-diastolic phase.
- 47x7 images (or slices) acquired at end-systolic phase.

Cardiac MRI examinations were performed at 1.5 T (Symphony Tim®, Siemens Medical Systems, Erlangen, Germany) at the Rouen University Hospital (FR)

The reference standard is a manual segmentation of the endocardium and epicardium performed by an experienced cardiac radiologist in clinical routine conditions, with the convention that trabeculae and papillary muscles were included in the RV cavity.

As an evaluation, the overlap measures Dice and Jaccard will be computed based on the pixel labeling as the result of a segmentation algorithm, as well as the point-2-curve error and Hausdorff distance. Based on the ED and ES myocardial surface segmentation, the following global RV functions will also be assessed: RV volumes (ml), ejection fraction, and RV mass (g), at ED and ES.

http://www.litislab.eu/rvsc/



3D Cardiovascular Imaging: a MICCAI segmentation challenge

This workshop is a continuation of the successful MICCAI grand challenge workshops series focusing on evaluating and comparing medical image analysis methods in clinical settings.

This year, we will use a similar format adapted to a new set of clinical applications. The goal of this workshop is to quantitatively evaluate the performance of 3D image analysis algorithms for:

1) coronary artery stenoses detection/quantification and lumen segmentation in computed tomography angiography (CTA) images

2) right ventricle segmentation in cardiac MRI.

The competition is conducted using an image database that covers a wide range of pathologies, as well as image sources.

Three sets of test images will be provided to all participants. The first set includes expert, ground truth annotations and is used for fine-tuning the algorithms. The second set will be used to evaluate the methods before the workshop and provide results for the workshop papers. The third set will be used during the workshop to evaluate all submitted algorithms on-site.

Submission of results of an algorithm submitted to the main conference (or to some other workshops) are allowed, as well as submission of results of already published methodologies.

Another major goal of the workshop is to foster in-depth discussions and technical interchange among researchers. For this reason, the workshop consists of in-depth presentations of selected algorithms, posters and discussion sessions.

After the workshop, collaborative papers describing the data, the participant methods and summarizing the results will be prepared for submission to a relevant journal (Medical Image Analysis or IEEE Transactions on Medical Imaging).

ORGANIZERS

Coronary artery stenoses detection & quantification and lumen segmentation in CTA images

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http://grand-challenge2012.bigr.nl/

This event is supported by

Toshiba Medical visualization Systems Europe (Main)

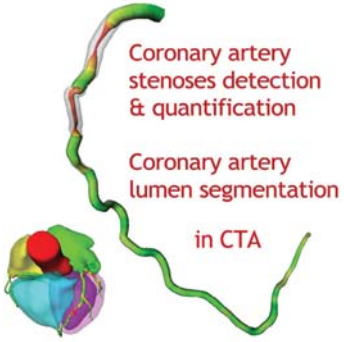
Pie Medical Imaging

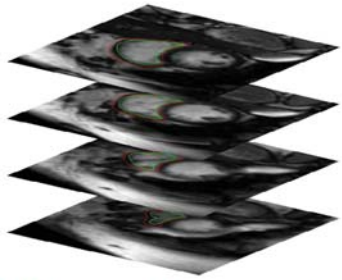
Medis Medical Imagine Systems

3D Cardiovascular Imaging: a MICCAI segmentation challenge

Training and testing data available
Standardized evaluation measures

MICCAI 2012, Nice, FRANCE
October 1st, 2012





Right ventricle segmentation in cardiac MRI

http://grand-challenge2012.bigr.nl/