

# PROGRAMME

## Oral Presentations and keynotes

Tuesday, October 16

17:00 – 18:30

Early Registration

Wednesday, October 17

8:00 – 8:45

Registration

8:45 – 9:00

Welcome

Auditorium

9:00 – 10:30

Keynotes I

Auditorium

Computational Bioimaging and Visualization  
**Chris Johnson**  
Robust Algorithms for Deformable Contours  
**Jorge S. Marques**

10:30 – 11:00

Coffee Break

11:00 – 12:30

Oral Presentations

Room B032

Chairs:

*Manuel Hidalgo, Andreas Obereder*

ORAL I

11:00 – 11:20 Human head models for the EEG forward problem  
*R. Rytsar, T.Pun*

11:20 – 11:40 Analysis of manual segmentation in medical image processing  
*K. Tingelhoff, K.W. Eichhorn, I. Wagner, F. Bootz, M.E. Kunkel, A.I. Moral, R. Westphal, M. Rilk, F. Wahl*

11:40 – 12:00 Clustering of BOLD signals recorded during rest reveals more inter-subject constancy than EEG-fMRI correlation maps  
*S. I. Gonçalves, P. J. W. Pouwels, J. P. A. Kuijter, R. M. Heethaar, J. C. de Munck*

12:00 – 12:20 Medical and biological imaging with optical coherence tomography  
*Carla Carmelo Rosa, Michael Leitner, Adrian Gh. Podoleanu*

Room B035

Chairs:

*Rui Lima, João Figueiredo*

ORAL II

11:00 – 11:20 Movement detection in 2D images with variable dimension cells  
*Frederico Lapa Grilo, João M. G. Figueiredo, O. P. Dias, T. G. Amaral*

11:20 – 11:40 Fast and straightforward method to estimate sub-pixel level displacement field  
*A. Sousa, J. Morais, V. Filipe, A. Jesus, M. Vaz*

11:40 – 12:00 A new semiautomatic method for ICH segmentation and tracking from CT head images  
*N. Pérez, J. A. Valdés, M. A. Guevara, L.A. Rodríguez, A. Silva*

12:00 – 12:20 Video sequences analysis for eye tracking  
*A.De Santis, D.Iacoviello*

12:20 – 14:00

Lunch

14:00 – 15:30

Keynotes II

Room B032

Latest advances in Cardiovascular Informatics  
**Ioannis A. Kakadiaris**

*Fast Surface Segmentation and remeshing by finding geodesics*  
**Laurent Cohen**

15:30 – 16:30

Oral Presentations

Room B032

Chairs:

*Sonia Gonçalves, Romana Rytsar*

ORAL III

15:30 – 15:50 Automatic Couinaud Liver segmentation using CT images  
*D.A.B. Oliveira, R.Q. Feitosa, M.M Correia*

15:50 – 16:10 Brain volumetry estimation based on a suitable combination of statistic and morphological techniques  
*J. M. Molina, A. Silva, M. A. Guevara, J.P. Cunha*

16:10 – 16:30 Multiscale analysis of short-term cardiorespiratory signals  
*L. Angelini, T. M. Creanza, R.Maestri, D. Marinazzo, M. Pellicoro, G. D. Pinna, S. Stramaglia, S. Tupputi*

Room B035

Chairs:

*Andrea Chincarini, Blai Coll*

ORAL IV

15:30 – 15:50 Fuzzy morphology based on uninorms: image edge-detection. opening and closing.  
*Manuel González-Hidalgo, Arnau Mir Torres, Daniel Ruiz-Aguilera, Joan Torrens Sastre*

15:50 – 16:10 Use of statistic texture descriptors to classify boar sperm images applying, discriminant analysis  
*Sir Suarez, Enrique Alegre, Manuel Castejón, Lidia Sánchez*

16:10 – 16:30 Automatic extraction and classification of DNA profiles in digital images  
*Cristina Caridade, A.R.S. Marçal, T. Mendonça*

16:30 – 17:00

Coffee Break

17:00 – 17:30

Posters

Atrium

17:30 – 18:30

Oral Presentations

Room B032

Chairs:

*Borges Pires, João Martins*

ORAL V

17:30 – 17:50 Behaviour of the medial gastrocnemius and soleus muscles during human drop jumps  
*F. Sousa, J.P. Vilas-Boas, M. Ishikawa & P.V. Komi*

Room B035

Chairs:

*Eurico Seabra, Paulo Flores*

ORAL VI

17:30 – 17:50 Medical interface for echographic free-hand images  
*J.B. Santos, D. Celorico, J. Varandas, J. Dias*

**17:50 – 18:10** Measurement of the IMT using a semi-automated software (ThichSoft): a validation study  
*Anton Vernet, Honorio Pallas, Lluís Masana, Blai Coll*

**18:10 – 18:30** Individualizing biomechanical shoulder models using scaling, morphing and fittings  
*Germano T. Gomes, Emmanuel A. Audenaert, Lieven De Wilde, Katharina D'Herde*

**17:50 – 18:10** The use of Computational Fluid Dynamic in swimming research  
*D.A. Marinho, A.J. Silva, A.I. Rouboa, L.T. Leal, L.S. Sousa, V.M. Reis, F.B. Alves, J.P. Vilas-Boas*

**18:10 – 18:30** 3D object reconstruction from uncalibrated images using a single off-the-shelf camera  
*Teresa C. S. Azevedo, João Manuel R. S. Tavares, Mário A. P. Vaz*

**19:30** Welcome Port of Honour Music House

## Thursday, October 18

**9:00 – 10:30** Keynotes III Room B032

From Geometrical Models to Physiological Models of the Human Body  
**Juan J. Villanueva**  
Automatic Generation of Computer Models from Multi-modal Bio-medical Imaging  
**Chandrajit Bajaj**

**10:30 – 11:00** Coffee Break

**11:00 – 12:30** Oral Presentations

**Room B032**

**Chairs:**  
*Sushil Kumar Mendiratta, Michel Audette*

**ORAL VII**

**11:00 – 11:20** Microscale flow dynamics of red blood cells in a circular microchannel  
*R. Lima, M. Nakamura, T. Ishikawa, S. Tanaka, M. Takeda, Y. Imai, K. Tsubota, S. Wada, T. Yamaguchi*

**11:20 – 11:40** Carotid artery ultrasound image segmentation using graph cuts  
*Amr R. Abdel-Dayem, Mahmoud R. El-Sakka*

**11:40 – 12:00** 3D reconstruction of the retinal arterial tree based on fundus images using a self-calibration approach  
*D. Liu, N.B. Wood, X.Y. Xu, N. Witt, A.D. Hughes, S.A. McG. Thom*

**12:00 – 12:20** Alternative lossless compression algorithms in X-ray cardiac images  
*D.R. Santos, C. M. A. Costa, A. Silva, J. L. Oliveira, A. J. R. Neves*

**Room B035**

**Chairs:**  
*João Paulo Vilas-Boas, Filipa Sousa*

**ORAL VIII**

**11:00 – 11:20** Fuzziness measure approach to automatic histogram threshold  
*Nuno Vieira Lopes, Humberto Bustince, Vítor Filipe, Pedro Melo Pinto*

**11:20 – 11:40** Coarse comparison of outlines shapes descriptors  
*Saliha Aouat, Slimane Larabi*

**11:40 – 12:00** Analysis of pupil fluctuations for detection of deception  
*D. Iacoviello*

**12:00 – 12:20** Volume properties of the hippocampal region as predictors of DAT development  
*A. Chincarini & G. Gemme, P. Calvini, M.A. Penco, S. Squarcia, F.M. Nobili, G. Rodriguez*

**12:20 – 14:00** Lunch

**14:00 – 15:30** Keynotes IV Room B032

Automatic Construction of Statistical Shape Models using Non-Rigid Registration  
**Tim Cootes**  
*Theory of Digital Manifolds and its Applications to Medical Imaging*  
**Valentin Brimkov**

**15:30 – 16:30** Oral Presentations

**Room B032**

**Chairs:**  
*Carla Carmelo Rosa, Luis Paulo Reis*

**ORAL IX**

**15:30 – 15:50** Direct approach for constructing volumetric meshes from 3D image data  
*V. Bui Xuan, P. G. Young, G. R. Tabor & T. Collins, R. Said, M. Gomes, V. M. B. Martins-Augusto*

**15:50 – 16:10** Automatic accuracy evaluation for distance measurement by medical ultrasound scanners  
*F.P. Branca, A. D'Orazio, S.A. Sciuto, A. Scorza*

**16:10 – 16:30** Geometry calibration for X-Ray equipment in radiation treatment devices  
*B. P. Selby, G. Sakas, S. Walter, U. Stilla*

**Room B035**

**Chairs:**  
*Daniela Iacoviello, Alberto de Santis*

**ORAL X**

**15:30 – 15:50** A novel model of bottom-up visual attention using local energy  
*A. García-Díaz, X.R. Fdez-Vidal, R. Dosil, X.M. Pardo*

**15:50 – 16:10** Acrosome integrity classification of boar spermatozoon images using DWT and texture descriptors  
*Maribel González, Enrique Alegre, Rocío Alaiz, Lidia Sánchez*

**16:10 – 16:30** Test of algorithms for z localization of pathology in optical micrographs stack of a cell  
*A. C. Pinho, A. Silva & A. R. Borges, B. S. K. Mendiratta*

**16:30 – 17:00** Coffee Break

**17:00 – 17:30** Posters Atrium

**17:30 – 18:30** Oral Presentations

**Room B032**

**Chairs:**  
*Daniele Marinazzo, Florian Fruehauf*

**ORAL XI**

**17:30 – 17:50** Detection of synthetic singularities in digital mammographies using spherical filters  
*Céline Gouttière, Joël De Coninck*

**17:50 – 18:10** Image processing on the Poisson ratio calculation of soft tissues  
*P. Martins, R. Natal Jorge, A. Fernandes, A. Ferreira, T. Mascarenhas*

**18:10 – 18:30** A simple mathematical model for the woman's breast geometry and its use in the breast characterisation  
*Paulo G. Macedo, Elisabete A. Mota, Vera M. Sá*

**Room B035**

**Chairs:**  
*Mahmoud El-Sakka, Anton Vernet*

**ORAL XII**

**17:30 – 17:50** Customized implant optimization for maxillo-mandibular osteotomy  
*C. Pereira, F. Ventura, M.C. Gaspar, A. Mateus*

**17:50 – 18:10** Nonlinear 3D foot FEA modelling from CT scan medical images  
*P.J. Antunes, G. R. Dias, A.T. Coelho, F. Rebelo, T. Pereira*

**18:10 – 18:30** Teaching kinematics and dynamics by using virtual reality capabilities  
*Paulo Flores*

**19:30** Farewell Dinner Taylor's - Porto Wine Cellars

# Friday, October 19

**9:30 – 10:30**

**Keynotes V**

**Room B032**

Image Sequence Evaluation

**Hervé Delingette**

Processing of Simultaneous acquisition of EEG and fMRI

**Mario Forjaz Secca**

**10:30 – 11:00**

**Coffee Break**

**11:00 – 12:30**

**Oral Presentations**

**Room B032**

**Chairs:**

*Renato Natal Jorge, João Tavares*

**ORAL XIII**

**11:00 – 11:20**

Paranasal sinuses segmentation/reconstruction for robot assisted endonasal surgery

*A.I. Moral, M.E. Kunkel, M. Rilk, F.M.Wahl, K. Tingelhoff & F. Bootz*

**11:20 – 11:40**

Computer-Aided detection system for nodule detection in lung CTs

*Gianfranco Gargano*

**11:40 – 12:00**

A tissue relevance and meshing method for computing patient-specific anatomical models in endoscopic sinus surgery simulation

*M.A. Audette, I. Hertel, O. Burgert, G. Strauss,*

**12:00 – 12:20**

Fluid-Structure interaction applied to blood flow simulations

*J. S. Pérez, E. Soudah, J. García, E. Escolano, E. Oñate, A. Mena, E. Heidenreich, J. F. Rodríguez, M. Doblaré*

**12:30**

**Closing**

**Room B032**

# Posters

## Wednesday, October 17

A system for ploidy analysis of malignant nuclei

*S. Isotani, Y.I. Sakai, A.T. Sakai, O.M. Capeli, A.R.P.L. de Albuquerque*

Acquisition electronic system for visualization, registering and filtering of ECG signals

*Ricardo E. Martines, Rosa C. David, Juan M. Vildady, Cesar O. Torres, Lorenzo Mattos*

Macerals detection and quantization in coal using optical methods

*Jose C. Peña, Yamelys Navarro, Cesar O. Torres*

Numerical experiments for segmenting medical images using level sets

*A. Araújo, D. M. G. Comissiong, G. Stadler*

A Drusen volume quantification method based on a segmentation algorithm

*Fernando Moitinho, André Mora, Pedro Vieira, José Fonseca*

Eye detection using a deformable template in static images

*Fernando Jorge Soares Carvalho, João Manuel R. S. Tavares*

A geometric modeling pipeline for bone structures based on computed, tomography data: a veterinary study

*D.S. Lopes, J.A.C. Martins, E.B. Pires, L.B. Rodrigues, E.B. de Las Casas, R.R. Faleiros*

Filtering ECG signals using fractional Fourier transform

*Juan M. Vildady, Cesar O. Torres, Lorenzo Mattos*

New method of segmentation using color component

*Jose C. Peña, Yamelys Navarro, Cesar O. Torres*

Predicting muscle fascicule paths for use in customized biomechanical models

*E. A. Audenaert, G. T. Gomes, A. Audenaert*

## Thursday, October 18

ECG Self – diagnosis system at P- R Interval

*Pedro R. Gomes, Filomena O. Soares, J. H. Correia*

Lung and Chest Wall structures segmentation in CT images

*J.H.S. Felix, P.C. Cortez, M.A. Holanda, V.H.C. Albuquerque, D.F. Colaço, A.R. Alexandria*

Measuring critical exponents with a low cost camera in a human standing task

*A. S. Fonseca, F. Vistulo de Abreu*

Segmentation of objects in images using physical principles

*Patrícia C. T. Gonçalves, João Manuel R. S. Tavares, Renato Natal Jorge*

A didactic application for creating new sights from multiple images using Light Fields

*Brigida Monica Faria, A. Augusto de Sousa, Luis Paulo Reis*

Advanced graphical tools on modelling and control of automation systems

*E. Seabra, J. Machado, P. Flores*

3D reconstruction of pelvic floor for numerical simulation purposes

*Fátima Alexandre, Rania F. El Sayed, Teresa Mascarenhas, R.M. Natal Jorge, M.P. Parente, A. A. Fernandes, J. Manuel R.S. Tavares*

Matching contours in images using curvature information

*Francisco P. M. Oliveira, João Manuel R. S. Tavares*

Kinematic analysis of human locomotion based on experimental data

*Fernando Meireles, Miguel Silva, Paulo Flores*

An application of hough transform to identify breast cancer in images

*E.M.P. de F. Chagas, D. L. Rodrigues, J.M.R.S. Tavares, A.M. Reis, D. Miranda, R. Duarte*