

# **2012 9th IEEE International Symposium on Biomedical Imaging**

**(ISBI 2012)**

**Barcelona, Spain  
2 – 5 May 2012**

**Pages 1-899**



**IEEE Catalog Number: CFP12BIS-PRT  
ISBN: 978-1-4577-1857-1**

# Table of Contents

## **WE-PO.PA: DIFFUSION AND FUNCTIONAL MR IMAGING A**

### **WE-PO.PA.1: HOW DO SPATIAL AND ANGULAR RESOLUTION AFFECT BRAIN CONNECTIVITY MAPS FROM DIFFUSION MRI? .....1**

*Liang Zhan, Daniel Franc, Vishal Patel, Neda Jahanshad, Yan Jin, University of California at Los Angeles, United States; Bryon Mueller, University of Minnesota, United States; Matt A. Bernstein, Bret Borowski, Clifford R. Jack, Mayo Clinic, United States; Arthur W. Toga, University of California at Los Angeles, United States; Kelvin Lim, University of Minnesota, United States; Paul M. Thompson, University of California at Los Angeles, United States*

### **WE-PO.PA.2: MEASURING INTER-HEMISPHERIC INTEGRATION IN BIPOLAR AFFECTIVE DISORDER USING BRAIN NETWORK ANALYSES AND HARDI .....5**

*Alex Leow, University of Illinois at Chicago, United States; Liang Zhan, University of California at Los Angeles, United States; Olusola Ajilore, Johnson GadElkarim, Aifeng Zhang, University of Illinois at Chicago, United States; Donatello Arienzo, Teena Moody, Jamie Feusner, University of California at Los Angeles, United States; Anand Kumar, University of Illinois at Chicago, United States; Paul M. Thompson, Lori Altshuler, University of California at Los Angeles, United States*

### **WE-PO.PA.3: A NEIGHBORHOOD-BASED PROBABILISTIC APPROACH FOR FIBER TRACKING IN HUMAN CARDIAC DTI .....9**

*Hongying Li, Marc Robini, Feng Yang, Yuemin Zhu, Institut National des Sciences Appliquées de Lyon, France*

### **WE-PO.PA.4: MODELLING FIBRE FANNING IN DIFFUSION-WEIGHTED MRI .....14**

*Stamatios Sotiropoulos, Timothy Behrens, Saad Jbabdi, University of Oxford, United Kingdom*

### **WE-PO.PA.5: DIRECT RECONSTRUCTION OF FIBRE ORIENTATION USING DISCRETE GROUND TRUTH INTERPOLATION .....18**

*Bartosz Neuman, Christopher Tench, Li Bai, University of Nottingham, United Kingdom*

### **WE-PO.PA.6: ENTROPY BASED DTI QUALITY CONTROL VIA REGIONAL ORIENTATION DISTRIBUTION .....22**

*Mahshid Farzinfar, Cheryl Dietrich, Rachel Smith, Yinpeng Li, Aditya Gupta, University of North Carolina, United States; Zhexing Liu, Southern Medical University, United States; Martin Styner, University of North Carolina, United States*

### **WE-PO.PA.7: BIOMARKERS FOR HARDI: 2ND & 4TH ORDER TENSOR INVARIANTS .....26**

*Aurobrata Ghosh, Theodore Papadopoulos, Rachid Deriche, INRIA Sophia Antipolis - Méditerranée, France*

### **WE-PO.PA.8: FMRI MODEL DIAGNOSTICS FOR THE DOUBLE GAMMA AND TEMPORAL DERIVATIVE .....30**

*Ben Cassidy, Victor Solo, The University of New South Wales, Australia*

### **WE-PO.PA.9: THE PARALLEL KALMAN FILTER: AN EFFICIENT TOOL TO DEAL WITH REAL-TIME NON CENTRAL $\kappa$ NOISE CORRECTION OF HARDI DATA .....34**

*Véronique Brion, Olivier Riff, NeuroSpin, France; Maxime Descoteaux, Sherbrooke University, France; Jean-François Mangin, Denis Le Bihan, Cyril Poupon, Fabrice Poupon, NeuroSpin, France*

|  |           |
|--|-----------|
| <b>WE-PO.PA.10: AN ALGEBRAIC SOLUTION TO ROTATION RECOVERY IN HARDI</b> .....  | <b>38</b> |
| <b>FROM CORRESPONDENCES OF ORIENTATION DISTRIBUTION FUNCTIONS</b>  |           |
| <i>Hasan Cetingul, Siemens Corporate Research &amp; Technology, United States; Bijan Afsari, Rene Vidal, Johns Hopkins University, United States</i>   |           |
| <b>WE-PO.PA.11: AGREEMENT BETWEEN THE WHITE MATTER CONNECTIVITY</b> .....  | <b>42</b> |
| <b>BASED ON THE TENSOR-BASED MORPHOMETRY AND THE VOLUMETRIC WHITE MATTER PARCELLATIONS BASED ON DIFFUSION TENSOR IMAGING</b>   |           |
| <i>Seung-Goo Kim, Hyekyoung Lee, Seoul National University, Republic of Korea; Moo K. Chung, Jamie L. Hanson, University of Wisconsin - Madison, United States; Brian B. Avants, James C. Gee, University of Pennsylvania School of Medicine, United States; Richard J. Davidson, Seth Pollak, University of Wisconsin - Madison, United States</i>  |           |
| <b>WE-PO.PA.12: ESTIMATION OF IN VIVO HUMAN MYOCARDIAL FIBRE STRAIN BY</b> .....   | <b>46</b> |
| <b>INTEGRATING DIFFUSION TENSOR AND TAGGED MRI USING FE MODELLING</b>  |           |
| <i>Vicky Y. Wang, University of Auckland, New Zealand; Christopher Casta, Pierre Croisille, Patrick Clarysse, Yue-Min Zhu, Université de Lyon, CREATIS, France; Brett R. Cowan, Centre for Advanced MRI, University of Auckland, New Zealand; Alistair A. Young, Auckland Bioengineering Institute, University of Auckland, New Zealand; Martyn P. Nash, University of Auckland, New Zealand</i> |           |
| <b>WE-PO.PA.13: OPTIMAL REGULARIZATION FOR MR DIFFUSION SIGNAL</b> .....   | <b>50</b> |
| <b>RECONSTRUCTION</b>  |           |
| <i>Emmanuel Caruyer, Rachid Deriche, INRIA Sophia Antipolis - Méditerranée, France</i>   |           |
| <b>WE-PO.PA.14: CONNECTIVITY-BASED ANALYSIS: APPLICATION TO WHITE MATTER</b> .....   | <b>54</b> |
| <b>MATURATION IN MOUSE BRAIN</b>   |           |
| <i>Youssef Rouchdy, Christos Davatzikos, Ragini Verma, University of Pennsylvania, United States</i>   |           |
| <br><b>WE-PO.PA: IMAGE ACQUISITION AND RECONSTRUCTION A</b>  |           |
| <b>WE-PO.PA.1: PARALLEL COMPUTATION OF A SPECT PROJECTION OPERATOR FOR</b> .....   | <b>58</b> |
| <b>A CONTENT ADAPATATIVE MESH MODEL</b>  |           |
| <i>Francesc Massanes, Jovan Brankov, Illinois Institute of Technology, United States</i>   |           |
| <b>WE-PO.PA.2: INCLUSION OF INTER CRYSTAL SCATTER DATA IN PET</b> .....  | <b>62</b> |
| <i>John Gillam, Paola Solevi, Josep Oliver, Magdalena Rafecas, IFIC (CSIC-Universitat de Valencia), Spain</i>  |           |
| <b>WE-PO.PA.3: HYR2PICS: HYBRID REGULARIZED RECONSTRUCTION FOR</b> .....   | <b>66</b> |
| <b>COMBINED PARALLEL IMAGING AND COMPRESSIVE SENSING IN MRI</b>  |           |
| <i>Claire Boyer, INSA Toulouse &amp; CEA/NeuroSpin, France; Philippe Ciuciu, CEA/NeuroSpin, France; Pierre Weiss, INSA Toulouse &amp; Université Paul Sabatier, France; Sébastien Meriaux, CEA/NeuroSpin, France</i>   |           |
| <b>WE-PO.PA.4: MODELS FOR BIOMEDICAL IMAGE RECONSTRUCTION BASED ON</b> .....   | <b>70</b> |
| <b>INTEGRAL APPROXIMATION METHODS</b>  |           |
| <i>Charles Byrne, University of Massachusetts, United States; Dan Gordon, Daniel Heilper, University of Haifa, Israel</i>  |           |
| <b>WE-PO.PA.5: A HYBRID TOTAL-VARIATION MINIMIZATION APPROACH TO</b> .....   | <b>74</b> |
| <b>COMPRESSED SENSING</b>  |           |
| <i>Yong Wang, Xidian University, China; Dong Liang, Chinese Academy of Sciences, China; Yuchou Chang, Leslie Ying, University of Wisconsin - Milwaukee, United States</i>  |           |

|  |            |
|--|------------|
| <b>WE-PO.PA.6: A KERNEL APPROACH TO COMPRESSED SENSING PARALLEL MRI.....</b>   | <b>78</b>  |
| <i>Yuchou Chang, University of Wisconsin - Milwaukee, United States; Kevin F. King, GE Healthcare, United States; Dong Liang, Chinese Academy of Sciences, China; Yong Wang, Xidian University, China; Leslie Ying, University of Wisconsin - Milwaukee, United States</i>   |            |
| <b>WE-PO.PA.7: VIRTUAL SOURCE PATTERNS FOR FLUORESCENCE TOMOGRAPHY.....</b>  | <b>82</b>  |
| <i>Nicolas Ducros, Andrea Bassi, Cosimo D'Andrea, Gianluca Valentini, Politecnico di Milano, Italy; Martin Schweiger, Simon Arridge, University College London, United Kingdom</i>   |            |
| <b>WE-PO.PA.8: MICROWAVE RADAR IMAGING OF INHOMOGENEOUS BREAST PHANTOMS USING CIRCULAR HOLOGRAPHY .....</b>  | <b>86</b>  |
| <i>Daniel Flores Tapia, Oleksandr Maizlish, University of Manitoba, Canada; Clive Michael Alabaster, Cranfield University, United Kingdom; Stephen Pistorius, CancerCare Manitoba, Canada</i>  |            |
| <b>WE-PO.PA.9: DIFFERENTIAL PHASE-CONTRAST X-RAY COMPUTED TOMOGRAPHY: FROM MODEL DISCRETIZATION TO IMAGE RECONSTRUCTION .....</b>  | <b>90</b>  |
| <i>Masih Nilchian, Michael Unser, École Polytechnique Fédérale de Lausanne, Switzerland</i>  |            |
| <b>WE-PO.PA.10: COMPRESSED SENSING RECONSTRUCTION OF STATISTICAL PARAMETER MAP FOR FUNCTIONAL DIFFUSE OPTICAL TOMOGRAPHY .....</b>   | <b>94</b>  |
| <i>Ok Kyun Lee, Hua Li, Sung Ho Tak, Jong Chul Ye, Korea Advanced Institute of Science and Technology, Republic of Korea</i>   |            |
| <b>WE-PO.PA.11: MULTI-MODALITY IMAGE SIMULATION WITH THE VIRTUAL IMAGING PLATFORM: ILLUSTRATION ON CARDIAC ECHOGRAPHY AND MRI .....</b>  | <b>98</b>  |
| <i>Tristan Glatard, Adrien Marion, Hugues Benoit-Cattin, Sorina Camarasu-Pop, Patrick Clarysse, Rafael Ferreira da Silva, Université de Lyon, CREATIS; CNRS UMR5220; Inserm U1044; INSA-Lyon; Université Lyon 1, France; Germain Forestier, Bernard Gibaud, INSERM / INRIA / CNRS / Univ. Rennes 1, VISAGES U746, Rennes, France; Carole Lartizien, Hervé Liebgott, Kevin Moulin, Denis Friboulet, Université de Lyon, CREATIS; CNRS UMR5220; Inserm U1044; INSA-Lyon; Université Lyon 1, France</i> |            |
| <b>WE-PO.PA.12: DIFFERENTIAL PHASE CONTRAST CT – CHARACTERICS OF SIGNAL AND NOISE .....</b>  | <b>102</b> |
| <i>Xiangyang Tang, Yi Yang, Shaojie Tang, Emory University School of Medicine, United States</i>   |            |
| <b>WE-PO.PA.13: NON-LINEAR ITERATIVE PHASE RETRIEVAL BASED ON FRECHET DERIVATIVE AND PROJECTION OPERATORS .....</b>  | <b>106</b> |
| <i>Valentina Davidoiu, Bruno Sixou, CREATIS, CNRS UMR5220; Inserm U630; INSA-Lyon; Université Lyon 1, France; Max Langer, Françoise Peyrin, CREATIS, CNRS UMR5220; Inserm U630; INSA-Lyon; Université Lyon 1; European Synchrotron Radiation Facility, France</i>  |            |
| <b>WE-PO.PA: COMPUTER AIDED DIAGNOSIS A</b>  |            |
| <b>WE-PO.PA.1: WEAKLY SUPERVISED CLASSIFICATION OF MEDICAL IMAGES .....</b>  | <b>110</b> |
| <i>Gwénolé Quéllec, INSERM, France; Mathieu Lamard, Université de Bretagne Occidentale, France; Guy Cazuguel, Telecom Bretagne, France; Michael Abramoff, University of Iowa, United States; Beatrice Cochener, Université de Bretagne Occidentale, France; Christian Roux, Telecom Bretagne, France</i>   |            |
| <b>WE-PO.PA.2: A NEW APPROACH TO AUTOMATIC DISC LOCALIZATION IN CLINICAL LUMBAR MRI: COMBINING MACHINE LEARNING WITH HEURISTICS .....</b>  | <b>114</b> |
| <i>Subarna Ghosh, Manavender R. Malgireddy, Vipin Chaudhary, State University of New York at Buffalo, United States; Gurmeet Dhillon, Proscan Imaging Inc., United States</i>  |            |

|  |            |
|--|------------|
| <b>WE-PO.PA.3: COMPUTER AIDED STAGING OF LYMPHOMA PATIENTS WITH FDG PET/CT IMAGING BASED ON TEXTURAL INFORMATION</b>   | <b>118</b> |
| <i>Carole Lartizien, Matthieu Rogez, Adeline Susset, Francesco Giammarile, Emilie Niaf, Fabien Ricard, Université de Lyon, France</i>  |            |
| <b>WE-PO.PA.4: AUTOMATIC SEGMENTATION OF BREAST CARCINOMAS FROM DCE-MRI USING A STATISTICAL LEARNING ALGORITHM</b>   | <b>122</b> |
| <i>Jagadeesan Jayender, Kirby G. Vosburgh, Eva Gombos, Harvard Medical School, Brigham and Women's Hospital, United States; Ahmad Ashraf, Despina Kontos, Sara C. Gavenonis, University of Pennsylvania, United States; Ferenc A. Jolesz, Harvard Medical School, Brigham and Women's Hospital, United States; Kilian M. Pohl, University of Pennsylvania, United States</i> |            |
| <b>WE-PO.PA.5: IDENTIFICATION OF BREAST VASCULAR CALCIUM DEPOSITION IN DIGITAL MAMMOGRAPHY BY LINEAR STRUCTURE ANALYSIS</b>  | <b>126</b> |
| <i>Jie-Zhi Cheng, Chung-Ming Chen, National Taiwan University, Taiwan; Dinggang Shen, University of North Carolina at Chapel Hill, United States</i>   |            |
| <b>WE-PO.PA.6: ANNOTATION OF MEDICAL IMAGES USING THE SURF DESCRIPTOR</b>  | <b>130</b> |
| <i>Anna Wojnar, Silesian University of Technology, Poland; António Pinheiro, Universidade da Beira Interior, Portugal</i>  |            |
| <b>WE-PO.PA.7: 3D BRAIN IMAGE-BASED DIAGNOSIS OF ALZHEIMER'S DISEASE: BRINGING MEDICAL VISION INTO FEATURE SELECTION</b>   | <b>134</b> |
| <i>Eduardo Bicacro, Margarida Silveira, Jorge S. Marques, Instituto Superior Técnico, Portugal; Durval C. Costa, Champalimaud Foundation, Portugal</i>   |            |
| <b>WE-PO.PA.8: A COMPUTER AIDED DETECTION SYSTEM FOR CEREBRAL MICROBLEEDS IN BRAIN MRI</b>   | <b>138</b> |
| <i>Babak Ghafaryasl, Fedde van der Lijn, Marielle Poels, Henri Vrooman, Mohammad Arfan Ikram, Wiro J. Niessen, Aad van der Lugt, Meike Vernooij, Marleen de Bruijne, Erasmus Medical Center, Netherlands</i>   |            |
| <b>WE-PO.PA.9: MULTIMODAL MRI-BASED TISSUE CLASSIFICATION IN BREAST DUCTAL CARCINOMA</b>   | <b>142</b> |
| <i>Carlos Andrés Méndez Guerrero, Francesca Pizzorni Ferrarese, University of Verona, Italy; Paul Summers, Giuseppe Petralia, Massimo Bellomi, European Institute of Oncology, Italy; Gloria Menegaz, University of Verona, Italy</i>  |            |
| <b>WE-PO.PA.10: FEATURE RANKING BASED NESTED SUPPORT VECTOR MACHINE ENSEMBLE FOR MEDICAL IMAGE CLASSIFICATION</b>  | <b>146</b> |
| <i>Erdem Varol, Bilwaj Gaonkar, Guray Erus, University of Pennsylvania, United States; Robert Schultz, Children's Hospital of Pennsylvania, United States; Christos Davatzikos, University of Pennsylvania, United States</i>  |            |
| <b>WE-PO.PA.11: HIPPOCAMPAL SHAPE ANALYSIS IN THE LAPLACE BELTRAMI FEATURE SPACE FOR TEMPORAL LOBE EPILEPSY DIAGNOSIS AND LATERALIZATION</b>   | <b>150</b> |
| <i>Rosita Shishegar, Ziba Gandomkar, Hamid Soltanian-Zadeh, Control and Intelligent Processing Centre of Excellence, University of Tehran, Iran; Seyed Reza Moghadasi, Sharif University of Technology, Iran</i>   |            |
| <b>WE-PO.PA.12: VARIABLE INTERACTION MEASURES WITH RANDOM FOREST CLASSIFIERS</b>   | <b>154</b> |
| <i>Cassidy Kelly, Kazunori Okada, San Francisco State University, United States</i>  |            |

|  |            |
|--|------------|
| <b>WE-PO.PA.13: AUTOMATIC REGIONS OF INTEREST IN FACTOR ANALYSIS FOR DYNAMIC MEDICAL IMAGING</b>   | <b>158</b> |
| <i>Václav Šmídl, Ondrej Tichý, Institute of Information Theory and Automation, Czech Republic</i>  |            |
| <b>WE-PO.PB: REGISTRATION, SEGMENTATION AND FEATURE DETECTION IN MICROSCOPY A</b>  |            |
| <b>WE-PO.PB.1: TISSUE SEGMENTATION AND CLASSIFICATION USING GRAPH-BASED UNSUPERVISED CLUSTERING</b>  | <b>162</b> |
| <i>Daniel Margolis, Binghamton University, United States; Alberto Santamaria-Pang, Jens Rittscher, General Electric, United States</i>   |            |
| <b>WE-PO.PB.2: FLUX-BASED 3D SEGMENTATION OF KERATIN INTERMEDIATE FILAMENTS IN CONFOCAL LASER SCANNING MICROSCOPY</b>  | <b>166</b> |
| <i>Gerlind Herberich, Andreas Friedrich, Til Aach, Reinhard Windoffer, Rudolf E. Leube, RWTH Aachen University, Germany</i>  |            |
| <b>WE-PO.PB.3: NON PARAMETRIC CELL NUCLEI SEGMENTATION BASED ON A TRACKING OVER DEPTH FROM 3D FLUORESCENCE CONFOCAL IMAGES</b>   | <b>170</b> |
| <i>Thierry Pécot, Shantanu Singh, Enrico Caserta, Kun Huang, Raghu Machiraju, Gustavo Leone, The Ohio State University, United States</i>  |            |
| <b>WE-PO.PB.4: PROBABILISTIC MULTI-COMPARTMENTY GEOMETRIC MODEL: APPLICATION TO CELL SEGMENTATION</b>  | <b>174</b> |
| <i>Sepehr Farhand, Indiana University-Purdue University Indianapolis, United States; Ramon B. Montero, Ximena Vial, Dat Tat Nguyen, Mark Reardon, Si M. Pham, Fotios M. Andreopoulos, University of Miami, United States; Gavriil Tsechpenakis, Indiana University-Purdue University Indianapolis, United States</i> |            |
| <b>WE-PO.PB.5: DEVELOPMENT OF A NOVEL 2D COLOR MAP FOR INTERACTIVE SEGMENTATION OF HISTOLOGICAL IMAGES</b>   | <b>178</b> |
| <i>Qaiser Chaudry, Yachna Sharma, Syed Raza, Georgia Institute of Technology, United States; May D. Wang, Georgia Institute of Technology / Emory University, United States</i>  |            |
| <b>WE-PO.PB.6: CO-REGISTRATION OF TOTAL INTERNAL REFLECTION FLUORESCENCE AND CONFOCAL MICROSCOPY IMAGES FOR STUDYING VESICLE TRAFFICKING IN LIVING CELLS</b>   | <b>182</b> |
| <i>William T. E. Pitkeathly, Joshua Z. Rappoport, Ela Claridge, University of Birmingham, United Kingdom</i>   |            |
| <b>WE-PO.PB.7: IMAGE SEGMENTATION WITH BACKGROUND CORRECTION USING A MULTIPLICATIVE SMOOTHING-SPLINE MODEL</b>   | <b>186</b> |
| <i>Ramtin Madani, Aurélien Bourquard, Michael Unser, École Polytechnique Fédérale de Lausanne, Switzerland</i>   |            |
| <b>WE-PO.PB.8: FAST RANDOM WALKER FOR NEUTROPHIL CELL SEGMENTATION IN 3D</b>   | <b>190</b> |
| <i>Cheng-Jin Du, University of Warwick, United Kingdom; John Ferguson, Phillip Hawkins, Len Stephens, The Babraham Institute, United Kingdom; Till Bretschneider, University of Warwick, United Kingdom</i>  |            |

**WE-PO.PB.9: TEXTON-BASED SEGMENTATION AND CLASSIFICATION OF HUMAN EMBRYONIC STEM CELL COLONIES USING MULTI-STAGE BAYESIAN LEVEL SETS .....194**

*Nathan Lowry, Massachusetts Institute of Technology and C.S. Draper Laboratory, United States; Rami Mangoubi, Mukund Desai, C.S. Draper Laboratory, United States; Youssef Marzouk, Massachusetts Institute of Technology, United States; Paul Sammak, University of Pittsburgh, United States*

**WE-PO.PB.10: A MULTI-RESOLUTION APPROACH TO NON-RIGID REGISTRATION OF MICROSCOPY IMAGES .....198**

*Kevin Lorenz, Purdue University, United States; Paul Salama, Kenneth Dunn, Indiana University, United States; Edward Delp, Purdue University, United States*

**WE-PO.PB.11: COHERENCE ENHANCING DIFFUSION FILTERING BASED ON THE PHASE CONGRUENCY TENSOR .....202**

*Boguslaw Obara, Mark Fricker, Vicente Grau, University of Oxford, United Kingdom*

**WE-PO.PB.12: SEGMENTATION OF HAEMATOPOEITIC CELLS IN BONE MARROW USING CIRCLE DETECTION AND SPLITTING TECHNIQUES .....206**

*Nisha Ramesh, Mohamed E. Salama, Tolga Tasdizen, University of Utah, United States*

**WE-PO.PB: MEDICAL AND BIOLOGICAL APPLICATIONS OF MICROSCOPY A**

**WE-PO.PB.8: PROPAGATION BASED X-RAY PHASE MICROTOMOGRAPHY OF MULTI-MATERIAL OBJECTS FOR SIMULTANEOUS BONE AND SOFT TISSUE VISUALISATION .....210**

*Max Langer, Université de Lyon, CNRS UMR5220 ; Inserm U1044 ; INSA-Lyon ; Université Lyon 1, European Synchrotron Radiation Facility, France; Peter Cloetens, European Synchrotron Radiation Facility, France; Bernhard Hesse, Charité-Universitätsmedizin Berlin, Germany; Alexandra Pacureanu, Université de Lyon, CNRS UMR5220 ; Inserm U1044 ; INSA-Lyon ; Université Lyon 1, European Synchrotron Radiation Facility, France; Kay Raum, Charité-Universitätsmedizin Berlin, Germany; Marie-Hélène Lafage-Proust, Université de Lyon, Inserm U1059, France; Françoise Peyrin, Université de Lyon, CNRS UMR5220 ; Inserm U1044 ; INSA-Lyon ; Université Lyon 1, European Synchrotron Radiation Facility, France*

**WE-PO.PB.11: ITERATIVE HISTOGRAM MATCHING ALGORITHM FOR CHROMOSOME IMAGE ENHANCEMENT BASED ON STATISTICAL MOMENTS .....214**

*Seyed Pooya Ehsani, Hojjat Seyed Mousavi, Babak hosseini Khalaj, Sharif University of Technology, Iran*

**WE-PO.PB.12: MAP ESTIMATION OF OXYGEN TENSION IN RETINAL VESSELS WITH PHOSPHORESCENCE LIFETIME IMAGING .....218**

*Isa Yildirim, Istanbul Technical University, Turkey; Rashid Ansari, University of Illinois at Chicago, United States*

**WE-PO.PB.13: CONFORMAL MAPPING OF NUCLEI IN 3D TOMOGRAPHIC CELL IMAGES TO ASSESS SHAPE HETEROGENEITY .....222**

*Vivek Nandakumar, Xing An, Yalin Wang, Roger Johnson, Deirdre Meldrum, Arizona State University, United States*

## **WE-PO.PB: CARDIAC AND VASCULAR IMAGING A**

### **WE-PO.PB.1: LEFT ENDOCARDIUM SEGMENTATION USING SPATIO-TEMPORAL METAMORPHS .....226**

*Xinyi Cui, Shaoting Zhang, Rutgers University, United States; Junzhou Huang, The University of Texas at Arlington, United States; Xiaolei Huang, Lehigh University, United States; Dimitris Metaxas, Rutgers University, United States; Leon Axel, New York University School of Medicine, United States*

### **WE-PO.PB.2: LEFT VENTRICLE SEGMENTATION WITH MIXTURE OF GAUSSIAN ACTIVE CONTOURS .....230**

*Xiaoxu Wang, Qingmao Hu, Shenzhen Institutes of Advanced Technology, China*

### **WE-PO.PB.3: AUTOMATIC CORONARY EXTRACTION BY SUPERVISED DETECTION AND SHAPE MATCHING .....234**

*Yoshiro Kitamura, Yuanzhong Li, Wataru Ito, FUJIFILM Corporation, Japan*

### **WE-PO.PB.4: INTERPRETING EDGE INFORMATION FOR IMPROVED ENDOCARDIUM DELINEATION IN ECHOCARDIOGRAMS .....238**

*Richard Stebbing, John McManigle, J. Alison Noble, University of Oxford, United Kingdom*

### **WE-PO.PB.5: BRUSHLET SEGMENTATION FOR AUTOMATIC DETECTION OF LUMEN BORDERS IN IVUS IMAGES: A COMPARISON STUDY .....242**

*Amin Katouzian, Technical University of Munich, Germany; Elsa Angelini, Telecom ParisTech, France; Bernhard Sturm, Volcano Corporation, United States; Andrew F. Laine, Columbia University, United States*

### **WE-PO.PB.6: SUPERVISED IN-VIVO PLAQUE CHARACTERIZATION INCORPORATING CLASS LABEL UNCERTAINTY .....246**

*Arna van Engelen, Wiro J. Niessen, Stefan Klein, Harald Groen, Hence Verhagen, Jolanda Wentzel, Aad van der Lugt, Marleen de Bruijne, Erasmus Medical Center, Netherlands*

### **WE-PO.PB.7: AUTOMATIC DETECTION OF CALCIFIED LESIONS IN THE DESCENDING AORTA USING CONTRAST ENHANCED CT SCANS .....250**

*Rahil Shahzad, Delft University of Technology, Netherlands; Michiel Schaap, Fredrico Goncalves, Coert Metz, Erasmus Medical Center, Netherlands; Hui Tang, Delft University of Technology, Netherlands; Theo van Walsum, Adriaan Moelker, Erasmus Medical Center, Netherlands; Lucas van Vliet, Delft University of Technology, Netherlands; Wiro J. Niessen, Erasmus Medical Center, Netherlands*

### **WE-PO.PB.8: SEGMENTATION OF MYOCARDIUM USING DEFORMABLE REGIONS AND GRAPH CUTS .....254**

*Mustafa Uzunbas, Shaoting Zhang, Rutgers University, United States; Kilian M. Pohl, University of Pennsylvania, United States; Dimitris Metaxas, Rutgers University, United States; Leon Axel, New York University School of Medicine, United States*

### **WE-PO.PB.9: SEGMENTATION-FREE AND MULTISCALE-FREE EXTRACTION OF MEDIAL INFORMATION USING GRADIENT VECTOR FLOW - APPLICATION TO VASCULAR STRUCTURES .....258**

*Guillaume Pizaine, Raphael Prevost, Philips Healthcare, France; Elsa Angelini, Isabelle Bloch, Telecom ParisTech, France; Sherif Makram-Ebeid, Philips Healthcare, France*



|   |            |
|---|------------|
| <b>WE-PO.PB.10: ESTIMATING AND RESOLVING UNCERTAINTY IN CARDIAC<br/>RESPIRATORY MOTION MODELLING</b>  | <b>262</b> |
| <i>Devis Peressutti, King's College London, United Kingdom; Erik-Jan Rijkhorst, VU University Medical Center, Netherlands; Dean Barratt, University College London, United Kingdom; Grame Penney, Andrew King, King's College London, United Kingdom</i>  |            |
| <b>WE-PO.PB.11: MOTION AND DEFORMATION ESTIMATION OF CARDIAC<br/>ULTRASOUND SEQUENCES USING AN ANATOMICAL B-SPLINE<br/>TRANSFORMATION MODEL</b>   | <b>266</b> |
| <i>Brecht Heyde, Piet Claus, Ruta Jasaityte, Daniel Barbosa, Catholic University of Leuven, Belgium; Stefaan Bouchez, Michael Vandenheuvel, Patrick Wouters, Ghent University, Belgium; Frederik Maes, Jan D'hooge, Catholic University of Leuven, Belgium</i>  |            |
| <b>WE-PO.PB.12: CONICAL DEFORMABLE MODEL FOR MYOCARDIAL<br/>SEGMENTATION IN LATE-ENHANCED MRI</b>   | <b>270</b> |
| <i>Xènia Albà, Rosa M. Figueras i Ventura, Karim Lekadir, Alejandro F. Frangi, Universitat Pompeu Fabra, Spain</i>  |            |
| <b>WE-PO.PB.13: LUMEN SEGMENTATION OF ATHEROSCLEROTIC CAROTID<br/>ARTERIES IN CTA</b>   | <b>274</b> |
| <i>Hui Tang, Erasmus Medical Center / Delft University of Technology, Netherlands; Theo van Walsum, Reinhard Hameeteman, Michiel Schaap, Aad van der Lugt, Erasmus Medical Center, Netherlands; Lucas van Vliet, Delft University of Technology, Netherlands; Wiro J. Niessen, Erasmus Medical Center / Delft University of Technology, Netherlands</i> |            |
| <b>WE-PO.PB.14: DENSE MYOCARDIAL MOTION FROM 4D ULTRASOUND:<br/>COMPARATIVE PERFORMANCE EVALUATION</b>  | <b>278</b> |
| <i>Ryan Mukherjee, Aurelio Pinheiro, Johns Hopkins University, United States; James Gammie, University of Maryland Medical Center, United States; David Yuh, Yale-New Haven Hospital, United States; Theodore Abraham, Elliot R. McVeigh, Philippe Burlina, Johns Hopkins University, United States</i>   |            |
| <b>WE-PO.PB.15: ENDOCARDIAL MOTION ESTIMATION FROM ELECTRO-ANATOMICAL<br/>DATA</b>  | <b>282</b> |
| <i>Antonio R. Porras, Gemma Piella, Corne Hoogendoorn, Universitat Pompeu Fabra, Spain; David Andreu, Antonio Berrueto, Universitat de Barcelona, Spain; Alejandro F. Frangi, Universitat Pompeu Fabra, Spain</i>   |            |
| <b>WE-PO.PB.16: 3D FUSION OF CINE AND LATE-ENHANCED CARDIAC MAGNETIC<br/>RESONANCE IMAGES</b>   | <b>286</b> |
| <i>Lucilio Cordero-Grande, Susana Merino-Caviedes, Universidad de Valladolid, Spain; Xènia Albà, Rosa M. Figueras i Ventura, Alejandro F. Frangi, Universitat Pompeu Fabra, Spain; Carlos Alberola-López, Universidad de Valladolid, Spain</i>  |            |
| <b>WE-PO.PB.17: MODIFIED HOUGH TRANSFORM FOR LEFT VENTRICLE<br/>MYOCARDIUM SEGMENTATION IN 3-D ECHOCARDIOGRAM IMAGES</b>  | <b>290</b> |
| <i>John McManigle, Richard Stebbing, J. Alison Noble, University of Oxford, United Kingdom</i>  |            |

## **WE-PO.PB: IMAGE ACQUISITION AND RECONSTRUCTION: APPLICATIONS**

### **WE-PM1.O1: MEDICAL APPLICATIONS OF MICROSCOPY**

#### **WE-PM1.O1.1: RECONSTRUCTION OF THE HUMAN HIPPOCAMPUS IN 3D FROM .....294 HISTOLOGY AND HIGH-RESOLUTION EX-VIVO MRI**

*Daniel Adler, Alex Liu, John Pluta, Salmon Kadivar, Sylvia Orozco, Hongzhi Wang, James C. Gee, Brian B. Avants, Paul Yushkevich, University of Pennsylvania, United States*

#### **WE-PM1.O1.2: MULTIFRACTAL FEATURE DESCRIPTOR FOR DIAGNOSING LIVER .....298 AND PROSTATE CANCERS IN H&E STAINED HISTOLOGIC IMAGES**

*Chamidu Atupelage, Hiroshi Nagahashi, Masahiro Yamaguchi, Tokyo Institute of Technology, Japan; Tokiya Abe, Akinori Hashiguchi, Michiie Sakamoto, Keio University, Japan*

#### **WE-PM1.O1.3: LEARNING INVARIANT FEATURES OF TUMOR SIGNATURES .....302**

*Quoc Le, Stanford University, United States; Ju Han, Lawrence Berkeley National Laboratory, United States; Joe W. Gray, Paul T. Spellman, Oregon Health Sciences University, United States; Alexander Borowsky, University of California at Davis, United States; Bahram Parvin, Lawrence Berkeley National Laboratory, United States*

#### **WE-PM1.O1.4: CAPILLARY DETECTION FOR CLINICAL IMAGES OF BASAL CELL .....306 CARCINOMA**

*Adam Huang, National Central University, Taiwan; Wen-Yu Chang, I-Shou University, Taiwan; Hsin-Yi Liu, National Central University, Taiwan; Gwo-Shing Chen, Kaohsiung Medical University Hospital, Taiwan*

#### **WE-PM1.O1.5: AUTOMATIC MYOCARDIAL INFARCTION SIZE EXTRACTION IN AN .....310 EXPERIMENTAL MURINE MODEL USING AN ANATOMICAL MODEL**

*Tiago Esteves, Mariana Valente, Diana Nascimento, Perpétua Pinto-Do-Ó, Instituto de Engenharia Biomédica, Portugal; Pedro Quelhas, Faculdade de Engenharia da Universidade do Porto, Portugal*

### **WE-PM1.O2: SPARSE METHODS I**

#### **WE-PM1.O2.1: INTERVENTIONAL MRI WITH SPARSE SAMPLING USING .....314 UNION-OF-SUBSPACES**

*S. Derin Babacan, Fan Lam, Xi Peng, Minh N. Do, Zhi-Pei Liang, University of Illinois at Urbana-Champaign, United States*

#### **WE-PM1.O2.2: SPATIOTEMPORAL DICTIONARY LEARNING FOR UNDERSAMPLED .....318 DYNAMIC MRI RECONSTRUCTION VIA JOINT FRAME-BASED AND DICTIONARY-BASED SPARSITY**

*Suyash P. Awate, Edward DiBella, University of Utah, United States*

#### **WE-PM1.O2.3: STRUCTURED SPARSE DECONVOLUTION FOR PARADIGM FREE .....322 MAPPING OF FUNCTIONAL MRI DATA**

*Cesar Caballero Gaudes, Isik Karahanoglu, François Lazeyras, Dimitri van de Ville, University of Geneva, Switzerland*

**WE-PM1.02.4: ACCELERATION OF HIGH ANGULAR AND SPATIAL RESOLUTION .....326  
DIFFUSION IMAGING USING COMPRESSED SENSING**

*Merry Mani, University of Rochester, United States; Mathews Jacob, University of Iowa, United States; Arnaud Guidon, Chunlei Liu, Allen Song, Duke University, United States; Vincent Magnotta, University of Iowa, United States; Jianhui Zhong, University of Rochester, United States*

**WE-PM1.02.5: ACCELERATING CARDIOVASCULAR IMAGING BY EXPLOITING .....330  
REGIONAL LOW-RANK STRUCTURE VIA GROUP SPARSITY**

*Anthony G. Christodoulou, S. Derin Babacan, Zhi-Pei Liang, University of Illinois at Urbana-Champaign, United States*

**WE-PM1.03: IMAGE REGISTRATION I**

**WE-PM1.03.1: LISA: LONGITUDINAL IMAGE REGISTRATION VIA SPATIO-TEMPORAL .....334  
ATLASES**

*Ahmed Serag, Paul Aljabar, Serena Counsell, James Boardman, Joseph V. Hajnal, Daniel Rueckert, Imperial College London, United Kingdom*

**WE-PM1.03.2: A NEW METHOD FOR ROBUST ORGAN POSITIONING IN CT .....338  
IMAGES**

*Torbjørn Vik, Daniel Bystrov, Nicole Schadewaldt, Heinrich Schulz, Jochen Peters, Philips Research, Germany*

**WE-PM1.03.3: DISCRETE SYMMETRIC IMAGE REGISTRATION.....342**

*Aristeidis Sotiras, Nikos Paragios, Ecole Centrale Paris / INRIA Saclay, France*

**WE-PM1.03.4: TOWARDS 3D REGISTRATION OF FETAL BRAIN MRI AND .....346  
ULTRASOUND**

*Maria Kuklisova-Murgasova, University of Oxford, United Kingdom; Gerardine Quaghebeur, John Radcliffe Hospital Oxford, United Kingdom; Joseph V. Hajnal, Imperial College London, United Kingdom; J. Alison Noble, Julia A. Schnabel, University of Oxford, United Kingdom*

**WE-PM1.03.5: A PRIMAL-DUAL APPROACH FOR DISCONTINUITY PRESERVING .....350  
REGISTRATION**

*Silja Kiriyanthan, Ketut Fundana, Tahir Majeed, Philippe C. Cattin, University of Basel, Switzerland*

**WE-PM1.04: CANCER IMAGING**

**WE-PM1.04.1: OPTIMIZING THE DESIGN OF FT-IR SPECTROSCOPIC IMAGING .....354  
INSTRUMENTS TO OBTAIN INCREASED SPATIAL RESOLUTION OF CHEMICAL  
SPECIES**

*Rohith Reddy, David Mayerich, Michael Walsh, Matthew Schulmerich, Paul Scott Carney, Rohit Bhargava, University of Illinois at Urbana-Champaign, United States*

**WE-PM1.04.2: NON-MELANOMA SKIN LESION CLASSIFICATION USING COLOUR .....358  
IMAGE DATA IN A HIERARCHICAL K-NN CLASSIFIER**

*Lucia Ballerini, Robert B. Fisher, Ben Aldridge, Jonathan Rees, University of Edinburgh, United Kingdom*

**WE-PM1.04.3: INDIVIDUAL NODULE TRACKING IN MICRO-CT IMAGES OF A .....362  
MOUSE MODEL OF LUNG CANCER**

*Rina Rudyanto, Ainhua Agirre, Carlos Ortiz-de-Solórzano, Arrate Muñoz-Barrutia, University of Navarra, Spain*

|   |            |
|---|------------|
| <b>WE-PM1.04.4: CONFIDENCE GUIDED ENHANCING BRAIN TUMOR SEGMENTATION IN MULTI-PARAMETRIC MRI</b>  | <b>366</b> |
| <i>Kishore Kumar Reddy, Berkan Solmaz, University of Central Florida, United States; Pingkun Yan, Chinese Academy of Sciences, China; Nicholas Avgeropoulos, MD Anderson Cancer Center, United States; David Rippe, Florida Hospital, United States; Mubarak Shah, University of Central Florida, United States</i> |            |
| <b>WE-PM1.04.5: INTER-INDIVIDUAL ORGAN-DRIVEN CT REGISTRATION FOR DOSE MAPPING IN PROSTATE CANCER RADIOTHERAPY</b>  | <b>370</b> |
| <i>Gaël Dréan, Oscar Acosta, Antoine Simon, INSERM U642 / LTSI Université de Rennes 1, France; Renaud de Crevoisier, Département de Radiothérapie, Centre Eugène Marquis / INSERM U642 - LTSI Université de Rennes 1, France; Pascal Haigron, INSERM U642 / LTSI Université de Rennes 1, France</i>                 |            |
| <b>TH-AM1.01: TRACKING IN LIVE CELL MICROSCOPY</b>  |            |
| <b>TH-AM1.01.1: TRAJECTORY RETRIEVAL FROM MONTE CARLO DATA ASSOCIATION SAMPLES FOR TRACKING IN FLUORESCENCE MICROSCOPY IMAGES</b>   | <b>374</b> |
| <i>Oliver Greß, Stefan Posch, Martin Luther University Halle-Wittenberg, Germany</i>  |            |
| <b>TH-AM1.01.2: ANALYSIS OF VIRAL SURFING BASED ON FLUORESCENCE MICROSCOPY IMAGING AND AUTOMATIC TRACKING</b>   | <b>378</b> |
| <i>Vasil Tsimashchuk, William J. Godínez, University of Heidelberg, BioQuant, IPMB, and DKFZ Heidelberg, Germany; Maik J. Lehmann, Humboldt-University Berlin, Germany; Karl Rohr, University of Heidelberg, BioQuant, IPMB, and DKFZ Heidelberg, Germany</i>   |            |
| <b>TH-AM1.01.3: A BATCH ALGORITHM USING ITERATIVE APPLICATION OF THE VITERBI ALGORITHM TO TRACK CELLS AND CONSTRUCT CELL LINEAGES</b>   | <b>382</b> |
| <i>Klas Magnusson, Joakim Jaldén, KTH Royal Institute of Technology, Sweden</i>   |            |
| <b>TH-AM1.01.4: FROM TIMELAPSE-DATA TO GENEALOGIC TREES: USING DIFFERENT CONTRAST MECHANISMS TO IMPROVE CELL TRACKING</b>   | <b>386</b> |
| <i>Tim Becker, Daniel H Rapoport, Fraunhofer Research Institution for Marine Biotechnology (EMB), Germany; Amir Madany Mamlouk, University of Lübeck, Germany</i>   |            |
| <b>TH-AM1.01.5: MITOSIS DETECTION OF HEMATOPOIETIC STEM CELL POPULATIONS IN TIME-LAPSE PHASE-CONTRAST MICROSCOPY IMAGES</b>   | <b>390</b> |
| <i>Seungil Huh, Sungeun Eom, Dai Fei Ker, Lee Weiss, Takeo Kanade, Carnegie Mellon University, United States</i>  |            |
| <b>TH-AM1.02: IMAGE RECONSTRUCTION: MRI</b>   |            |
| <b>TH-AM1.02.1: REGULARIZED MR COIL SENSITIVITY ESTIMATION USING AUGMENTED LAGRANGIAN METHODS</b>   | <b>394</b> |
| <i>Michael J. Allison, Sathish Ramani, Jeffrey A. Fessler, University of Michigan, United States</i>  |            |
| <b>TH-AM1.02.2: THREE-DIMENSIONAL HYBRID-ENCODED MRI USING COMPRESSED SENSING</b>   | <b>398</b> |
| <i>Haifeng Wang, University of Wisconsin - Milwaukee, United States; Dong Liang, Chinese Academy of Sciences, China; Kevin F. King, GE Healthcare, United States; Leslie Ying, University of Wisconsin - Milwaukee, United States</i>   |            |

**TH-AM1.02.3: NEW LINEAR TRANSFORMS FOR DATA ON A FOURIER 2-SPHERE .....402  
WITH APPLICATION TO DIFFUSION MRI**

*Justin P. Haldar, Richard M. Leahy, University of Southern California, United States*

**TH-AM1.02.4: ACCELERATING NON-CARTESIAN SENSE FOR LARGE COIL ARRAYS: .....406  
APPLICATION TO MOTION COMPENSATION IN MULTISHOT DWI**

*Merry Mani, University of Rochester, United States; Mathews Jacob, University of Iowa, United States; Arnaud Guidon, Duke University, United States; Vincent Magnotta, University of Iowa, United States; Jianhui Zhong, University of Rochester, United States*

**TH-AM1.02.5: K-T CSPI: A DYNAMIC MRI RECONSTRUCTION FRAMEWORK FOR .....410  
COMBINING COMPRESSED SENSING AND PARALLEL IMAGING**

*Yihang Zhou, State University of New York at Buffalo, United States; Yuchou Chang, University of Wisconsin - Milwaukee, United States; Dong Liang, Chinese Academy of Sciences, China; Leslie Ying, State University of New York at Buffalo, United States*

**TH-AM1.03: BRAIN IMAGING**

**TH-AM1.03.1: GENETIC INFLUENCES ON SULCAL PATTERNS OF THE BRAIN.....414**

*Shantanu Joshi, University of California at Los Angeles, United States; Anand Joshi, University of Southern California, United States; Boris Gutman, Arthur W. Toga, University of California at Los Angeles, United States; Katie L. McMahon, Greig de Zubicaray, University of Queensland, Australia; Nicholas G. Martin, Margaret J. Wright, Queensland Institute of Medical Research, Australia; Paul M. Thompson, University of California at Los Angeles, United States*

**TH-AM1.03.2: AUTOMATIC SULCAL CURVE EXTRACTION WITH MRF BASED SHAPE .....418  
PRIOR**

*Zhen Yang, Aaron Carass, Jerry L. Prince, Johns Hopkins University, United States*

**TH-AM1.03.3: STRUCTURAL GROUP ANALYSIS OF CORTICAL CURVATURE AND .....422  
DEPTH PATTERNS IN THE DEVELOPING BRAIN**

*Grégory Operto, NeuroSpin CEA, France; Guillaume Auzias, Arnaud Le Troter, LSIS laboratory UMR CNRS 6168, France; Matthieu Perrot, Denis Rivière, NeuroSpin CEA, France; Jessica Dubois, U992 Cognitive NeuroImaging Unit, France; Petra Hüppi, Geneva University Hospitals, Switzerland; Olivier Coulon, LSIS laboratory UMR CNRS 6168, France; Jean-François Mangin, NeuroSpin CEA, France*

**TH-AM1.03.4: ATLAS-BASED CLUSTERING OF SULCAL PATTERNS - APPLICATION TO .....426  
THE LEFT INFERIOR FRONTAL SULCUS**

*Olivier Coulon, CNRS, Aix-Marseille Univ, France; Vladimir Fonov, McGill University, Canada; Jean-François Mangin, Neurospin Center, CEA, France; D. Louis Collins, McGill University, Canada*

**TH-AM1.03.5: GEODESIC CURVATURE FLOW ON SURFACES FOR AUTOMATIC .....430  
SULCAL DELINEATION**

*Anand Joshi, Signal and Image Processing Institute, Univ. of Southern California, United States; David Shattuck, University of California at Los Angeles, United States; Hanna Damasio, Brain and Creativity Institute, United States; Richard M. Leahy, Signal and Image Processing Institute, University of Southern California, United States*

## **TH-AM2.O1: REGISTRATION AND SEGMENTATION IN MICROSCOPY**

### **TH-AM2.O1.1: LOCAL AFFINE TEXTURE TRACKING FOR SERIAL REGISTRATION OF ZEBRAFISH IMAGES .....434**

*Abhir Bhalerao, University of Warwick, United Kingdom; Luke Pase, Graham Lieschke, Monash University, Australia; Stephen Renshaw, University of Sheffield, United Kingdom; Constantino Carlos Reyes-Aldasoro, University of Sussex, United Kingdom*

### **TH-AM2.O1.2: NON-RIGID MULTI-FRAME REGISTRATION OF LIVE CELL MICROSCOPY IMAGES .....438**

*Marco Tektonidis, Il-Han Kim, Karl Rohr, University of Heidelberg, BioQuant, IPMB, and DKFZ Heidelberg, Germany*

### **TH-AM2.O1.3: AN EXTENSION OF THIN-PLATE SPLINES FOR IMAGE REGISTRATION WITH RADIAL BASIS FUNCTIONS .....442**

*Karl Rohr, Stefan Würz, University of Heidelberg, DKFZ Heidelberg, Germany*

### **TH-AM2.O1.4: NON-RIGID BIOMEDICAL IMAGE REGISTRATION USING GRAPH CUTS WITH A NOVEL DATA TERM .....446**

*Ananda Chowdhury, Rounak Roy, Sumon Bose, Jadavpur University, India; Fahmi Khalifa, Ahmed Elnakib, Ayman El-Baz, University of Louisville, United States*

### **TH-AM2.O1.5: CIRCULAR FOURIER-HOG FEATURES FOR ROTATION INVARIANT OBJECT DETECTION IN BIOMEDICAL IMAGES .....450**

*Henrik Skibbe, Marco Reisert, University Hospital Freiburg, Germany*

## **TH-AM2.O2: CARDIAC IMAGING**

### **TH-AM2.O2.1: SPM TO THE HEART: MAPPING OF 4D CONTINUOUS VELOCITIES FOR MOTION ABNORMALITY QUANTIFICATION .....454**

*Mathieu de Craene, Nicolas Duchateau, Catalina Tobon-Gomez, Babak Ghafaryasl, Gemma Piella, Universitat Pompeu Fabra, Spain; Kawal Rhode, King's College London, Spain; Alejandro F. Frangi, Universitat Pompeu Fabra, Spain*

### **TH-AM2.O2.2: A COMBINED SHAPE TRACKING AND SPECKLE TRACKING APPROACH FOR 4D DEFORMATION ANALYSIS IN ECHOCARDIOGRAPHY .....458**

*Colin Compas, Yale University, United States; Emily Wong, Xiaojie Huang, University of Washington, United States; Smita Sampath, Ben Lin, Xenophon Papademetris, Yale University, United States; Karl Thiele, Philips Medical, United States; Donald Dione, Albert Sinusas, Yale University, United States; Mathew O'Donnell, University of Washington, United States; James S. Duncan, Yale University, United States*

### **TH-AM2.O2.3: IMPROVING FULL-CARDIAC CYCLE STRAIN ESTIMATION FROM TAGGED CMR BY ACCURATE MODELING OF 3D IMAGE APPEARANCE CHARACTERISTICS .....462**

*Matthew Nitzken, Garth Beache, Ahmed Elnakib, Fahmi Khalifa, University of Louisville, United States; Georgy Gimel'farb, University of Auckland, New Zealand; Ayman El-Baz, University of Louisville, United States*

### **TH-AM2.O2.4: LEVEL SET-BASED TRACKING OF THE ENDOCARDIUM WITHOUT A SHAPE PRIOR FROM 3D ULTRASOUND IMAGES .....466**

*Yrjö Häme, Viktor Gamarnik, Columbia University, United States; Katherine M. Parker, Jeffrey W. Holmes, University of Virginia, United States; Andrew F. Laine, Columbia University, United States*

## **TH-AM2.O3: IMAGE ANALYSIS: PET, SPECT, CT**

### **TH-AM2.O3.1: EVALUATION OF THE PLATE-ROD MODEL ASSUMPTION OF .....470 TRABECULAR BONE**

*Rodrigo Moreno, Magnus Borga, Örjan Smedby, Linköping University, Sweden*

### **TH-AM2.O3.2: EMPHYSEMA QUANTIFICATION IN A MULTI-SCANNER HRCT .....474 COHORT USING LOCAL INTENSITY DISTRIBUTIONS**

*Carlos S. Mendoza, Universidad de Sevilla, Spain; George R. Washko, James C. Ross, Alejandro A. Díaz, Brigham and Women's Hospital, United States; David A. Lynch, James D. Crapo, National Jewish Medical and Research Center, United States; Edward K. Silverman, Brigham and Women's Hospital, United States; Begoña Acha, Carmen Serrano-Gotarredona, Universidad de Sevilla, Spain; Raúl San José Estépar, Brigham and Women's Hospital, United States*

### **TH-AM2.O3.3: ROC-LIKE OPTIMIZATION BY SAMPLE RANKING: APPLICATION TO .....478 CT COLONOGRAPHY**

*Shijun Wang, Matthew McKenna, National Institutes of Health Clinical Center, United States; Nicholas Petrick, Berkman Sahiner, Food and Drug Administration, United States; Marius Linguraru, Children's National Medical Center, United States; Zhuoshi Wei, Jianhua Yao, Ronald Summers, National Institutes of Health Clinical Center, United States*

### **TH-AM2.O3.4: GLOBAL CONTEXT INFERENCE FOR ADAPTIVE ABNORMALITY .....482 DETECTION IN PET-CT IMAGES**

*Yang Song, Weidong Cai, David Dagan Feng, University of Sydney, Australia*

### **TH-AM2.O3.5: DUAL-TIME-POINT PATLAK ESTIMATION FROM LIST MODE PET .....486 DATA**

*Wentao Zhu, University of Southern California, United States; Quanzheng Li, Massachusetts General Hospital, United States; Richard M. Leahy, University of Southern California, United States*

## **TH-AM2.O4: FETAL AND NEONATAL IMAGING (SS)**

### **TH-AM2.O4.1: IMAGE ANALYSIS OF THE HUMAN FETUS AND NEWBORN - .....490 DEVELOPING NEW CLINICAL TOOLS FOR PERINATAL CARE**

*J. Alison Noble, University of Oxford, United Kingdom*

### **TH-AM2.O4.2: OPPORTUNITIES AND CHALLENGES OF BIOMEDICAL IMAGING IN .....493 FETAL AND NEONATAL BRAIN DISEASE**

*Eduard Gratacos, Hospital Clinic, Spain*

### **TH-AM2.O4.3: FETAL BRAIN MAPPING .....495**

*Colin Studholme, University of Washington, United States*

### **TH-AM2.O4.4: QUANTITATIVE IMAGE ANALYSIS OF THE PRETERM BRAIN .....499**

*Ewout Vansteenkiste, Ghent University, Belgium; Paul Govaert, Erasmus Medical Center, Belgium*

### **TH-AM2.O4.5: DIFFUSE OPTICAL IMAGING OF THE NEWBORN INFANT BRAIN .....503**

*Jeremy C. Hebden, Marta Varela, Salavat Magazov, Nick Everdell, Adam Gibson, University College London, United Kingdom; Judith Meek, University College London Hospitals NHS Foundation Trust, United Kingdom; Topun Austin, Cambridge University Hospitals NHS Foundation Trust, United Kingdom*

## **TH-PO.PA: MEDICAL IMAGE ANALYSIS: APPLICATIONS B**

### **TH-PO.PA: DIFFUSION AND FUNCTIONAL MR IMAGING B**

#### **TH-PO.PA.1: IDENTIFYING THE STRUCTURAL ARCHITECTURE OF THE HUMAN .....506 INFERIOR PARIETAL LOBULE USING DIFFUSION MRI**

*Rosalia Tungaraza, University of Washington, United States; J. Jeffry Howbert, Insilicos LLC, United States; Sonya Mehta, David Haynor, Linda Shapiro, Thomas Grabowski, University of Washington, United States*

#### **TH-PO.PA.2: A MODEL-BASED METHOD WITH JOINT SPARSITY CONSTRAINT FOR .....510 DIRECT DIFFUSION TENSOR ESTIMATION**

*Yanjie Zhu, Yin Wu, Shenzhen Institutes of Advanced Technology, China; Yuanjie Zheng, University of Pennsylvania, United States; Ed X. Wu, The University of Hong Kong, Hong Kong SAR of China; Leslie Ying, The University of Wisconsin-Milwaukee, United States; Dong Liang, Shenzhen Institutes of Advanced Technology, China*

#### **TH-PO.PA.3: EVALUATION OF DISTORTION CORRECTION OF .....514 DIFFUSION-WEIGHTED MR IMAGES OF HUMAN CERVIX**

*Maysam Jafar, Sharon Giles, Veronica Morgan, Maria Schmidt, Martin O. Leach, Nandita M. deSouza, Institute of Cancer Research and Royal Marsden NHS Foundation Trust, United Kingdom*

#### **TH-PO.PA.4: A NESTED CORTEX PARCELLATION COMBINING ANALYSIS OF MEG .....518 FORWARD PROBLEM AND DIFFUSION MRI TRACTOGRAPHY**

*Anne-Charlotte Philippe, Maureen Clerc, Theodore Papadopoulos, Rachid Deriche, INRIA, France*

#### **TH-PO.PA.5: UNSUPERVISED AUTOMATIC WHITE MATTER FIBER CLUSTERING .....522 USING A GAUSSIAN MIXTURE MODEL**

*Meizhu Liu, Baba Vemuri, University of Florida, United States; Rachid Deriche, INRIA, France*

#### **TH-PO.PA.6: LEFT VERSUS RIGHT HEMISPHERE DIFFERENCES IN BRAIN .....526 CONNECTIVITY: 4-TESLA HARDI TRACTOGRAPHY IN 569 TWINS**

*Madelaine Daianu, Neda Jahanshad, Emily Dennis, Arthur W. Toga, University of California at Los Angeles School of Medicine, United States; Katie L. McMahon, Greig de Zubicaray, University of Queensland, Australia; Nicholas G. Martin, Queensland Institute of Medical Research, Australia; Margaret J. Wright, Queensland Institute of Medical Research, University of Queensland, Australia; Ian Hickie, University of Sydney, Australia; Paul M. Thompson, University of California at Los Angeles School of Medicine, United States*

#### **TH-PO.PA.7: A VARIATIONAL MODEL FOR DENOISING HIGH ANGULAR .....530 RESOLUTION DIFFUSION IMAGING**

*Melissa Tong, University of California at Los Angeles, United States; Yunho Kim, University of California at Irvine, United States; Liang Zhan, University of California at Los Angeles, United States; Guillermo Sapiro, Christophe Lenglet, Bryon Mueller, University of Minnesota, United States; Paul M. Thompson, Luminata Vese, University of California at Los Angeles, United States*

#### **TH-PO.PA.9: A NOVEL INTRINSIC UNSCENTED KALMAN FILTER FOR .....534 TRACTOGRAPHY FROM HARDI**

*Guang Cheng, Hesamoddin Salehian, Min-Sig Hwang, Dena Howland, John Forder, Baba Vemuri, University of Florida, United States*



**TH-PO.PA.10: DIFFUSION TENSOR IMAGE PROCESSING USING BIQUATERNIONS .....538**  
*Krishna Nand Keshava Murthy, University of British Columbia, Canada; Ghassan Hamarneh, Simon Fraser University, Canada; Rafeef Abugharbieh, University of British Columbia, Canada*

**TH-PO.PA.11: DISCOVERY OF GENES THAT AFFECT HUMAN BRAIN .....542**  
**CONNECTIVITY: A GENOME-WIDE ANALYSIS OF THE CONNECTOME**  
*Neda Jahanshad, Derrek Hibar, April Ryles, Arthur W. Toga, University of California at Los Angeles, United States; Katie L. McMahon, Greig I. de Zubicaray, University of Queensland, Australia; Narelle K. Hansell, Grant W. Montgomery, Nicholas G. Martin, Margaret J. Wright, Queensland Institute of Medical Research, Australia; Paul M. Thompson, University of California at Los Angeles, United States*

**TH-PO.PA.12: RETROSPECTIVE LOCAL ARTEFACTS DETECTION IN .....546**  
**DIFFUSION-WEIGHTED IMAGES USING THE RANDOM SAMPLE CONSENSUS (RANSAC) PARADIGM.**  
*Benoît Scherrer, Simon K. Warfield, Harvard Medical School, United States*

**TH-PO.PA.13: IDENTIFICATION OF FAULTY DTI-BASED SUB-NETWORKS IN .....550**  
**AUTISM USING NETWORK REGULARIZED SVM**  
*Hai Li, Zhong Xue, The Methodist Hospital Research Institute, United States; Timothy Ellmore, The University of Texas Medical School at Houston, United States; Richard Frye, Stephen Wong, Arkansas Children's Hospital Research Institute, United States*

**TH-PO.PA.14: ALTERED STRUCTURAL BRAIN NETWORK TOPOLOGY IN INFANTS .....554**  
**WITH INTRAUTERINE GROWTH RESTRICTION**  
*Dafnis Batalle, Elisenda Eixarch, Emma Muñoz-Moreno, Francesc Figueras, Ivan Amat-Roldan, Eduard Gratacos, Institut Clínic de Ginecologia, Obstetrícia i Neonatologia (ICGON), Hospital Clínic and Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), University of Barcelona, Spain*

**TH-PO.PA.15: AN FDR-CONTROLLED, EXPLORATORY GROUP MODELING FOR .....558**  
**ASSESSING BRAIN CONNECTIVITY**  
*Aiping Liu, University of British Columbia, Canada; Junning Li, AUG Signals Ltd., Canada; Z. Jane Wang, Martin McKeown, University of British Columbia, Canada*

## **TH-PO.PA: IMAGE ACQUISITION AND RECONSTRUCTION B**

**TH-PO.PA.1: RECONSTRUCTION METHODS FROM HYPERPOLARIZED 13C .....614**  
**CHEMICAL SHIFT IMAGING SPIRAL 3D DATA: COMPARISON BETWEEN DIRECT SUMMATION AND GRIDDING METHOD**  
*Fabio Gibiino, University of Pisa, Italy; Vincenzo Positano, Fondazione Gabriele Monasterio CNR -Regione Toscana; Institute of Clinical Physiology, National Research Council., Italy; Giulio Giovannetti, Institute of Clinical Physiology, National Research Council., Italy; Francesca Frijia, Fondazione Gabriele Monasterio CNR - Regione Toscana, Italy; Luca Menichetti, Institute of Clinical Physiology, National Research Council; Fondazione Gabriele Monasterio CNR - Regione Toscana, Italy; Jan-Henrik Ardenkjaer-Larsen, GE Healthcare / The Technical University of Denmark, Denmark; Florian Wiesinger, Rolf F. Schulte, GE Global Research, Germany; Daniele de Marchi, Fondazione Gabriele Monasterio CNR - Regione Toscana, Italy; Vincenzo Lionetti, Scuola Superiore Sant'Anna, Italy; Giovanni Aquaro, Massimo Lombardi, Fondazione Gabriele Monasterio CNR - Regione Toscana, Italy; Luigi Landini, University of Pisa / Fondazione Gabriele Monasterio CNR - Regione Toscana; Institute of Clinical Physiology, National Research Council, Italy; Maria Filomena Santarelli, Institute of Clinical Physiology, National Research Council; Fondazione Gabriele Monasterio CNR - Regione Toscana, Italy*

|  |            |
|--|------------|
| <b>TH-PO.PA.2: 3D RECONSTRUCTION OF CORONARY ARTERIES FROM ROTATIONAL X-RAY ANGIOGRAPHY</b>  | <b>618</b> |
| <i>Ruben Cardenes, Alexey Novikov, Universitat Pompeu Fabra, Spain; Julian Gunn, Rod Hose, University of Sheffield, United Kingdom; Alejandro F. Frangi, Universitat Pompeu Fabra, Spain</i>   |            |
| <b>TH-PO.PA.3: ENHANCEMENT OF ORGAN OF INTEREST VIA BACKGROUND SUBTRACTION IN CONE BEAM ROTATIONAL ANGIOCARDIOGRAM</b>   | <b>622</b> |
| <i>Mingqing Chen, Yefeng Zheng, Siemens Corporate Research, United States; Kerstin Mueller, Christopher Rohkohl, Guenter Lauritsch, Jan Boese, Siemens AG, Germany; Dorin Comaniciu, Siemens Corporate Research, United States</i>                           |            |
| <b>TH-PO.PA.4: REGULARIZATION DESIGN FOR BREAST LESION DETECTION IN PENALIZED MAXIMUM LIKELIHOOD IMAGE RECONSTRUCTION</b>  | <b>626</b> |
| <i>Li Yang, Jian Zhou, Jinyi Qi, University of California at Davis, United States</i>  |            |
| <b>TH-PO.PA.5: MMSE OPTIMAL NON-LOCAL MOTION COMPENSATED K-T FOCUSS FOR COMPRESSED SENSING CARDIAC CINE IMAGING</b>  | <b>630</b> |
| <i>Huisu Yoon, Jong Chul Ye, Korea Advanced Institute of Science and Technology, Republic of Korea</i>   |            |
| <b>TH-PO.PA.6: A GPU-OPTIMIZED BINARY SPACE PARTITION STRUCTURE TO ACCELERATE THE MONTE CARLO SIMULATION OF CT PROJECTIONS OF VOXELIZED PATIENT MODELS WITH METAL IMPLANTS</b>   | <b>634</b> |
| <i>Andreu Badal, Aldo Badano, U.S. Food and Drug Administration, United States</i>   |            |
| <b>TH-PO.PA.7: A MRI PHANTOM FOR CARDIAC PERFUSION SIMULATION</b>  | <b>638</b> |
| <i>Santiago Aja-Fernández, Lucilio Cordero-Grande, Carlos Alberola-López, Universidad de Valladolid, Spain</i>   |            |
| <b>TH-PO.PA.8: INFORMATION THEORETIC DISCREPANCY BASED ITERATIVE RECONSTRUCTION FOR TRANSMISSION TOMOGRAPHY</b>  | <b>642</b> |
| <i>Kwang Eun Jang, Younghun Sung, Jongha Lee, Kangeui Lee, Jae Hak Lee, Seongdeok Lee, Samsung Advanced Institute of Technology, Republic of Korea</i>   |            |
| <b>TH-PO.PA.9: COMPUTATION OF VARIANCE IN COMPARTMENT MODEL PARAMETER ESTIMATES FROM DYNAMIC PET DATA</b>  | <b>646</b> |
| <i>Mustafa Kamasak, Istanbul Technical University, Turkey</i>  |            |
| <b>TH-PO.PA.10: HYBRID REGULARIZATION FOR MRI RECONSTRUCTION WITH FIELD INHOMOGENEITY CORRECTION</b>   | <b>650</b> |
| <i>Ryan Compton, Stanley Osher, Louis Bouchard, University of California at Los Angeles, United States</i>   |            |
| <b>TH-PO.PA.11: IMPROVED HIGHER DEGREE TOTAL VARIATION (HDTV) REGULARIZATION</b>   | <b>656</b> |
| <i>Yue Hu, University of Rochester, United States; Mathews Jacob, University of Iowa, United States</i>  |            |
| <b>TH-PO.PA.12: UTILITY OF 4D RECONSTRUCTION FOR LOW-DOSE CARDIAC GATED SPECT</b>  | <b>660</b> |
| <i>Mingwu Jin, The University of Texas at Arlington, United States; Xiaofeng Niu, Wenyuan Qi, Yongyi Yang, Miles N. Wernick, Illinois Institute of Technology, United States; Michael A. King, University of Massachusetts Medical School, United States</i> |            |

## **TH-PO.PA: COMPUTER AIDED DIAGNOSIS B**

### **TH-PO.PA.1: MANIFOLD-CONSTRAINED EMBEDDINGS FOR THE DETECTION OF .....562 WHITE MATTER LESIONS IN BRAIN MRI**

*Samuel Kadoury, Ecole Polytechnique de Montreal, Canada; Guray Erus, University of Pennsylvania, United States; Evangelia I. Zacharaki, University of Patras, Greece; Nikos Paragios, Ecole Centrale Paris, France; Christos Davatzikos, University of Pennsylvania, United States*

### **TH-PO.PA.2: AN NBSS ALGORITHM FOR PHARMACOKINETIC ANALYSIS OF .....566 PROSTATE CANCER USING DCE-MR IMAGES**

*ArulMurugan Ambikapathi, Tsung-Han Chan, Kannan Keizer, National Tsing Hua University, Taiwan; Fei-Shih Yang, Mackay Memorial Hospital, Taiwan; Chong-Yung Chi, National Tsing Hua University, Taiwan*

### **TH-PO.PA.3: COMBINING IMAGING AND CLINICAL DATA IN MANIFOLD LEARNING: .....570 DISTANCE-BASED AND GRAPH-BASED EXTENSIONS OF LAPLACIAN EIGENMAPS**

*Jean-Baptiste Fiot, Université Paris Dauphine, France; Jurgen Fripp, CSIRO, Australia; Laurent D. Cohen, Université Paris Dauphine, France*

### **TH-PO.PA.4: AUTOMATIC BRAIN TUMOR DETECTION IN MAGNETIC RESONANCE .....574 IMAGES**

*Sahar Ghanavati, Junning Li, Ting Liu, AUG Signals Ltd., Canada; Paul S. Babyn, The Hospital for Sick Children, Canada; Wendy Doda, Hospital for Sick Children, Canada; George Lampropoulos, AUG Signals Ltd., Canada*

### **TH-PO.PA.5: TRACKING ABNORMALITIES IN VIDEO CAPSULE ENDOSCOPY USING .....578 SURROUNDING FEATURES WITH A TRIANGULAR CONSTRAINT**

*Yukiko Yanagawa, Osaka University, Japan; Tomio Echigo, Osaka Electro-Communication University, Japan; Hai Vu, Osaka University, Japan; Hirotohi Okazaki, Yasuhiro Fujiwara, Tetsuo Arakawa, Osaka City University, Japan; Yasushi Yagi, Osaka University, Japan*

### **TH-PO.PA.6: AN AUTOMATIC BRANCH AND STENOSES DETECTION IN COMPUTED .....582 TOMOGRAPHY ANGIOGRAPHY**

*Suheyla Cetin, Gozde Unal, Sabanci University, Turkey; Muzaffer Degertekin, Yeditepe University Hospital, Turkey*

### **TH-PO.PA.7: FDOPA KINETICS ANALYSIS IN PET IMAGES FOR PARKINSON'S .....586 DISEASE DIAGNOSIS BY USE OF PARTICLE SWARM OPTIMIZATION**

*Chih-Kang Huang, Weichung Wang, National Taiwan University, Taiwan; Kai-Yuan Tzen, National Taiwan University Hospital, Taiwan; Win-Li Lin, Cheng-Ying Chou, National Taiwan University, Taiwan*

### **TH-PO.PA.8: EXPLOITING ROTATION INVARIANCE WITH SVM CLASSIFIER FOR .....590 MICROCALCIFICATION DETECTION**

*Yan Yang, Juan Wang, Yongyi Yang, Illinois Institute of Technology, United States*

### **TH-PO.PA.9: USING LOCAL BINARY PATTERN TO CLASSIFY DEMENTIA IN MRI .....594**

*Ketil Oppedal, Kjersti Engan, University of Stavanger, Norway; Dag Aarstrand, Mona Beyer, Stavanger University Hospital, Norway; Ole-Bjørn Tysnes, Haukeland University Hospital, Norway; Trygve Eftestøl, University of Stavanger, Norway*

**TH-PO.PA.10: SUPPORT VECTOR MACHINE (SVM) ACTIVE LEARNING FOR .....598  
AUTOMATED GLIOBLASTOMA SEGMENTATION**

*Po Su, Zhong Xue, The Methodist Hospital Research Institute & Northwestern Polytechnical University, United States; Linda Chi, MD Anderson Cancer Center, United States; Jianhua Yang, Northwestern Polytechnical University, China; Stephen Wong, The Methodist Hospital Research Institute, United States*

**TH-PO.PA.11: IMPROVING THE ACCURACY OF OPTIC DISC DETECTION BY .....602  
FINDING MAXIMAL WEIGHTED CLIQUE OF MULTIPLE CANDIDATES OF  
INDIVIDUAL DETECTORS**

*Balazs Harangi, Andras Hajdu, University of Debrecen, Hungary*

**TH-PO.PA.12: MULTIMODAL CLASSIFICATION OF DEMENTIA USING FUNCTIONAL .....606  
DATA, ANATOMICAL FEATURES AND 3D INVARIANT SHAPE DESCRIPTORS**

*Arthur Mikhno, Pablo Martinez Nuevo, Davangere Devanand, Ramin Parsey, Andrew F. Laine, Columbia University, United States*

**TH-PO.PA.13: MAGNITUDE MR IMAGE DENOISING VIA CURE-OPTIMIZED .....610  
NON-LOCAL MEANS**

*Jung Ook Hong, Florian Luisier, Patrick J. Wolfe, Harvard University, United States*

**TH-PO.PB: TRACKING IN LIVE CELL MICROSCOPY A**

**TH-PO.PB.1: TRACKING VIRUS PARTICLES IN FLUORESCENCE MICROSCOPY .....664  
IMAGES USING TWO-STEP MULTI-FRAME ASSOCIATION**

*Astha Jaiswal, William J. Godinez, Roland Eils, University of Heidelberg, Germany; Maik J. Lehmann, Humboldt-University Berlin, Germany; Karl Rohr, University of Heidelberg, Germany*

**TH-PO.PB.2: LIFETIME ESTIMATION OF MOVING VESICLES IN .....668  
FREQUENCY-DOMAIN FLUORESCENCE LIFETIME IMAGING MICROSCOPY**

*Philippe Roudot, Charles Kervrann, INRIA Rennes - Bretagne Atlantique, France; François Waharte, UMR 144 CNRS - PICT IBiSA - Institut Curie, France*

**TH-PO.PB.3: APPLICATION INDEPENDENT GREEDY PARTICLE TRACKING .....672  
METHOD FOR 3D FLUORESCENCE MICROSCOPY IMAGE SERIES**

*Lassi Paavola, University of Jyväskylä, Finland; Pasi Kankaanpää, University of Turku, Finland; Pekka Ruusuvaara, Tampere University of Technology, Finland; Gregory McNerney, University of California at Davis Medical Center, United States; Mikko Karjalainen, Varpu Marjomäki, University of Jyväskylä, Finland*

**TH-PO.PB.4: DEFORMABLE TRELLISES ON FACTOR GRAPHS FOR ROBUST .....676  
MICROTUBULE TRACKING IN CLUTTER**

*Rahul Kidambi, Min-Chi Shih, Kenneth Rose, University of California at Santa Barbara, United States*

**TH-PO.PB: REGISTRATION, SEGMENTATION AND FEATURE DETECTION IN  
MICROSCOPY B**

**TH-PO.PB.1: COMPARING ACTIVE CONTOURS FOR THE SEGMENTATION OF .....736  
BIOMEDICAL IMAGES**

*Birgit Moeller, Stefan Posch, Martin Luther University Halle-Wittenberg, Germany*

|   |            |
|---|------------|
| <b>TH-PO.PB.2: IMAGE SEGMENTATION WITH IMPLICIT COLOR STANDARDIZATION</b> .....   | <b>740</b> |
| <b>USING CASCADED EM: DETECTION OF MYELODYSPLASTIC SYNDROMES</b>  |            |
| <i>James Monaco, Rutgers University, United States; Philipp Raess, University of Pennsylvania, United States; Ronak Chawla, Rutgers University, United States; Adam Bagg, University of Pennsylvania, United States; Mitchell Weiss, John Choi, Children’s Hospital of Philadelphia, United States; Anant Madabhushi, Rutgers University, United States</i> |            |
| <b>TH-PO.PB.3: RETINAL BLOOD VESSEL SEGMENTATION USING GEODESIC</b> .....   | <b>744</b> |
| <b>VOTING METHODS</b>   |            |
| <i>Youssef Rouchdy, Paris Dauphine University, France; Laurent D. Cohen, Université Paris Dauphine, France</i>  |            |
| <b>TH-PO.PB.4: COUPLED EDGE PROFILE ACTIVE CONTOURS FOR RED BLOOD</b> .....   | <b>748</b> |
| <b>CELL FLOW ANALYSIS</b>   |            |
| <i>Ilker Ersoy, Filiz Bunyak, University of Missouri Columbia, United States; John M. Higgins, Harvard University, United States; Kannappan Palaniappan, University of Missouri Columbia, United States</i>   |            |
| <b>TH-PO.PB.5: QUANTIFICATION OF MEMBRANE IHC STAINS THROUGH</b> .....  | <b>752</b> |
| <b>MULTI-SPECTRAL IMAGING</b>   |            |
| <i>Mehrnoush Khojasteh, British Columbia Cancer Research Center, and University of British Columbia, Canada; Rabab K. Ward, University of British Columbia, Canada; Calum MacAulay, British Columbia Cancer Research Center, Canada</i>   |            |
| <b>TH-PO.PB.6: AXON SEGMENTATION IN MICROSCOPY IMAGES - A GRAPHICAL</b> .....   | <b>756</b> |
| <b>MODEL BASED APPROACH</b>   |            |
| <i>F. Noushin Golabchi, Dana H. Brooks, Northeastern University, United States</i>  |            |
| <b>TH-PO.PB.7: DISCRIMINATIVE SEMI-MARKOV MODELS FOR AUTOMATED</b> .....  | <b>760</b> |
| <b>MITOTIC PHASE LABELLING</b>  |            |
| <i>Amr El-Labban, Andrew Zisserman, University of Oxford, United Kingdom; Yusuke Toyoda, Alex Bird, Anthony Hyman, Max Planck Institute of Molecular Cell Biology and Genetics, Germany</i>   |            |
| <b>TH-PO.PB.8: AXON EXTRACTION FROM FLUORESCENT CONFOCAL</b> .....  | <b>764</b> |
| <b>MICROSCOPY IMAGES</b>  |            |
| <i>Alejandro Mottini, INRIA / I3S, France; Xavier Descombes, INRIA, France; Florence Besse, IBDC, France</i>  |            |
| <b>TH-PO.PB.9: A TEMPLATE MATCHING APPROACH FOR SEGMENTING</b> .....  | <b>768</b> |
| <b>MICROSCOPY IMAGES</b>  |            |
| <i>Cheng Chen, Wei Wang, Carnegie Mellon University, United States; John Ozolek, Children’s Hospital of Pittsburgh, United States; Nuno Lages, Steven Altschuler, Lani Wu, University of Texas Southwestern Medical Center, United States; Gustavo Rohde, Carnegie Mellon University, United States</i>   |            |
| <b>TH-PO.PB.10: A GEOMETRIC-STATISTICAL APPROACH TOWARD NEURON</b> .....  | <b>772</b> |
| <b>MATCHING</b>   |            |
| <i>Suvadip Mukherjee, University of Virginia, United States; Saurav Basu, Carnegie Mellon University, United States; Barry Condron, Scott T. Acton, University of Virginia, United States</i>   |            |
| <b>TH-PO.PB.11: AUTOMATING THE QUANTIFICATION OF MEMBRANE PROTEINS</b> .....  | <b>776</b> |
| <b>UNDER CONFOCAL MICROSCOPY</b>  |            |
| <i>Pascal Valloiton, Matthew Payne, Tomasz Bednarz, Luke Domanski, CSIRO, Australia; David James, William E. Hughes, Garvan Institute of Medical Research, Australia; Changming Sun, CSIRO, Australia</i>   |            |

## **TH-PO.PB: CARDIAC AND VASCULAR IMAGING B**

### **TH-PO.PB.1: MODEL-BASED SEGMENTATION OF THE LEFT MAIN CORONARY BIFURCATION FROM 2D ANGIOGRAMS .....780**

*Romain Lacroix, Raoul Florent, Vincent Auvray, Philips Healthcare, France*

### **TH-PO.PB.2: LEFT ENDOCARDIUM TRACKING VIA COLLABORATIVE TRACKERS AND SHAPE PRIOR .....784**

*Yan Zhou, Elekta Inc., United States; Shaoting Zhang, Rutgers University, United States; Nikolaos Tsekos, Ioannis Pavlidis, University of Houston, United States; Dimitris Metaxas, Rutgers University, United States*

### **TH-PO.PB.3: VISUALIZING CHANGES IN VESSEL WALL DYNAMICS DUE TO STENT-GRAFTING IN THE AORTIC ARCH .....788**

*Ernst Schwartz, Medical University Vienna, Austria; Johannes Holfeld, Innsbruck Medical University, Austria; Martin Czerny, Bern University Hospital, Switzerland; Georg Langs, Medical University Vienna, Austria*

### **TH-PO.PB.4: DERIVED INPUT FUNCTION FROM DYNAMIC CARDIAC 18F-FDG PET IMAGES IN RODENTS BASED ON THE GENERALIZED GAUSSIAN ICA MODEL .....792**

*Mabrouk Rostom, Sylvain Prevost, François Dubeau, Université de Sherbrooke, Canada; Layachi Bentabet, Bishop's University, Canada*

### **TH-PO.PB.5: GENERIC REBOOTING SCHEME AND MODEL-BASED PROBABILISTIC PRUNING ALGORITHM FOR TREE-LIKE STRUCTURE TRACKING .....796**

*Ziyue Xu, University of Iowa, United States; Fei Zhao, Roshni Bhagalia, Bipul Das, GE Global Research, United States*

### **TH-PO.PB.6: A NEW FEATURE FOR AUTOMATIC ANEURYSM DETECTION .....800**

*Clemens M. Hentschke, Klaus D. Tönnies, University of Magdeburg, Germany; Oliver Beuing, Rosa Nickl, University Hospital of Magdeburg, Germany*

### **TH-PO.PB.7: SPARSE RECONSTRUCTION FROM A LIMITED PROJECTION NUMBER OF THE CORONARY ARTERY TREE IN X-RAY ROTATIONAL IMAGING .....804**

*Yining Hu, Laboratory of Image Science and Technology (LIST), China; Miyoun Jung, CEREMADE, UMR CNRS 7534, France; Ahmed Oukili, INSERM U642, LTSI, France; Guanyu Yang, Laboratory of Image Science and Technology (LIST), China; Jean-Claude Nunes, INSERM U642, LTSI, France; Jérôme Fehrenbach, Institut de Mathématiques de Toulouse, France; Gabriel Peyre, CEREMADE, UMR CNRS 7534, France; Marc Bedossa, Department of Cardiology, France; Limin Luo, Southeast University, China; Christine Toumoulin, INSERM U642, LTSI, France; Laurent D. Cohen, CEREMADE, UMR CNRS 7534, France*

### **TH-PO.PB.8: 3D SADDLE POINT DETECTION AND APPLICATIONS IN CARDIAC IMAGING .....808**

*Andrea Fuster, Roy van Pelt, Rutger Fick, Geert Claassen, Bart M. ter Haar Romeny, Hans van Assen, Luc Florack, Eindhoven University of Technology, Netherlands*

### **TH-PO.PB.9: A NEW APPROACH IN COMBINED MODELING OF MRI AND BLOOD FLOW: A PRELIMINARY STUDY .....812**

*Krzysztof Jurczuk, Marek Kretowski, Bialystok University of Technology, Poland; Pierre-Anatoine Eliat, Jean-Jacques Bellanger, Herve Saint-Jalmes, Johanne Bezy-Wendling, University of Rennes 1, France*

|  |            |
|--|------------|
| <b>TH-PO.PB.10: QUANTIFICATION OF PULMONARY VEIN MORPHOLOGY USING CENTERLINE TRACKING</b>  | <b>816</b> |
| <i>Maryam Rettmann, Mayo Clinic, United States; Mia Gunawan, Georgetown University, United States; David Holmes III, Douglas Packer, Richard A. Robb, Mayo Clinic, United States</i>   |            |
| <b>TH-PO.PB.11: EFFECT OF VENC ON ACCURACY OF VELOCITY PROFILES IN MULTI-SLICE PHASE-CONTRAST MR IMAGING OF STENOTIC FLOW</b>  | <b>820</b> |
| <i>MJ Negahdar, Jong won Cha, Mostafa Shakeri, University of Louisville, United States; M. Kendrick, Motaz Alshaher, Robley Rex VA Medical Center, United States; Iman Khodarahimi, K. Sharp, University of Louisville, United States; A. Yancey, Robley Rex VA Medical Center, United States; J. Heidenreich, Amir Amini, University of Louisville, United States</i> |            |
| <b>TH-PO.PB.12: ESTIMATION OF THE CARDIAC EJECTION FRACTION FROM IMAGE STATISTICS</b>  | <b>824</b> |
| <i>Mariam Afshin, Robarts Research Institute, Canada; Ismail Ben Ayed, GE Healthcare, Canada; Ali Islam, St. Joseph's Health Care, Canada; Aashish Goela, Ian Ross, London Health Science Center, Canada; Terry Peters, Robarts Research Institute, Canada; Shuo Li, GE Healthcare, Canada</i>   |            |
| <b>TH-PO.PB.13: A NEW NONRIGID REGISTRATION FRAMEWORK FOR IMPROVED VISUALIZATION OF TRANSMURAL PERFUSION GRADIENTS ON CARDIAC FIRST-PASS PERFUSION MRI</b>   | <b>828</b> |
| <i>Fahmi Khalifa, Garth Beache, University of Louisville, United States; Georgy Gimel'farb, University of Auckland, New Zealand; Ayman El-Baz, University of Louisville, United States</i>   |            |
| <b>TH-PO.PB.14: A PATIENT-SPECIFIC REDUCED-ORDER MODEL FOR CORONARY CIRCULATION</b>  | <b>832</b> |
| <i>Lucian Itu, Siemens Corporate Research, Transilvania University of Brasov, United States; Puneet Sharma, Viorel Mihalef, Ali Kamen, Siemens Corporate Research, United States; Constantin Suciu, Siemens Corporate Technology, Transilvania University of Brasov, Romania; Dorin Comaniciu, Siemens Corporate Research, United States</i>                           |            |
| <b>TH-PO.PB.15: PERSONALIZED LEARNING-BASED SEGMENTATION OF THORACIC AORTA AND MAIN BRANCHES FOR DIAGNOSIS AND TREATMENT PLANNING</b>  | <b>836</b> |
| <i>Dime Vitanovski, Pattern Recognition Lab, Germany; Kristof Ralovich, Siemens AG, Germany; Razvan Ionasec, Yefeng Zheng, Siemens SCR, United States; Michael Suehling, Waldemar Krawtschuk, Siemens AG, Germany; Joachim Hornegger, Pattern Recognition Lab, Germany; Dorin Comaniciu, Siemens SCR, United States</i>  |            |
| <b>TH-PO.PB.16: NON-INVASIVE INDICATORS OF PULMONARY HYPERTENSION FROM PULMONARY VEINS QUANTIFICATION IN SICKLE CELL DISEASE</b>   | <b>840</b> |
| <i>Guido Jajamovich, Columbia University, United States; Vivek Pamulapati, Shoaib Alam, Alem Mehari, Gregory Kato, Bradford Wood, National Institutes of Health, United States; Marius Lingurar, Children's National Medical Center, United States</i>   |            |
| <b>TH-PO.PB.17: MANIFOLD LEARNING FOR ANALYSIS OF LOW-ORDER NONLINEAR DYNAMICS IN HIGH-DIMENSIONAL ELECTROCARDIOGRAPHIC SIGNALS</b>  | <b>844</b> |
| <i>Burak Erem, Northeastern University, United States; Petr Stovicek, Charles University Hospital, Czech Republic; Dana H. Brooks, Northeastern University, United States</i>  |            |

## **TH-PO.PB: IMAGE REGISTRATION**

### **TH-PO.PB.1: VALIDATION OF DEFORMABLE REGISTRATION IN ADAPTIVE RADIATION THERAPY WITH SCALE INVARIANT FEATURE TRANSFORM .....680**

*Chiara Paganelli, Marta Peroni, Guido Baroni, Marco Riboldi, Politecnico di Milano, Italy*

### **TH-PO.PB.2: MULTI-CONTRAST DIFFUSION TENSOR IMAGE REGISTRATION WITH STRUCTURAL MRI .....684**

*Xiujuan Geng, Martin Styner, Aditya Gupta, Dinggang Shen, John H. Gilmore, The University of North Carolina at Chapel Hill, United States*

### **TH-PO.PB.3: A PROBABILISTIC NON-RIGID REGISTRATION FRAMEWORK USING LOCAL NOISE ESTIMATES .....688**

*Ivor Simpson, Mark Woolrich, Jesper Andersson, Adrian Groves, Julia A. Schnabel, University of Oxford, United Kingdom*

### **TH-PO.PB.4: WHICH REGISTRATION METHOD FOR HIGH RESOLUTION FMRI TO EXPLORE HAND MOVEMENT CORTICAL REPRESENTATION? .....692**

*Fabrizio Pizzagalli, Institut National de la Santé Et de la Recherche Médicale, France; Guillaume Auzias, Centre National de la Recherche Scientifique, France; Chantal Delon-Martin, Michel Dojat, Institut National de la Santé Et de la Recherche Médicale, France*

### **TH-PO.PB.5: FEATURE-BASED PIECEWISE RIGID REGISTRATION IN 2-D MEDICAL IMAGES .....696**

*Dirk Smeets, Johannes Keustermans, Jeroen Hermans, Dirk Vandermeulen, Paul Suetens, KU Leuven, Belgium*

### **TH-PO.PB.6: BLOCK-MATCHING STRATEGIES FOR RIGID REGISTRATION OF MULTIMODAL MEDICAL IMAGES .....700**

*Olivier Commowick, INRIA Rennes, France; Nicolas Wiest-Daessle, University Hospital Rennes, France; Sylvain Prima, INRIA Rennes, France*

### **TH-PO.PB.7: NON-RIGID REGISTRATION GUIDED BY LANDMARKS AND LEARNING .....704**

*Jutta Eckl, Volker Daum, Joachim Hornegger, Universität Erlangen-Nürnberg, Germany; Kilian M. Pohl, University of Pennsylvania, United States*

### **TH-PO.PB.8: NONRIGID VOLUME REGISTRATION USING SECOND-ORDER MRF MODEL .....708**

*Dongjin Kwon, Seoul National University, Republic of Korea; Il Dong Yun, Hankuk Univ. of F. S., Republic of Korea; Kilian M. Pohl, Christos Davatzikos, University of Pennsylvania, United States; Sang Uk Lee, Seoul National University, Republic of Korea*

### **TH-PO.PB.9: SUPINE AND PRONE CT COLONOGRAPHY REGISTRATION BY MATCHING GRAPHS OF TENIAE COLI .....712**

*Zhuoshi Wei, Shijun Wang, National Institutes of Health, United States; Nicholas Petrick, U.S. Food and Drug Administration, United States; Jianhua Yao, National Institutes of Health, United States; Senthil Periaswamy, iCAD Inc., United States; Ronald Summers, National Institutes of Health, United States*

### **TH-PO.PB.10: SHAPE MATCHING WITH MEDIAL CURVES AND 1-D GROUP-WISE REGISTRATION .....716**

*Boris Gutman, University of California at Los Angeles, United States; Yalin Wang, Arizona State University, United States; Priya Rajagopalan, Arthur W. Toga, Paul M. Thompson, University of California at Los Angeles, United States*



|  |            |
|--|------------|
| <b>TH-PO.PB.11: IMAGE MOSAICING OF LOW QUALITY NEONATAL RETINAL IMAGES .....</b>   | <b>720</b> |
| <i>Akhilesh Bontala, Jayanthi Sivaswamy, International Institute of Information Technology Hyderabad, India; Rajeev Pappuru, LV Prasad Eye Institute, India</i>  |            |
| <b>TH-PO.PB.12: HYBRID FEATURE-BASED LOG-DEMONS REGISTRATION FOR .....<br/>TUMOUR TRACKING IN 2-D LIVER ULTRASOUND IMAGES</b>  | <b>724</b> |
| <i>Amalia Cifor, Laurent Risser, Daniel Chung, Institute of Biomedical Engineering, United Kingdom; Ewan M. Anderson, Surgery and Diagnostic Building, United Kingdom; Julia A. Schnabel, Institute of Biomedical Engineering, United Kingdom</i>  |            |
| <b>TH-PO.PB.13: LOCALLY-ADAPTIVE SIMILARITY METRIC FOR DEFORMABLE .....<br/>MEDICAL IMAGE REGISTRATION</b>   | <b>728</b> |
| <i>Lisa Tang, Simon Fraser University, Canada; Alfred Hero, University of Michigan, United States; Ghassan Hamarneh, Simon Fraser University, Canada</i>   |            |
| <b>TH-PO.PB.14: AN EFFICIENT, VARIATIONAL NON-PARAMETRIC MODEL OF .....<br/>TUMOUR INDUCED BRAIN DEFORMATION TO AID NON-DIFFEOMORPHIC<br/>IMAGE REGISTRATION</b>   | <b>732</b> |
| <i>Andreas Mang, Tina Anne Schuetz, Alina Toma, Stefan Becker, Thorsten M. Buzug, University of Lübeck, Germany</i>  |            |
| <b>TH-PM1.01: SEGMENTATION AND FEATURE ANALYSIS IN MICROSCOPY</b>  |            |
| <b>TH-PM1.01.1: CHARACTERIZATION OF CELL SHAPE AND DEFORMATION IN 3D .....<br/>USING SPHERICAL HARMONICS</b>   | <b>848</b> |
| <i>Christel Ducroz, Jean-Christophe Olivo-Marin, Alexandre Dufour, Institut Pasteur, France</i>  |            |
| <b>TH-PM1.01.2: FAST PARAMETRIC SNAKES FOR 3D MICROSCOPY.....</b>  | <b>852</b> |
| <i>Ricard Delgado-Gonzalo, École Polytechnique Fédérale de Lausanne, Switzerland; Nicolas Chenouard, CIBM, Université de Lausanne, Switzerland; Michael Unser, École Polytechnique Fédérale de Lausanne, Switzerland</i>   |            |
| <b>TH-PM1.01.3: BATCH-INVARIANT NUCLEAR SEGMENTATION IN WHOLE MOUNT .....<br/>HISTOLOGY SECTIONS</b>   | <b>856</b> |
| <i>Hang Chang, Leandro Loss, Lawrence Berkeley National Laboratory, United States; Paul T. Spellman, Oregon Health Sciences University, United States; Alexander Borowsky, University of California at Davis, United States; Bahram Parvin, Lawrence Berkeley National Laboratory, United States</i> |            |
| <b>TH-PM1.01.4: A NEW APPROACH FOR SPOT DETECTION IN TOTAL INTERNAL .....<br/>REFLECTION FLUORESCENCE MICROSCOPY</b>   | <b>860</b> |
| <i>Seyed Hamid RezaTofighi, Richard Hartley, Australian National University, Australia; William E. Hughes, Garvan Institute of Medical Research, Australia</i>   |            |
| <b>TH-PM1.01.5: PATTERNING MOTOR NEURONS IN THE DROSOPHILA VENTRAL .....<br/>NERVE CORD USING LATENT STATE CONDITIONAL RANDOM FIELDS</b>   | <b>864</b> |
| <i>Xiao Chang, Indiana University-Purdue University Indianapolis, United States; Michael D. Kim, Akira Chiba, University of Miami, United States; Gavriil Tsechpenakis, Indiana University-Purdue University Indianapolis, United States</i>   |            |

## **TH-PM1.02: SPARSE METHODS II**

### **TH-PM1.02.1: GROUPED L0 LEAST SQUARES PENALISED .....868 MAGNETOENCEPHALOGRAPHY**

*Ben Cassidy, Victor Solo, Akila J. Seneviratne, The University of New South Wales, Australia*

### **TH-PM1.02.2: SPARSITY-BASED DECONVOLUTION OF LOW-DOSE BRAIN .....872 PERFUSION CT IN SUBARACHNOID HEMORRHAGE PATIENTS**

*Ruogu Fang, Tshuan Chen, Cornell University, United States; Pina Sanelli, Weill Cornell Medical College, United States*

### **TH-PM1.02.3: SIMULTANEOUS IMAGE RECONSTRUCTION AND SENSITIVITY .....876 ESTIMATION IN PARALLEL MRI USING BLIND COMPRESSED SENSING**

*Huajun She, Rong-Rong Chen, University of Utah, United States; Dong Liang, Shenzhen Institutes of Advanced Technology, United States; Edward DiBella, University of Utah, United States; Leslie Ying, University of Wisconsin - Milwaukee, United States*

### **TH-PM1.02.4: RECONSTRUCTION OF BIOMEDICAL IMAGES AND SPARSE .....880 STOCHASTIC MODELING**

*Emrah Bostan, Ulugbek Kamilov, Michael Unser, École Polytechnique Fédérale de Lausanne, Switzerland*

### **TH-PM1.02.5: COMPRESSED SENSING SUBTRACTED ROTATIONAL ANGIOGRAPHY .....884 WITH MULTIPLE SPARSE PENALTY**

*Hélène Langet, Cyril Riddell, Yves Troussset, GE Healthcare, France; Arthur Tenenhaus, Elisabeth Lahalle, Gilles Fleury, Supélec, France; Nikos Paragios, Ecole Centrale Paris, France*

## **TH-PM1.03: ATLAS-BASED METHODS**

### **TH-PM1.03.1: A GENERATIVE MODEL FOR MULTI-ATLAS SEGMENTATION ACROSS .....888 MODALITIES**

*Juan Eugenio Iglesias, Mert Rory Sabuncu, Massachusetts General Hospital, Harvard Medical School, United States; Koen van Leemput, Massachusetts General Hospital, Harvard Medical School, Technical University of Denmark and Aalto University, Finland, United States*

### **TH-PM1.03.2: DEPENDENCY PRIOR FOR MULTI-ATLAS LABEL FUSION.....892**

*Hongzhi Wang, Paul Yushkevich, University of Pennsylvania, United States*

### **TH-PM1.03.3: MULTI-CLASS BRAIN SEGMENTATION USING ATLAS PROPAGATION .....896 AND EM-BASED REFINEMENT**

*Christian Ledig, Robin Wolz, Paul Aljabar, Imperial College London, United Kingdom; Jyrki Lötjönen, VTT Technical Research Centre of Finland, Finland; Rolf A. Heckemann, Alexander Hammers, The Neurodis Foundation, France; Daniel Rueckert, Imperial College London, United Kingdom*

### **TH-PM1.03.4: ITERATIVE MULTI-ATLAS BASED SEGMENTATION WITH .....900 MULTI-CHANNEL IMAGE REGISTRATION AND JACKKNIFE CONTEXT MODEL**

*Yongfu Hao, Tianzi Jiang, Yong Fan, Institute of Automation, Chinese Academy of Sciences, China*

**TH-PM1.03.5: CHANGES IN ANATOMICAL BRAIN CONNECTIVITY BETWEEN AGES .....904  
12 AND 30: A HARDI STUDY OF 467 ADOLESCENTS AND ADULTS**

*Emily Dennis, Neda Jahanshad, Arthur W. Toga, University of California at Los Angeles, United States; Kori Johnson, Queensland Institute of Medical Research, Australia; Katie L. McMahon, Greig de Zubicaray, University of Queensland, Australia; Nicholas G. Martin, Queensland Institute of Medical Research, Australia; Ian Hickie, University of Sydney, Australia; Margaret J. Wright, Queensland Institute of Medical Research, Australia; Paul M. Thompson, University of California at Los Angeles, United States*

**TH-PM1.04: QUANTITATIVE IMAGE ANALYSIS METHODS FOR CLINICAL  
TRIALS AND POPULATION STUDIES (SS)**

**TH-PM1.04.1: IMAGING BIOMARKERS IN CLINICAL TRIALS: WHERE IMAGING .....908  
SCIENCE MEETS REGULATORS**

*Derek Hill, IXICO Ltd, United Kingdom*

**TH-PM1.04.2: QUANTITATIVE PARAMETERS DERIVED FROM FDG AND AMYLOID .....909  
PET SCANS FOR CLINICAL TRIALS**

*Karl Herholz, University of Manchester, United Kingdom*

**TH-PM1.04.3: PET IN DRUG DEVELOPMENT .....910**

*Adriaan A Lammertsma, VU University Medical Center, Netherlands*

**TH-PM1.04.4: QUANTITATIVE IMAGING BIOMARKERS IN NEUROLOGIC DISEASE: .....911  
POPULATION STUDY PERSPECTIVE**

*Wiro J. Niessen, Erasmus Medical Center / Delft University of Technology, Netherlands; Henri Vrooman, Renske de Boer, Fedde van der Lijn, Hakim Achterberg, Marcel Koek, Stefan Klein, Aad van der Lugt, Marleen de Bruijne, Arfan Ikram, Meike Vernooij, Erasmus Medical Center, Netherlands*

**TH-PM1.04.5: O TKDKQO CTMGTUR' P'GWTQF GI GP GT CVK&G'F KUQTF GTU.....912  
AND POPULATION STUDIES**

*Jonathan Schott, University College of London, United Kingdom*

**TH-PM1.04.6: STRUCTURAL AND FUNCTIONAL IMAGING BIOMARKERS TO ASSESS .....913  
CANCER TREATMENT RESPONSE**

*Brandon Whitcher, Mango Solutions, United Kingdom*

**FR-AM1.01: QUANTITATIVE ASPECTS OF SINGLE MOLECULE MICROSCOPY  
(SS)**

**FR-AM1.01.1: 3D SINGLE MOLECULE TRACKING AND SUPERRESOLUTION .....914  
IMAGING USING MULTIFOCAL PLANE MICROSCOPY**

*Sripad Ram, E. Sally Ward, Raimund J. Ober, University of Texas Southwestern Medical Center, United States*

**FR-AM1.01.2: FUNDAMENTAL LIMITS IN DETERMINING THE ORIENTATION OF .....916  
SINGLE MOLECULES - AN INFORMATION THEORETIC APPROACH**

*Matthew Foreman, Peter Török, Imperial College London, United Kingdom*

**FR-AM1.01.3: FAST SINGLE MOLECULE LOCALIZATION USING GRAPHICS .....919  
PROCESSING UNITS**

*Keith Lidke, University of New Mexico, United States*

**FR-AM1.01.4: MODEL-FREE ANALYSIS OF TIME-DEPENDENT SINGLE-MOLECULE SPECTROSCOPY .....921**

*Kevin Welsher, Haw Yang, Princeton University, United States*

**FR-AM1.01.5: STOCHASTIC OPTICAL FLUCTUATION IMAGING.....924**

*Anja Huss, Joerg Enderlein, Georg-August-University, Germany*

**FR-AM1.01.6: OPTIMAL 3D SINGLE-MOLECULE SUPER-RESOLUTION MICROSCOPY WITH ENGINEERED POINT SPREAD FUNCTIONS .....926**

*Sean Quirin, Ginni Grover, Rafael Piestun, University of Colorado, United States*

**FR-AM1.02: DIFFUSION IMAGING I**

**FR-AM1.02.1: INTERPOLATING MULTI-FIBER MODELS BY GAUSSIAN MIXTURE SIMPLIFICATION .....928**

*Maxime Taquet, Université Catholique de Louvain, Belgium; Benoît Scherrer, Christopher Benjamin, Sanjay Prabhu, Harvard Medical School, United States; Benoît Macq, Université Catholique de Louvain, Belgium; Simon K. Warfield, Harvard Medical School, United States*

**FR-AM1.02.2: DEBLURRING OF PROBABILISTIC ODFS IN QUANTITATIVE DIFFUSION MRI .....932**

*Antonio Tristán-Vega, Laboratory of Mathematics in Imaging, United States; Santiago Aja-Fernández, Laboratorio de Procesado de Imagen, Spain; Carl-Fredrik Westin, Laboratory of Mathematics in Imaging, United States*

**FR-AM1.02.3: A NEW MULTI-FIBER MODEL FOR LOW ANGULAR RESOLUTION DIFFUSION MRI .....936**

*Aymeric Stamm, University of Rennes I, France; Patrick Pérez, Technicolor, France; Christian Barillot, CNRS, France*

**FR-AM1.02.4: AN OVER-COMPLETE DICTIONARY BASED REGULARIZED RECONSTRUCTION OF A FIELD OF ENSEMBLE AVERAGE PROPAGATORS .....940**

*Wenxing Ye, Baba Vemuri, Alireza Entezari, University of Florida, United States*

**FR-AM1.02.5: DIFFUSION IMAGING PROTOCOL EFFECTS ON GENETIC ASSOCIATIONS .....944**

*Neda Jahanshad, Omid Kohannim, Arthur W. Toga, University of California at Los Angeles, United States; Katie L. McMahon, Greig I. de Zubicaray, University of Queensland, Australia; Narelle K. Hansell, Grant W. Montgomery, Nicholas G. Martin, Margaret J. Wright, Queensland Institute of Medical Research, Australia; Paul M. Thompson, University of California at Los Angeles, United States*

**FR-AM1.03: IMAGE GUIDED THERAPY AND INTERVENTIONS**

**FR-AM1.03.1: GRAPH-BASED GUIDE-WIRE SEGMENTATION THROUGH FUSION OF CONTRAST-ENHANCED AND FLUOROSCOPIC IMAGES .....948**

*Nicolas Honnorat, Ecole Centrale de Paris / General Electric Healthcare / INRIA, France; Régis Vaillant, GE Healthcare, France; Nikos Paragios, INRIA / Ecole Centrale de Paris / Université Paris-Est / Ecole des ponts Paristech, France*

**FR-AM1.03.2: A MODEL-BASED REGISTRATION APPROACH OF PREOPERATIVE MRI .....952  
WITH 3D ULTRASOUND OF THE LIVER FOR INTERVENTIONAL GUIDANCE  
PROCEDURES**

*Samuel Kadoury, Lyubomir Zagorchev, Philips Research North America, United States; Bradford Wood, Aradhana Venkatesan, National Institutes of Health, United States; Juergen Weese, Philips Research Europe, Netherlands; James Jago, Philips Healthcare, United States; Jochen Kruecker, Philips Research North America, United States*

**FR-AM1.03.3: A FRAMEWORK FOR AUTOMATIC, ACCURATE, AND FAST 2-D+T/3-D .....956  
REGISTRATION APPLIED TO TRANS-CATHETER AORTIC VALVE  
IMPLANTATION (TAVI) PROCEDURES**

*Xudong Lv, University of British Columbia, Canada; Rui Liao, Yinxiao Liu, Shun Miao, Siemens Corporate Research, United States*

**FR-AM1.03.4: RESPIRATORY MOTION COMPENSATION FOR IMAGE-GUIDED .....960  
BRONCHOSCOPY USING A GENERAL MOTION MODEL**

*Tobias Klinder, Cristian Lorenz, Philips Research Europe – Hamburg, Germany*

**FR-AM1.03.5: ROBUST REAL-TIME MR-GEOMETRIC DISTORTION CORRECTION .....964  
FOR INTERVENTIONAL PROCEDURE ON MOBILE TARGETS**

*Baudouin Denis de Senneville, Mario Ries, Chrit Moonen, University Medical Center Utrecht, Netherlands*

**FR-AM1.04: SPARSE METHODS FOR SIGNAL RECONSTRUCTION AND  
MEDICAL IMAGE ANALYSIS (SS)**

**FR-AM1.04.1: COMPRESSED MAGNETIC RESONANCE IMAGING BASED ON .....968  
WAVELET SPARSITY AND NONLOCAL TOTAL VARIATION**

*Junzhou Huang, The University of Texas at Arlington, United States; Fei Yang, Rutgers University, United States*

**FR-AM1.04.2: RETROSPECTIVE ILLUMINATION CORRECTION OF RETINAL .....972  
FUNDUS IMAGES FROM GRADIENT DISTRIBUTION SPARSITY**

*Yuanjie Zheng, Brian Vanderbeek, Rui Xiao, Ebenezer Daniel, Dwight Stambolian, Maureen Maguire, Joan O'Brien, James C. Gee, University of Pennsylvania, United States*

**FR-AM1.04.3: EFFICIENT SPARSE SHAPE COMPOSITION WITH ITS APPLICATIONS .....976  
IN BIOMEDICAL IMAGE ANALYSIS: AN OVERVIEW**

*Shaoting Zhang, Rutgers University, United States; Yiqiang Zhan, Siemens, United States; Yan Zhou, Elekta Inc., United States; Dimitris Metaxas, Rutgers University, United States*

**FR-AM1.04.4: COMBINATION OF COMPRESSED SENSING AND PARALLEL IMAGING .....980  
FOR HIGHLY-ACCELERATED DYNAMIC MRI**

*Ricardo Otazo, Li Feng, Hersh Chandarana, Tobias Block, Leon Axel, Daniel K. Sodickson, New York University School of Medicine, United States*

**FR-AM2.01: QUANTITATIVE SINGLE MOLECULE MICROSCOPY**

**FR-AM2.01.1: A BAYESIAN METHOD FOR 3D ESTIMATION OF SUBCELLULAR .....984  
PARTICLE FEATURES IN MULTI-ANGLE TIRF MICROSCOPY**

*Liang Liang, Yale University, United States; Hongying Shen, Yale University, United States; Yingke Xu, Pietro de Camilli, Derek K. Toomre, James S. Duncan, Yale University, United States*

**FR-AM2.01.2: THE EFFECT OF BACKGROUND ON LOCALIZATION UNCERTAINTY .....988  
IN SINGLE EMITTER IMAGING**

*Sjoerd Stallinga, Bernd Rieger, Delft University of Technology, Netherlands*

**FR-AM2.01.3: NANOMETER RESOLUTION TRACKING AND MODELING OF .....992  
BIDIRECTIONAL AXONAL CARGO TRANSPORT**

*Minhua Qiu, Hao-Chih Lee, Ge Yang, Carnegie Mellon University, United States*

**FR-AM2.01.4: IMAGE REGISTRATION ERROR ANALYSIS WITH APPLICATIONS IN .....996  
SINGLE MOLECULE MICROSCOPY**

*Edward Cohen, The University of Texas at Austin, United States; Raimund J. Ober, University of Texas at Dallas, United States*

**FR-AM2.01.5: COUPLED SIGNED-DISTANCE FUNCTIONS FOR IMPLICIT SURFACE .....1000  
RECONSTRUCTION**

*Yuanhao Gong, Gregory Paul, Ivo F. Sbalzarini, ETH Zurich, Switzerland*

**FR-AM2.02: IMAGE RECONSTRUCTION: PET, SPECT, CT**

**FR-AM2.02.1: CONSTRAINED MIXTURE MODELING FOR THE ESTIMATION OF .....1004  
KINETIC PARAMETERS IN DYNAMIC PET**

*Yanguang Lin, University of Southern California, United States; Quanzheng Li, Harvard Medical School, United States; Justin P. Haldar, Richard M. Leahy, University of Southern California, United States*

**FR-AM2.02.2: STATISTICAL X-RAY CT RECONSTRUCTION USING A .....1008  
SPLITTING-BASED ITERATIVE ALGORITHM WITH ORTHONORMAL  
WAVELETS**

*Sathish Ramani, Jeffrey A. Fessler, University of Michigan, United States*

**FR-AM2.02.3: LOW-DOSE X-RAY CT RECONSTRUCTION BASED ON JOINT .....1012  
SINOGRAM SMOOTHING AND LEARNED DICTIONARY-BASED  
REPRESENTATION**

*Ivana Stojanovic, Boston University, United States; Homer Pien, Synho Do, Massachusetts General Hospital, United States; W. Clem Karl, Boston University, United States*

**FR-AM2.02.4: ITERATIVE SCATTER CORRECTION FOR DIGITAL TOMOSYNTHESIS .....1016  
USING COMPOSITION RATIO UPDATE AND GPU BASED MONTE CARLO  
SIMULATION**

*Kyung Sang Kim, Korea Advanced Institute of Science and Technology, Republic of Korea; Young Hoon Seong, Jongha Lee, Kwang Eun Jang, Samsung Electronics, Republic of Korea; Jong Chul Ye, Korea Advanced Institute of Science and Technology, Republic of Korea*

**FR-AM2.02.5: EFFECTS OF MOTION ESTIMATION METHODS ON 4D GATED .....1020  
CARDIAC SPECT RECONSTRUCTION**

*Wenyuan Qi, Xiaofeng Niu, Yongyi Yang, Illinois Institute of Technology, United States*

## **FR-AM2.03: IMAGE SEGMENTATION I**

### **FR-AM2.03.1: FULLY AUTOMATIC BREAST SEGMENTATION IN 3D BREAST MRI .....1024**

*Lei Wang, Bram Platel, Fraunhofer MEVIS, Germany; Tatyana Ivanovskaya, Institute for Community Medicine, Ernst-Moritz-Arndt University, Germany; Markus Harz, Horst K. Hahn, Fraunhofer MEVIS, Germany*

### **FR-AM2.03.2: AUTOMATIC MULTI-ATLAS-BASED CARTILAGE SEGMENTATION FROM ..1028 KNEE MR IMAGES**

*Liang Shan, University of North Carolina at Chapel Hill, United States; Cecil Charles, Duke University, United States; Marc Niethammer, University of North Carolina at Chapel Hill, United States*

### **FR-AM2.03.3: TENSOR SCALE-BASED ANISOTROPIC REGION GROWING FOR .....1032 SEGMENTATION OF ELONGATED BIOLOGICAL STRUCTURES**

*Ziyue Xu, Zhiyun Gao, Eric Hoffman, Punam Saha, University of Iowa, United States*

### **FR-AM2.03.4: AUTOMATIC SKELETAL MUSCLE SEGMENTATION THROUGH .....1036 RANDOM WALKS AND GRAPH-BASED SEED PLACEMENT**

*Pierre-Yves Baudin, Ecole Centrale de Paris, France; Noura Azzabou, Pierre Carlier, Institute of Myology, France; Nikos Paragios, Ecole Centrale de Paris, France*

### **FR-AM2.03.5: AN AAM-BASED DETECTION APPROACH OF LUNG NODULES FROM .....1040 LDCT SCANS**

*Amal Farag, Hossam Abdelmunim, James Graham, Aly A. Farag, Cambren Carter, Salwa Elshazly, University of Louisville, United States; Mohamed El-Mogy, Sabry El-Mogy, Mogy Scan, Egypt; Robert Falk, Jewish Hospital and 3DR, United States*

## **FR-AM2.04: DYNAMIC IMAGING**

### **FR-AM2.04.1: QUANTIFICATION OF DCE-MRI: A VALIDATION OF THREE .....1044 TECHNIQUES WITH 3D-HISTOLOGY**

*Karin Bol, Joost C. Haeck, Lejla Alic, Wiro J. Niessen, Marion de Jong, Monique Bernsen, Jifke F. Veenland, Erasmus Medical Center, Netherlands*

### **FR-AM2.04.2: A TEXTURAL FEATURE BASED TUMOR THERAPY RESPONSE .....1048 PREDICTION MODEL FOR LONGITUDINAL EVALUATION WITH PET IMAGING**

*Jose George, Peter Claes, Kathleen Vunckx, Sabine Tejpar, Chrisitophe Deroose, Johan Nuyts, Dirk Loeckx, Paul Suetens, Katholieke Universiteit Leuven, Belgium*

### **FR-AM2.04.3: AN ADAPTIVE COMPLEX INDEPENDENT COMPONENT ANALYSIS TO .....1052 ANALYZE DYNAMIC CONTRAST ENHANCED-MRI**

*Hatef Mehrabian, Ian Pang, Rajiv Chopra, Anne Martel, University of Toronto, Canada*

### **FR-AM2.04.4: ROBUST NON-LOCAL REGULARIZATION FRAMEWORK FOR MOTION .....1056 COMPENSATED DYNAMIC IMAGING WITHOUT EXPLICIT MOTION ESTIMATION**

*Zhili Yang, University of Rochester, United States; Mathews Jacob, University of Iowa, United States*

### **FR-AM2.04.5: A BLIND COMPRESSIVE SENSING FRAME WORK FOR .....1060 ACCELERATED DYNAMIC MRI**

*Sajan Goud Lingala, Mathews Jacob, The University of Iowa, United States*

## **FR-PO.PA: MEDICAL IMAGE ANALYSIS: APPLICATIONS A**

### **FR-PO.PA: BRAIN IMAGING A**

#### **FR-PO.PA.1: A NON PARAMETRIC MIXED-EFFECT MODEL FOR POPULATION ANALYSIS: APPLICATION TO ALZHEIMER'S DISEASE DATA .....1124**

*Juan David Ospina, Oscar Acosta, Renaud de Crevoisier, Juan Carlos Correa, Pascal Haigron, Université de Rennes 1, France*

#### **FR-PO.PA.2: FULLY AUTOMATIC SEGMENTATION OF THE DENTATE NUCLEUS USING DIFFUSION WEIGHTED IMAGES .....1128**

*Chuyang Ye, John Bogovic, Johns Hopkins University, United States; Pierre-Louis Bazin, Max Planck Institute for Human Cognitive and Brain Sciences, Germany; Jerry L. Prince, Johns Hopkins University, United States; Sarah Ying, Johns Hopkins University School of Medicine, United States*

#### **FR-PO.PA.3: PARTIAL SPARSE CANONICAL CORRELATION ANALYSIS (PSCCA) FOR POPULATION STUDIES IN MEDICAL IMAGING .....1132**

*Paramveer S. Dhillon, Brian B. Avants, Lyle Ungar, James C. Gee, University of Pennsylvania, United States*

#### **FR-PO.PA.4: AN ADAPTIVE NON LOCAL MAXIMUM LIKELIHOOD ESTIMATION METHOD FOR DENOISING MAGNETIC RESONANCE IMAGES .....1136**

*Jeny Rajan, Johan van Audekerke, Annemie van der Linden, Marleen Verhoye, Jan Sijbers, University of Antwerp, Belgium*

#### **FR-PO.PA.5: AUTOMATIC HUMAN BRAIN VESSEL SEGMENTATION FROM 3D 7 TESLA MRA IMAGES USING FAST MARCHING WITH ANISOTROPIC DIRECTIONAL PRIOR .....1140**

*Wei Liao, Karl Rohr, University of Heidelberg and German Cancer Research Center Heidelberg, Germany; Chang-Ki Kang, Zang-Hee Cho, Gachon University of Medicine and Science, Republic of Korea; Stefan Würz, University of Heidelberg and German Cancer Research Center Heidelberg, Germany*

#### **FR-PO.PA.6: SKELETON-BASED GYRI SULCI SEPARATION FOR IMPROVED ASSESSMENT OF CORTICAL THICKNESS .....1144**

*Mirco Richter, University of Konstanz, Germany; Courtney Bishop, University of Oxford, United Kingdom; Juergen Dukart, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany; Elisabeth Stuehler, University of Konstanz, Germany; Karsten Mueller, Matthias Schroeter, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany; Dorit Merhof, University of Konstanz, Germany*

#### **FR-PO.PA.7: COLLABORATIVE LABELING OF MALIGNANT GLIOMA .....1148**

*Zhoubing Xu, Andrew Asman, Eesha Singh, Lola Chambless, Reid Thompson, Bennett Landman, Vanderbilt University, United States*

#### **FR-PO.PA.8: SEGMENTATION OF SERIAL MRI OF TBI PATIENTS USING PERSONALIZED ATLAS CONSTRUCTION AND TOPOLOGICAL CHANGE ESTIMATION .....1152**

*Bo Wang, Marcel Prastawa, Suyash P. Awate, University of Utah, United States; Andrei Irimia, Micah C. Chambers, Paul M. Vespa, John D. van Horn, University of California at Los Angeles, United States; Guido Gerig, University of Utah, United States*



**FR-PO.PA.9: QUANTIFYING REGIONAL GROWTH PATTERNS THROUGH .....1156  
LONGITUDINAL ANALYSIS OF DISTANCES BETWEEN MULTIMODAL MR  
INTENSITY DISTRIBUTIONS**

*Avantika Vardhan, Marcel Prastawa, Sylvain Gouttard, University of Utah, United States; Joseph Piven, University of North Carolina, United States; Guido Gerig, University of Utah, United States*

**FR-PO.PA.10: PREDICTING TEMPORAL LOBE VOLUME ON MRI FROM .....1160  
GENOTYPES USING L1-L2 REGULARIZED REGRESSION**

*Omid Kohannim, Derrek Hibar, Neda Jahanshad, Jason Stein, Xue Hua, Arthur W. Toga, University of California at Los Angeles, United States; Clifford R. Jack, Mayo Clinic, United States; Michael W. Weiner, UCSF, United States; Paul M. Thompson, University of California at Los Angeles, United States*

**FR-PO.PA.11: HIPPOCAMPAL ATROPHY RATE USING AN EXPECTATION .....1164  
MAXIMIZATION CLASSIFIER WITH A DISEASE-SPECIFIC PRIOR**

*Jyrki Lötjönen, VTT Technical Research Centre of Finland, Finland; Robin Wolz, Imperial College London, United Kingdom; Juha Koikkalainen, Valeria Manna, VTT Technical Research Centre of Finland, Finland; Christian Ledig, Imperial College London, United Kingdom; Lennart Thurjell, Roger Lundqvist, GE Healthcare, Sweden; Gunhild Waldemar, Copenhagen University Hospital, Denmark; Hilka Soininen, Kuopio University Hospital, Finland; Daniel Rueckert, Imperial College London, United Kingdom*

**FR-PO.PA.12: HIPPOCAMPUS SEGMENTATION BY OPTIMIZING THE LOCAL .....1168  
CONTRIBUTION OF IMAGE AND PRIOR TERMS, THROUGH GRAPH CUTS AND  
MULTI-ATLAS**

*Dimitrios Zarpalas, Polyxeni Gkontra, Petros Daras, CERTH/ITI, Greece; Nicos Maglaveras, Laboratory of Medical Informatics, Greece*

**FR-PO.PA.13: PHANTOM-BASED MRI CORRECTIONS AND POWER TO TRACK BRAIN .....1172  
CHANGE**

*Christopher R. K. Ching, Xue Hua, University of California at Los Angeles, United States; Chadwick Ward, Jeff Gunter, Matt A. Bernstein, Clifford R. Jack, Mayo Clinic / University of Minnesota, United States; Michael W. Weiner, Dept. of Radiology, Medicine and Psychiatry, UCSF, CA, USA, Dept. Veterans Affairs Medical Center, San Francisco, CA, USA, United States; Paul M. Thompson, University of California at Los Angeles School of Medicine, United States*

**FR-PO.PA.14: A CONTRARIO DETECTION OF FOCAL BRAIN PERFUSION .....1176  
ABNORMALITIES BASED ON AN ARTERIAL SPIN LABELING TEMPLATE**

*Camille Maumet, Pierre Maurel, Elise Bannier, University of Rennes 1, France; Jean-Christophe Ferré, CHU Rennes, France; Christian Barillot, Centre National de la Recherche Scientifique, France*

**FR-PO.PA: ULTRASOUND A**

**FR-PO.PA.1: A QUANTITATIVE ULTRASOUND-BASED METHOD AND DEVICE FOR .....1064  
RELIABLY GUIDING PATHOLOGISTS TO METASTATIC REGIONS OF  
DISSECTED LYMPH NODES**

*Alain Coron, UPMC Univ Paris 06, France; Jonathan Mamou, Riverside Research, United States; Emi Saegusa-Beecroft, University of Hawaii and Kuakini Medical Center, United States; Michael L. Oelze, University of Illinois, United States; Tadashi Yamaguchi, Chiba University, Japan; Masaki Hata, Junji Machi, Eugene Yanagihara, University of Hawaii and Kuakini Medical Center, United States; Pascal Laugier, CNRS, France; Ernest J. Feleppa, Riverside Research, United States*

|   |                  |
|---|------------------|
| <b>FR-PO.PA.2: CONFIDENCE ESTIMATION IN IVUS RADIO-FREQUENCY DATA WITH<br/>RANDOM WALKS</b>   | <b>.....1068</b> |
| <i>Athanasios Karamalis, Amin Katouzian, Technische Universität München, Germany; Stephane Carlier, Universitair Ziekenhuis Brussel, Belgium; Nassir Navab, Technische Universität München, Germany</i>   |                  |
| <b>FR-PO.PA.3: REGISTRATION OF RF ULTRASOUND DATA USING HYBRID LOCAL<br/>BINARY PATTERNS</b>  | <b>.....1072</b> |
| <i>Tassilo Klein, TU München, Germany; Mattias Hansson, Malmö University, School of Technology, Sweden; Athanasios Karamalis, Nassir Navab, TU München, Germany</i>   |                  |
| <b>FR-PO.PA.4: TRACKING MICRO TOOL IN A DYNAMIC 3D ULTRASOUND SITUATION<br/>USING KALMAN FILTER AND RANSAC ALGORITHM</b>  | <b>.....1076</b> |
| <i>Yue Zhao, INSA Lyon, France; Hervé Liebgott, Christian Cachard, Université Lyon 1, France</i>  |                  |
| <b>FR-PO.PA.5: COMPRESSED BEAMFORMING APPLIED TO B-MODE ULTRASOUND<br/>IMAGING</b>  | <b>.....1080</b> |
| <i>Noam Wagner, Yonina C. Eldar, Arie Feuer, Technion-Israel Institute of Technology, Israel; Zvi Friedman, GE Healthcare, Israel</i>   |                  |
| <b>FR-PO.PA.6: FREEHAND 3D ULTRASOUND VOLUME IMAGING USING A<br/>MINIATURE-MOBILE 6-DOF CAMERA TRACKING SYSTEM</b>  | <b>.....1084</b> |
| <i>Shih-Yu Sun, Brian Anthony, Massachusetts Institute of Technology, United States</i>   |                  |
| <b>FR-PO.PA.7: FAST AND FULLY AUTOMATIC 3D ECHOCARDIOGRAPHIC<br/>SEGMENTATION USING B-SPLINE EXPLICIT ACTIVE SURFACES</b>   | <b>.....1088</b> |
| <i>Daniel Barbosa, Katholieke Universiteit Leuven, Belgium; Thomas Dietenbeck, INSA-Lyon, France; Brecht Heyde, Katholieke Universiteit Leuven, Belgium; Helene Houle, Siemens, United States; Denis Friboulet, INSA-Lyon, France; Jan D'hooge, Katholieke Universiteit Leuven, Belgium; Olivier Bernard, INSA-Lyon, France</i> |                  |
| <b>FR-PO.PA.8: SPATIAL COMPOUNDING OF TRANS-ESOPHAGEAL ECHO VOLUMES<br/>USING X-RAY PROBE TRACKING</b>  | <b>.....1092</b> |
| <i>James Housden, YingLiang Ma, Aruna Arujuna, King's College London, United Kingdom; Niels Nijhof, Pascal Cathier, Geert Gijbbers, Roland Bullens, Philips Healthcare, Netherlands; Kawal Rhode, King's College London, United Kingdom</i>   |                  |
| <b>FR-PO.PA.9: ULTRASOUND IMAGE SEGMENTATION USING LOCAL STATISTICS<br/>WITH AN ADAPTIVE SCALE SELECTION</b>  | <b>.....1096</b> |
| <i>Qing Yang, Djamel Boukerroui, Université de Technologie de Compiègne, France</i>   |                  |
| <b>FR-PO.PA.10: TRANSVERSE OSCILLATIONS BEAMFORMER DESIGN FOR SECTOR<br/>SCAN USING BACK-PROPAGATION</b>  | <b>.....1100</b> |
| <i>Xinxin Guo, Denis Friboulet, INSA de Lyon, France; Hervé Liebgott, Université Lyon 1, France</i>   |                  |
| <b>FR-PO.PA.11: CONTROLLED MOTION STRAIN MEASUREMENT USING LATERAL<br/>SPECKLE TRACKING IN ACHILLES TENDONS DURING HEALING</b>  | <b>.....1104</b> |
| <i>Phillip Brown, Joseph Alsousou, Mark Thompson, J. Alison Noble, University of Oxford, United Kingdom</i>   |                  |
| <b>FR-PO.PA.12: MAXIMUM LIKELIHOOD ESTIMATION OF YOUNG'S MODULUS IN<br/>TRANSIENT ELASTOGRAPHY WITH UNKNOWN LINE-OF-SIGHT ORIENTATION</b>   | <b>.....1108</b> |
| <i>Maurice Charbit, Elsa Angelini, LTCI/Institut Telecom, France; Stéphane Audière, Echosens, France</i>  |                  |

**FR-PO.PA.13: SEMIAUTOMATED BREAST CANCER CLASSIFICATION FROM .....1112  
ULTRASOUND VIDEO**

*Leonardo Bocchi, Francesca Gritti, Claudia Manfredi, University of Florence, Italy; Elisabetta Giannotti, Jakopo Nori, AOU Careggi, Italy*

**FR-PO.PA.14: CLUTTER REDUCTION IN ECHOCARDIOGRAPHY WITH SHORT-LAG .....1116  
SPATIAL COHERENCE (SLSC) IMAGING**

*Muyinatu A Lediju Bell, Robi Goswami, Gregg Trahey, Duke University, United States*

**FR-PO.PA.15: MULTI RESOLUTION TRANSVERSE OSCILLATIONS FOR MOTION .....1120  
ESTIMATION IN ULTRASOUND IMAGES**

*François Varray, Olivier Basset, Christian Cachard, Hervé Liebgott, Université de Lyon, CREATIS; CNRS UMR5220; Inserm U1044; INSA-Lyon; Université Lyon 1, France*

**FR-PO.PA: IMAGE GUIDED THERAPY AND INTERVENTIONS**

**FR-PO.PA.1: EFFECT OF COIL SURFACE AREA ON THE HEMODYNAMICS OF A .....1180  
PATIENT-SPECIFIC INTRACRANIAL ANEURYSM: A COMPUTATIONAL STUDY**

*Martha L. Aguilar, Hernán G. Morales, Ignacio Larrabide, Universitat Pompeu Fabra, Spain; Juan M. Macho, Luis San Roman, Hospital Clinic y Provincial de Barcelona, Spain; Alejandro F. Frangi, Universitat Pompeu Fabra, Spain*

**FR-PO.PA.2: FAST TRACKING OF CATHETERS IN 2D FLUOROSCOPIC IMAGES .....1184  
USING AN INTEGRATED CPU-GPU FRAMEWORK**

*Wen Wu, Terrence Chen, Norbert Strobel, Dorin Comaniciu, Siemens, United States*

**FR-PO.PA.3: HIGH EFFICIENT SURGICAL SIMULATION BASED ON STRUCTURED .....1188  
DICTIONARY**

*Dan Wang, Ahmed Tewfik, The University of Texas at Austin, United States*

**FR-PO.PA.4: MODEL-BASED FUSION OF CT AND NON-CONTRASTED 3D C-ARM CT: .....1192  
APPLICATION TO TRANSCATHETER VALVE THERAPIES**

*Sasa Grbic, TU München, Germany; Christian Gesell, Razvan Ionasec, Matthias John, Jan Boese, Siemens, United States; Joachim Hornegger, University of Erlangen-Nuremberg, Germany; Nassir Navab, Technical University Munich, Germany; Dorin Comaniciu, Siemens, Germany*

**FR-PO.PA.5: AN IMPROVED ENDOVASCULAR GUIDEWIRE POSITION SIMULATION .....1196  
ALGORITHM**

*Lei Xu, State University of New York at Buffalo, United States; Yong Tian, Lan Zhou University, China; Xuhui Jin, State University of New York at Buffalo, United States; Jie Chen, Tianjin Vocational Institute, China; Sebastian Schafer, Johns Hopkins University, United States; Kenneth Hoffmann, Jinhui Xu, State University of New York at Buffalo, United States*

**FR-PO.PA.6: VIRTUAL ANGIOGRAPHY USING CFD SIMULATIONS BASED ON .....1200  
PATIENT-SPECIFIC PARAMETER OPTIMIZATION**

*Juergen Endres, University of Erlangen-Nuremberg, Germany; Thomas Redel, Markus Kowarschik, Siemens AG, Germany; Jana Hutter, Joachim Hornegger, Arnd Doerfler, University of Erlangen-Nuremberg, Germany*

**FR-PO.PA.7: CALIBRATION OF C-ARM FOR ORTHOPEDIC INTERVENTIONS VIA .....1204  
STATISTICAL MODEL-BASED DISTORTION CORRECTION AND ROBUST  
PHANTOM DETECTION**

*Steffen Schumann, Xiao Dong, Marc Puls, Lutz-P. Nolte, Guoyan Zheng, University of Bern, Switzerland*

**FR-PO.PA.8: SIMULATION OF THE POSTOPERATIVE TRUNK APPEARANCE IN .....1208  
SCOLIOSIS SURGERY**

*Olivier Dionne, Kondo Claude Assi, Sebastien Grenier, Ecole Polytechnique de Montreal, Canada; Hubert Labelle, Sainte-Justine Hospital, Canada; Francois Guibault, Farida Cheriet, Ecole Polytechnique de Montreal, Canada*

**FR-PO.PA.9: PATIENT-SPECIFIC FINITE-ELEMENT SIMULATION OF RESPIRATORY .....1212  
MECHANICS FOR RADIOTHERAPY GUIDANCE, A FIRST EVALUATION STUDY**

*Bernhard Fuerst, Tommaso Mansi, Parmeshwar Khurd, Jingdan Zhang, Siemens Corporation, Corporate Research, United States; Jerome Declerck, Siemens Molecular Imaging, United Kingdom; Thomas Boettger, Siemens Radiation Oncology, Germany; Nassir Navab, Technische Universität München, Germany; John E Bayouth, Iowa University, United States; Ali Kamen, Siemens Corporation, Corporate Research, United States*

**FR-PO.PA.10: COMPARISON OF TWO TECHNIQUES OF ENDOVASCULAR COIL .....1216  
MODELING IN CEREBRAL ANEURYSMS USING CFD**

*Hernán G. Morales, Ignacio Larrabide, Martha L. Aguilar, Arjan J. Geers, Universitat Pompeu Fabra, Spain; Juan M. Macho, Luis San Roman, Hospital Clinic, Spain; Alejandro F. Frangi, Universitat Pompeu Fabra, Spain*

**FR-PO.PA.11: NAVIGATED BRONCHOSCOPY USING INTRAOPERATIVE .....1220  
FLUOROSCOPY AND PREOPERATIVE CT**

*Teena Steger, Martin Hoßbach, Fraunhofer Institute for Computer Graphics Research IGD, Germany*

**FR-PO.PA.12: SPATIALLY VARYING RIEMANNIAN ELASTICITY REGULARIZATION: .....1224  
APPLICATION TO THORACIC CT REGISTRATION IN IMAGE-GUIDED  
RADIOTHERAPY**

*Troels Bjerre, Mads Ockert Fogtmann, Technical University of Denmark, Denmark; Marianne Aznar, Per Munck af Rosenschöld, Lena Specht, Rigshospitalet, Copenhagen University, Denmark; Rasmus Larsen, Technical University of Denmark, Denmark*

**FR-PO.PB: TRACKING IN LIVE CELL MICROSCOPY B**

**FR-PO.PB.1: MONITORING CARDIOMYOCYTE MOTION IN REAL TIME .....1308  
THROUGH IMAGE REGISTRATION AND TIME SERIES ANALYSIS**

*Xiaofeng Liu, Satish Iyengar, Jens Rittscher, GE Global Research Center, United States*

**FR-PO.PB.2: SPATIO-TEMPORAL FILTERING WITH MORPHOLOGICAL OPERATORS .....1312  
FOR ROBUST CELL MIGRATION ESTIMATION IN "IN-VIVO" IMAGES**

*David Pastor-Escuredo, Miguel A. Luengo-Oroz, Universidad Politecnica de Madrid, Spain; Louise Duloquin, CNRS, France; Benoit Lombardot, Ecole Polytechnique, France; María Jesús Ledesma-Carbayo, Universidad Politecnica de Madrid, Spain; Paul Bourgine, Ecole Polytechnique, France; Nadine Peyriéras, CNRS, France; Andrés Santos, Universidad Politecnica de Madrid, Spain*

**FR-PO.PB.3: FAST TRACKING OF FLUORESCENT CELLS BASED ON THE .....1316  
CHAN-VESE MODEL**

*Martin Maška, Arrate Muñoz-Barrutia, Carlos Ortiz-de-Solórzano, University of Navarra, Spain*

## **FR-PO.PB: SINGLE MOLECULE AND ELECTRON MICROSCOPY A**

### **FR-PO.PB.2: EFFECT OF TIME DISCRETIZATION ON THE LIMIT OF THE ACCURACY OF PARAMETER ESTIMATION FOR MOVING SINGLE MOLECULES IMAGED BY FLUORESCENCE MICROSCOPY .....1228**

*Yau Wong, Zhiping Lin, Nanyang Technological University, Singapore; Raimund J. Ober, University of Texas at Dallas, United States*

### **FR-PO.PB.7: A PSF-BASED APPROACH TO BIPLANE CALIBRATION IN 3D SUPER-RESOLUTION MICROSCOPY .....1232**

*Hagai Kirshner, Thomas Pengo, Nicolas Olivier, Daniel Sage, Suliana Manley, Michael Unser, École Polytechnique Fédérale de Lausanne, Switzerland*

## **FR-PO.PB: IMAGE SEGMENTATION A**

### **FR-PO.PB.1: OUT-OF-ATLAS LABELING: A MULTI-ATLAS APPROACH TO CANCER SEGMENTATION .....1236**

*Andrew Asman, Bennett Landman, Vanderbilt University, United States*

### **FR-PO.PB.2: ADAPTIVE IMAGE SEGMENTATION BASED ON LOCAL NEIGHBORHOOD INFORMATION AND GAUSSIAN WEIGHTED CHI-SQUARE DISTANCE .....1240**

*Zhentai Lu, Qian Zheng, Wei Yang, Qianjin Feng, Wufan Chen, Southern Medical University, China*

### **FR-PO.PB.3: ANALYSIS OF ABDOMINAL FAT TISSUE IMAGES ACQUIRED WITH CONTINUOUSLY MOVING TABLE MRI .....1244**

*Stathis Hadjidemetriou, Ute Ludwig, Juergen Hennig, University Medical Center Freiburg, Germany; Martin Büchert, Magnetic Resonance Development and Application Center, Germany*

### **FR-PO.PB.4: VASCULAR NETWORK SEGMENTATION: AN UNSUPERVISED APPROACH .....1248**

*Xavier Descombes, INRIA, France; Franck Plouraboue, Abdelhakim El Boustani, IMFT, France; Caroline Fonta, CerCo, France; Geraldine Le Duc, ESRF, France; Raphael Serduc, INSERM, France; Timm Weitkamp, Soleil, France*

### **FR-PO.PB.5: IMAGE GRADIENT BASED SHAPE PRIOR FOR THE SEGMENTATION OF NOT THAT SPHERICAL STRUCTURES .....1252**

*Sebastian Steger, Georgios Sakas, Fraunhofer Institute for Computer Graphics Research IGD, Germany*

### **FR-PO.PB.6: ARTICULATED ATLAS FOR SEGMENTATION OF THE SKELETON FROM HEAD & NECK CT DATASETS .....1256**

*Sebastian Steger, Fraunhofer Institute for Computer Graphics Research IGD, Germany; Matthias Kirschner, Stefan Wesarg, Technische Universität Darmstadt, Germany*

### **FR-PO.PB.7: 3D RANDOM WALK BASED SEGMENTATION FOR LUNG TUMOR DELINEATION IN PET IMAGING .....1260**

*Dago Pacome Onoma, University of Rouen and University of Cocody, France; Su Ruan, University of Rouen, France; Isabelle Gardin, University of Rouen and Centre Henri Becquerel, France; Georges Alain Monnehan, University of Cocody, Cote d'Ivoire; Romain Modzelewski, Pierre Vera, University of Rouen and Centre Henri Becquerel, France*

|   |             |
|---|-------------|
| <b>FR-PO.PB.8: OPTIMAL ATLAS SELECTION USING IMAGE SIMILARITIES IN A TRAINED REGRESSION MODEL TO PREDICT PERFORMANCE</b>  | <b>1264</b> |
| <i>Akin Akinyemi, Costas Plakas, Jim Piper, Colin Roberts, Ian Poole, Toshiba Medical Visualization Systems, United Kingdom</i>   |             |
| <b>FR-PO.PB.9: DYNAMIC GRAPH CUTS FOR COLON SEGMENTATION IN FUNCTIONAL CINE-MRI</b>   | <b>1268</b> |
| <i>Mehmet Yigitsoy, Technische Universität München, Germany; Maximilian Reiser, Ludwig-Maximilians-Universität München, Germany; Nassir Navab, Technische Universität München, Germany; Sonja Kirchhoff, Ludwig-Maximilians-Universität München, Germany</i>  |             |
| <b>FR-PO.PB.10: FULLY AUTOMATIC SHAPE CONSTRAINED MANDIBLE SEGMENTATION FROM CONE-BEAM CT DATA</b>  | <b>1272</b> |
| <i>Sebastian T. Gollmer, Thorsten M. Buzug, University of Lübeck, Germany</i>   |             |
| <b>FR-PO.PB.11: EVALUATION OF ATLAS FUSION STRATEGIES FOR SEGMENTATION OF HEAD AND NECK LYMPH NODES FOR RADIOTHERAPY PLANNING</b>   | <b>1276</b> |
| <i>Subrahmanyam Gorthi, Meritxell Bach-Cuadra, École Polytechnique Fédérale de Lausanne, Switzerland; Ulrike Schick, University Hospital of Geneva, Switzerland; Pierre-Alain Tercier, Abdelkarim S. Allal, Fribourg Hospital, Switzerland; Jean-Philippe Thiran, École Polytechnique Fédérale de Lausanne, Switzerland</i> |             |
| <b>FR-PO.PB.12: MESENTERIC VASCULATURE-GUIDED SMALL BOWEL SEGMENTATION ON HIGH-RESOLUTION 3D CT ANGIOGRAPHY SCANS</b>   | <b>1280</b> |
| <i>Weidong Zhang, Jiamin Liu, Jianhua Yao, Tan Nguyen, Adeline Louie, Stephen Wank, National Institutes of Health, United States; Wieslaw Nowinski, Agency for Science, Technology &amp; Research (A*STAR), Singapore; Ronald Summers, National Institutes of Health, United States</i>                                     |             |
| <b>FR-PO.PB.13: MULTILEVEL STATISTICAL SHAPE MODELS: A NEW FRAMEWORK FOR MODELING HIERARCHICAL STRUCTURES</b>   | <b>1284</b> |
| <i>Fabian Lecron, University of Mons, Belgium; Jonathan Boisvert, Canada's National Research Council, Canada; Mohammed Benjelloun, University of Mons, Belgium; Hubert Labelle, Sainte-Justine Hospital, Canada; Saïd Mahmoudi, University of Mons, Belgium</i>   |             |
| <b>FR-PO.PB.14: VESSEL SEGMENTATION USING 3D ELASTICA REGULARIZATION</b>  | <b>1288</b> |
| <i>Noha El-Zehiry, Leo Grady, Siemens Corporate Research, United States</i>   |             |
| <br><b>FR-PO.PB: COMPUTATIONAL TECHNIQUES IN MICROSCOPY B</b>   |             |
| <b>FR-PO.PB.1: BLIND DECONVOLUTION WITH PSF REGULARIZATION FOR WIDE-FIELD MICROSCOPY</b>  | <b>1292</b> |
| <i>Margret Keuper, Maja Temerinac-Ott, University of Freiburg, Germany; Jan Padeken, Patrick Heun, Max-Planck Institute for Immunobiology, Germany; Thomas Brox, Hans Burkhardt, Olaf Ronneberger, University of Freiburg, Germany</i>  |             |

**FR-PO.PB.4: CALLIBRATION PROCEDURE AND CHARACTERIZATION OF A .....1296  
COMMERCIAL MULTIPHOTON MICROSCOPE TO MEASURE POLARIZATION  
SECOND HARMONIC GENERATION MICROSCOPY**

*Patricia Garcia-Canadilla, Iratxe Torre, Fetal and Perinatal Research Group, Departments of Maternal-Fetal Medicine and Neonatology, Institut Clinic de Ginecologia, Obstetrícia i Neonatologia, Hospital Clínic de Barcelona, IDIBAPS, Universitat de Barcelona, Centro de investigación Biomédica en Red de Enfermedades Raras, CIBER-ER, Instituto Salud Carlos III, Spain; Maria Calvo, Serveis Científic Tècnics, Facultat de Medicina, Universitat de Barcelona-IDIBAPS, Spain; Anna Gonzalez-Tendero, Eduard Gratacos, Fetal and Perinatal Research Group, Departments of Maternal-Fetal Medicine and Neonatology, Institut Clinic de Ginecologia, Obstetrícia i Neonatologia, Hospital Clínic de Barcelona, IDIBAPS, Universitat de Barcelona, Centro de investigación Biomédica en Red de Enfermedades Raras, CIBER-ER, Instituto Salud Carlos III, Spain; Ivan Amat-Roldan, TransMural Biotech, S.L. Fetal and Perinatal Research Group, Departments of Maternal-Fetal Medicine and Neonatology, Institut Clinic de Ginecologia, Obstetrícia i Neonatologia, Hospital Clínic de Barcelona, IDIBAPS, Universitat de Barcelona, Centro de investigación Biomédica en Red de Enfermedades Raras, CIBER-ER, Instituto Salud Carlos III, Spain*

**FR-PO.PB.5: A STATISTICAL FRAMEWORK FOR MATERIAL DECOMPOSITION .....1300  
USING MULTI-ENERGY PHOTON COUNTING X-RAY DETECTOR**

*Jiyoung Choi, Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea; Dong-Goo Kang, Sunghoon Kang, Younghun Sung, Samsung Electronics, Republic of Korea; Jong Chul Ye, Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea*

**FR-PO.PB.6: ANALYZING MULTI-TAG BIOIMAGES WITH BIOIMAX COLOCATION .....1304  
MINING TOOLS**

*Jan Koelling, Magnus Rathke, Dominic Gardner, Bielefeld University, Germany; Sylvie Abouna, Michael Khan, Biomedical Research Institute, United Kingdom; Tim W. Nattkemper, Bielefeld University, Germany*

**SA-AM1.01: CELLULAR TOMOGRAPHY (SS)**

**SA-AM1.01.1: DETECTING CORRELATIVE LIGHT AND ELECTRON MICROSCOPIC .....1320  
LABELS BY ELECTRON SPECTROSCOPIC IMAGING**

*Martin Pfannmöller, Ira V. Röder, Universität Heidelberg, Germany; Gerd Benner, Carl Zeiss NTS, Germany; York Stierhof, Universität Tübingen, Germany; Irene U. Wacker, Karlsruhe Institute of Technology, Germany; Rasmus R. Schröder, Universität Heidelberg, Germany*

**SA-AM1.01.2: A BAYESIAN VIEW ON CRYO-EM STRUCTURE DETERMINATION. ....1321**

*Sjors Scheres, MRC Laboratory of Molecular Biology, United Kingdom*

**SA-AM1.01.3: IMAGE PROCESSING FOR CELLULAR TOMOGRAPHY USING SOFT .....1322  
X-RAYS**

*Carlos Oscar S. Sorzano, Joaquín Otón, Jesús Cuenca, Airén Zaldivar-Pérez, National Center of Biotechnology (CSIC), Spain; Gabriel Caffarena, Javier Sánchez Jiménez, University San Pablo - CEU, Spain; Cédric Messaoudi, Sergio Marco, Institute Curie, France; Roberto Marabini, José María Carazo, National Center of Biotechnology (CSIC), Spain*

## **SA-AM1.02: ULTRASOUND**

### **SA-AM1.02.1: REGULARISED FEATURE-BASED FUZZY CONNECTEDNESS .....1323 SEGMENTATION OF ULTRASOUND IMAGES FOR FETAL SOFT TISSUE QUANTIFICATION ACROSS GESTATION**

*Sylvia Rueda, Caroline Knight, Aris T. Papageorghiou, J. Alison Noble, University of Oxford, United Kingdom*

### **SA-AM1.02.2: AUTOMATED BONE AND JOINT-REGION SEGMENTATION IN .....1327 VOLUMETRIC ULTRASOUND**

*Kedar Patwardhan, General Electric, United States; Kunlin Cao, University of Iowa, United States; David Mills, General Electric, United States; Ralf Thiele, University of Rochester, United States*

### **SA-AM1.02.3: EMPIRICAL BAYES ESTIMATOR FOR ENDOCARDIAL EDGE .....1331 DETECTION IN 3D+T ECHOCARDIOGRAPHY**

*Engin Dikici, Norwegian University of Science and Technology, Norway; Fredrik Orderud, GE Vingmed Ultrasound, Norway; Bo Henry Lindqvist, Norwegian University of Science and Technology, Norway*

### **SA-AM1.02.4: IMPROVED NAKAGAMI IMAGING USING A COMBINED ESTIMATOR .....1335**

*Aymeric Larrue, J. Alison Noble, University of Oxford, United Kingdom*

## **SA-AM1.03: IMAGE REGISTRATION II**

### **SA-AM1.03.1: DIRBOOST: AN ALGORITHM FOR BOOSTING DEFORMABLE IMAGE .....1339 REGISTRATION**

*Sascha Muenzing, Universtiy Medical Center Utrecht, Netherlands; Bram van Ginneken, Radboud University Nijmegen Medical Center, Netherlands; Josien Pluim, Universtiy Medical Center Utrecht, Netherlands*

### **SA-AM1.03.2: 3D/2D IMAGE REGISTRATION BY NONLINEAR REGRESSION.....1343**

*Ana R. Gouveia, University of Beira Interior/University of Lisbon, Portugal; Coert Metz, Erasmus Medical Center, Netherlands; Luis Freire, Instituto Politécnico de Lisboa, Portugal; Stefan Klein, Erasmus Medical Center, Netherlands*

### **SA-AM1.03.3: DEFORMABLE REGISTRATION OF MR IMAGES USING A .....1347 HIERARCHICAL PATCH BASED APPROACH WITH A NORMALIZED METRIC QUALITY MEASURE**

*Marius Erdt, Sebastian Steger, Fraunhofer IGD, Germany; Stefan Wesarg, Technische Universität Darmstadt, Germany*

### **SA-AM1.03.4: PIECEWISE-DIFFEOMORPHIC REGISTRATION OF 3D CT/MR .....1351 PULMONARY IMAGES WITH SLIDING CONDITIONS**

*Laurent Risser, Mattias P. Heinrich, University of Oxford, United Kingdom; Tahreema Matin, Churchill Hospital, United Kingdom; Julia A. Schnabel, University of Oxford, United Kingdom*

### **SA-AM1.03.5: SPEEDING-UP IMAGE REGISTRATION FOR REPETITIVE MOTION .....1355 SCENARIOS**

*Valeria de Luca, Christine Tanner, Gábor Székely, ETH Zurich, Switzerland*



## **SA-AM1.04: IMAGE-BASED PHYSIOLOGICAL / BIOLOGICAL MODELING AND SIMULATION (SS)**

### **SA-AM1.04.1: IN-SILICO ORGANOGENESIS: IMAGE-DRIVEN MODELING OF LIMB .....1359 DEVELOPMENT.**

*James Sharpe, CRG, Spain*

### **SA-AM1.04.2: UNSUPERVISED SEGMENTATION AND PERSONALISED FE .....1360 MODELLING OF IN VIVO HUMAN MYOCARDIAL MECHANICS BASED ON AN MRI ATLAS**

*Vicky Y. Wang, University of Auckland, New Zealand; Corne Hoogendoorn, Gerhard Engelbrecht, Universitat Pompeu Fabra, Spain; Alex Frangi, University of Sheffield, United Kingdom; Alistair A. Young, Peter Hunter, Martyn P. Nash, University of Auckland, New Zealand*

### **SA-AM1.04.3: SUBJECT SPECIFIC, IMAGE BASED ANALYSIS AND MODELING IN .....1364 PATIENTS WITH ATRIAL FIBRILLATION FROM MRI**

*Rob MacLeod, Josh Blauer, Ravi Ranjan, University of Utah, United States; Natalia Trayanova, Kathleen McDowell, Johns Hopkins University, United States; Gernot Plank, Medical University of Graz, Austria*

### **SA-AM1.04.4: SPATIAL REDISTRIBUTION OF PERFUSION AND GAS EXCHANGE IN .....1365 PATIENT-SPECIFIC MODELS OF PULMONARY EMBOLISM**

*Merryn Tawhai, Alys Clark, University of Auckland, New Zealand; Margaret Wilsher, David Milne, Auckland City Hospital, New Zealand; Karthikeya Subramaniam, University of Auckland, New Zealand; Kelly Burrowes, University of Oxford, United Kingdom*

## **SA-AM2.01: ELECTRON MICROSCOPY**

### **SA-AM2.01.1: AUTOMATIC NON-PARAMETRIC CAPSID SEGMENTATION USING .....1369 WAVELETS TRANSFORM AND GRAPH**

*Florian Levet, INSERM, France; Aurélie Cassany, Michael Kann, Université Bordeaux 2, France; Jean-Baptiste Sibarita, CNRS, France*

### **SA-AM2.01.2: DETECTION AND IDENTIFICATION OF MACROMOLECULAR .....1373 COMPLEXES IN CRYO-ELECTRON TOMOGRAMS USING SUPPORT VECTOR MACHINES**

*Yuxiang Chen, Thomas Hrabe, Stefan Pfeffer, Max Planck Institute of Biochemistry, Germany; Olivier Pauly, Diana Mateus, Nassir Navab, Technische Universität München, Germany; Friedrich Förster, Max Planck Institute of Biochemistry, Germany*

### **SA-AM2.01.3: HIDDEN MARKOV MODELS FOR TRACKING NEURONAL .....1377 STRUCTURE CONTOURS IN ELECTRON MICROGRAPH STACKS**

*Min-Chi Shih, Kenneth Rose, University of California at Santa Barbara, United States*

### **SA-AM2.01.4: STRUCTURAL CHARACTERIZATION OF ELECTROSPUN SCAFFOLDS .....1381 BY IMAGE ANALYSIS TECHNIQUES**

*Elham Vatankhah, Dariush Semnani, Isfahan University of Technology, Iran; Mahdi Tadayon, Behrad Consulting Engineers Company, Iran*

**SA-AM2.01.5: DETECTION OF 3D FILAMENTOUS NETWORKS FROM .....1385  
TOMOGRAPHIC ELECTRON MICROSCOPY**

*Leandro Loss, Hang Chang, Lawrence Berkeley National Laboratory, United States; Purbasha Sarkar, Manfred Auer, Energy Biosciences Institute, United States; Bahram Parvin, Lawrence Berkeley National Laboratory, United States*

**SA-AM2.02: DIFFUSION IMAGING II**

**SA-AM2.02.1: GROUP ACTION INDUCED AVERAGING FOR HARDI PROCESSING .....1389**

*Hasan Cetingul, Siemens Corporate Research & Technology, United States; Bijan Afsari, Johns Hopkins University, United States; Margaret J. Wright, Queensland Institute of Medical Research, Australia; Paul M. Thompson, University of California at Los Angeles, United States; Rene Vidal, Johns Hopkins University, United States*

**SA-AM2.02.2: ADAPTIVE CUTS FOR EXTRACTING SPECIFIC WHITE MATTER .....1393  
TRACTS**

*Nagesh Adluru, Vikas Singh, Andrew Alexander, University of Wisconsin - Madison, United States*

**SA-AM2.02.3: LONGITUDINAL GROWTH MODELING OF DISCRETE-TIME .....1397  
FUNCTIONS WITH APPLICATION TO DTI TRACT EVOLUTION IN EARLY  
NEURODEVELOPMENT**

*Anuja Sharma, University of Utah, United States; Stanley Durrleman, INRIA, France; John H. Gilmore, The University of North Carolina at Chapel Hill, United States; Guido Gerig, University of Utah, United States*

**SA-AM2.02.4: DENOISING DIFFUSION-WEIGHTED MR MAGNITUDE IMAGE .....1401  
SEQUENCES USING LOW RANK AND EDGE CONSTRAINTS**

*Fan Lam, S. Derin Babacan, University of Illinois at Urbana-Champaign, United States; Justin P. Haldar, Signal and Image Processing Institute and the Brain and Creativity Institute, University of Southern California, United States; Norbert Schuff, Department of Radiology and Biomedical Imaging, University of California and VA Medical Center, San Francisco, United States; Zhi-Pei Liang, University of Illinois at Urbana-Champaign, United States*

**SA-AM2.02.5: SMALL WORLD NETWORK MEASURES PREDICT WHITE MATTER .....1405  
DEGENERATION IN PATIENTS WITH EARLY-STAGE MILD COGNITIVE  
IMPAIRMENT**

*Talia M. Nir, Neda Jahanshad, University of California at Los Angeles School of Medicine, United States; Clifford R. Jack, Mayo Clinic and Foundation, United States; Michael W. Weiner, UCSF School of Medicine, United States; Arthur W. Toga, Paul M. Thompson, University of California at Los Angeles School of Medicine, United States*

**SA-AM2.03: IMAGE SEGMENTATION II**

**SA-AM2.03.1: FAST INTERACTIVE MULTI-REGION CARDIAC SEGMENTATION WITH .....1409  
LINEARLY ORDERED LABELS**

*Martin Rajchl, Jing Yuan, Eranga Ukwatta, Terry Peters, Robarts Research Institute, Canada*

**SA-AM2.03.2: LEARNING LOCAL VESSEL APPEARANCE MODELS USING .....1413  
STRUCTURED SPARSITY**

*Vimal Singh, Ahmed Tewfik, The University of Texas at Austin, United States*

**SA-AM2.03.3: VESSEL CENTERLINE TRACKING AND BOUNDARY SEGMENTATION .....1417  
IN CORONARY MRA WITH MINIMAL MANUAL INTERACTION**

*Sahar Soleimanifard, Johns Hopkins University, United States; Michael Schär, Philips Healthcare, United States; Allison G. Hays, Robert G. Weiss, Matthias Stuber, Jerry L. Prince, Johns Hopkins University, United States*

**SA-AM2.03.4: PRECISE SEGMENTATION OF THE LEFT ATRIUM IN C-ARM CT .....1421  
VOLUMES WITH APPLICATIONS TO ATRIAL FIBRILLATION ABLATION**

*Yefeng Zheng, Siemens Corporate Research, United States; Matthias John, Jan Boese, Siemens AG, Germany; Dorin Comaniciu, Siemens Corporate Research, United States*

**SA-AM2.03.5: 3D CARDIAC SEGMENTATION WITH POSE-INVARIANT HIGHER-ORDER ....1425  
MRFS**

*Bo Xiang, Chaohui Wang, Ecole Centrale de Paris, France; Jean-Francois Deux, Alain Rahmouni, Henri Mondor Hospital, France; Nikos Paragios, Ecole Centrale de Paris, France*

**SA-AM2.04: IMAGE-BASED COMPUTATIONAL CARDIAC PHYSIOLOGY (SS)**

**SA-AM2.04.1: INTEGRATION OF DIFFERENT CARDIAC ELECTROPHYSIOLOGICAL .....1429  
MODELS INTO A SINGLE SIMULATION PIPELINE**

*Oscar Camara, Universitat Pompeu Fabra, Spain; Maxime Sermesant, INRIA, France; Pablo Lamata, University of Oxford, United Kingdom; Linwei Wang, Rochester Institute of Technology, United States; Mihaela Pop, University of Toronto, Canada; Jatin Relan, INRIA, France; Mathieu de Craene, Universitat Pompeu Fabra, Spain; Hervé Delingette, INRIA, France; Steven Niederer, King's College London, United Kingdom; Ali Pashaei, Universitat Pompeu Fabra, Spain; Gernot Plank, Medical University of Graz, Austria; Daniel Romero, Universitat Pompeu Fabra, Spain; Rafael Sebastian, Universitat de Valencia, Spain; Ken Wong, INRIA, France; Heye Zhang, Chinese University of Hong Kong, China; Nicholas Ayache, INRIA, France; Alejandro F. Frangi, Universitat Pompeu Fabra, Spain; Pengcheng Shi, Rochester Institute of Technology, United States; Nic Smith, King's College London, United Kingdom; Graham Wright, University of Toronto, Canada*

**SA-AM2.04.2: TOWARDS INTEGRATED NONINVASIVE PERSONALIZATION OF .....1430  
CARDIAC ELECTROMECHANICS**

*Hongda Mao, Linwei Wang, Ken C.L. Wong, Rochester Institute of Technology, United States; Huafeng Liu, Zhejiang University, United States; Pengcheng Shi, Rochester Institute of Technology, United States*

**SA-AM2.04.3: DATA-DRIVEN COMPUTATIONAL MODELS OF HEART ANATOMY, .....1434  
MECHANICS AND HEMODYNAMICS: AN INTEGRATED FRAMEWORK**

*Tommaso Mansi, Viorel Mihalef, Puneet Sharma, Bogdan Georgescu, Xudong Zheng, Saikiran Rapaka, Ali Kamen, Siemens Corporation, Corporate Research and Technology, United States; Derliz Mereles, Henning Steen, Benjamin Meder, Hugo Katus, University Hospital Heidelberg, Germany; Dorin Comaniciu, Siemens Corporation, Corporate Research and Technology, United States*

**SA-AM2.04.4: CLINICAL APPLICATIONS OF IMAGE FUSION FOR .....1435  
ELECTROPHYSIOLOGY PROCEDURES**

*Kawal Rhode, Yingliang Ma, James Housden, Rashed Karim, Aldo Rinaldi, Michael Cooklin, Jaswinder Gill, Mark O'Neill, Tobias Schaeffter, King's College London, United Kingdom; Jatin Relan, Maxime Sermesant, Hervé Delingette, Nicholas Ayache, INRIA, France; Martin Kruger, Walther Schulze, Gunnar Seemann, Olaf Doessel, Karlsruhe Institute of Technology, Germany; Reza Razavi, King's College London, United Kingdom*

## **SA-PO.PA: BRAIN IMAGING B**

### **SA-PO.PA.1: SUPER RESOLUTION OF 3D MRI IMAGES USING A BIVARIATE .....1499 LAPLACIAN MIXTURE MODEL CONSTRAINT**

*Rafiqul Islam, Andrew J. Lambert, Mark R. Pickering, The University of New South Wales at the Australian Defence Force Academy, Australia*

### **SA-PO.PA.2: DISCOVERING ASSOCIATIONS IN HIGH DIMENSIONAL .....1503 IMAGING-GENETICS DATA: A COMPARISON STUDY OF DIMENSION REDUCTION AND REGULARISATION STRATEGIES COMBINED WITH PARTIAL LEAST SQUARES**

*Edith Le Floch, CEA, France; Philippe Pinel, INSERM, France; Arthur Tenenhaus, Supélec, France; Laura Trinchera, AgroParisTech, France; Jean-Baptiste Poline, Vincent Frouin, Edouard Duchesnay, CEA, France*

### **SA-PO.PA.3: STATISTICAL GROWTH MODELING OF LONGITUDINAL DT-MRI FOR .....1507 REGIONAL CHARACTERIZATION OF EARLY BRAIN DEVELOPMENT**

*Neda Sadeghi, Marcel Prastawa, P. Thomas Fletcher, University of Utah, United States; John H. Gilmore, The University of North Carolina at Chapel Hill, United States; Weili Lin, University of North Carolina, United States; Guido Gerig, University of Utah, United States*

### **SA-PO.PA.4: WHOLE BRAIN GROUP NETWORK ANALYSIS USING NETWORK BIAS .....1511 AND VARIANCE PARAMETERS**

*Alireza Akhondi-Asl, Arne Hans, Benoît Scherrer, Jurriaan M. Peters, Simon K. Warfield, Harvard Medical School, United States*

### **SA-PO.PA.5: COMBINING REGIONAL METRICS FOR DISEASE-RELATED BRAIN .....1515 POPULATION ANALYSIS**

*Dong Hye Ye, University of Pennsylvania, United States; Jihun Hamm, The Ohio State University, United States; Kilian M. Pohl, University of Pennsylvania, United States*

### **SA-PO.PA.6: ANISOTROPIC LMMSE DENOISING OF MRI BASED ON STATISTICAL .....1519 TISSUE MODELS**

*Gonzalo Vegas-Sánchez-Ferrero, Antonio Tristán-Vega, Santiago Aja-Fernández, Marcos Martín-Fernández, LPI - Universidad de Valladolid, Spain; César Palencia, Universidad de Valladolid, Spain; Rachid Deriche, INRIA Sophia Antipolis, France*

### **SA-PO.PA.7: CLASSIFICATION OF ALZHEIMER'S DISEASE PATIENTS AND CONTROLS ....1523 WITH GAUSSIAN PROCESSES**

*Jonathan Young, Marc Modat, Jorge Cardoso, John Ashburner, Sebastien Ourselin, University College London, United Kingdom*

### **SA-PO.PA.8: FAST SURFACE-BASED MEASUREMENTS USING FIRST .....1527 EIGENFUNCTION OF THE LAPLACE-BELTRAMI OPERATOR: INTEREST FOR SULCAL DESCRIPTION**

*Julien Lefèvre, Aix-Marseille Univ, France; David Germanaud, Clara Fischer, CEA, France; Roberto Toro, Institut Pasteur, France; Denis Rivière, CEA, France; Olivier Coulon, Aix-Marseille Univ, France*

### **SA-PO.PA.9: MODULATION OF SCALE-FREE PROPERTIES OF BRAIN ACTIVITY IN .....1531 MEG**

*Nicolas Zilber, Philippe Ciuciu, CEA/NeuroSpin, France; Patrice Abry, ENS Lyon & CNRS, France; Virginie van Wassenhove, CEA/NeuroSpin & INSERM U992, France*

**SA-PO.PA.10: LANDMARK LOCALISATION IN BRAIN MR IMAGES USING FEATURE .....1535  
POINT DESCRIPTORS BASED ON 3D LOCAL SELF-SIMILARITIES**

*Ricardo Guerrero, Luis Pizarro, Robin Wolz, Daniel Rueckert, Imperial College London, United Kingdom*

**SA-PO.PA.11: A MARGINALISED MARKOV CHAIN MONTE CARLO APPROACH FOR .....1539  
MODEL BASED ANALYSIS OF EEG DATA**

*Imali Hettiarachchi, Shady Mohamed, Saeid Nahavandi, Deakin University, Australia*

**SA-PO.PA.12: POPULATION INTENSITY OUTLIERS OR A NEW MODEL FOR BRAIN .....1543  
WM ABNORMALITIES**

*Xavier Tomas-Fernandez, Simon K. Warfield, Childrens' Hospital Boston, United States*

**SA-PO.PA.13: PHASE SYNCHRONY IN MULTIVARIATE GAUSSIAN DATA WITH .....1547  
APPLICATIONS TO CORTICAL NETWORKS**

*Sergul Aydore, University of Southern California, United States; Dimitrios Pantazis, Massachusetts Institute of Technology, United States; Richard M. Leahy, University of Southern California, United States*

**SA-PO.PA.14: ROBUST IDENTIFICATION OF PARTIAL-CORRELATION BASED .....1551  
NETWORKS WITH APPLICATIONS TO CORTICAL THICKNESS DATA**

*David Wheland, Anand Joshi, University of Southern California, United States; Katie L. McMahon, Narelle K. Hansell, Nicholas G. Martin, Margaret J. Wright, University of Queensland, Australia; Paul M. Thompson, David Shattuck, University of California at Los Angeles School of Medicine, United States; Richard M. Leahy, University of Southern California, United States*

**SA-PO.PA: ULTRASOUND B**

**SA-PO.PA.1: AUTOMATIC DETECTION OF LOCAL FETAL BRAIN STRUCTURES IN .....1555  
ULTRASOUND IMAGES**

*M Yaqub, Institute of Biomedical Engineering, United Kingdom; Raffaele Napolitano, Christos Ioannou, Aris T. Papageorghiou, Nuffield Department of Obstetrics and Gynaecology, United Kingdom; Julia Noble, Institute of Biomedical Engineering, United Kingdom*

**SA-PO.PA.2: KIDNEY DETECTION AND REAL-TIME SEGMENTATION IN 3D .....1559  
CONTRAST-ENHANCED ULTRASOUND IMAGES**

*Raphael Prevost, Benoit Mory, Philips Research, France; Jean-Michel Correas, Hopital Necker, France; Laurent D. Cohen, Université Paris Dauphine, France; Roberto Ardon, Philips Research, France*

**SA-PO.PA.3: CONSISTENT ASSOCIATION BETWEEN IMAGE FEATURES OF FETAL .....1563  
LUNGS FROM DIFFERENT ULTRASOUND EQUIPMENTS AND FETAL LUNG  
MATURITY FROM AMNIOCENTESIS**

*Elisenda Bonet-Carne, TransMural Biotech, S.L., Spain; Teresa Cobo, Institut Clinic of Gynecology, Obstetrics and Neonatology, Hospital Clinic-IDIBAPS, Spain; Jordi Luque, TransMural Biotech, S.L., Spain; Mónica Martínez-Terrón, Institut Clinic of Gynecology, Obstetrics and Neonatology, Hospital Clinic-IDIBAPS, Spain; Alvaro Perez-Moreno, TransMural Biotech, S.L., Spain; Montse Palacio, Eduard Gratacos, Institut Clinic of Gynecology, Obstetrics and Neonatology, Hospital Clinic-IDIBAPS-CIBERER, Spain; Ivan Amat-Roldan, TransMural Biotech, S.L., Spain*

**SA-PO.PA.4: MODEL-BASED FLOW QUANTIFICATION USING CONDITIONAL .....1567  
RANDOM FIELDS WITH GLOBAL PREFERENCES**

*Yang Wang, Bogdan Georgescu, Siemens Corporate Research, United States; Saurabh Datta, Siemens Ultrasound, United States; Shizhen Liu, Paaladinesh Thavendiranathan, Mani Vannan, The Ohio State University Medical Center, United States*

|   |                  |
|---|------------------|
| <b>SA-PO.PA.5: AUTOMATED 3-D INTRAOCULAR ULTRASOUND DETECTION OF ELEVATED INTRACRANIAL PRESSURE</b>   | <b>.....1571</b> |
| <i>Yaoqi Zhang, W. Clem Karl, Boston University, United States; Gwendolyn van Der Wilden, Peter Fagenholz, Javier Romero, Vicki Noble, Homer Pien, Massachusetts General Hospital, United States</i>  |                  |
| <b>SA-PO.PA.6: 3D RECONSTRUCTION OF WAVE-PROPAGATED POINT SOURCES FROM BOUNDARY MEASUREMENTS USING JOINT SPARSITY AND FINITE RATE OF INNOVATION</b>   | <b>.....1575</b> |
| <i>Zafer Dogan, Ivana Jovanovic, École Polytechnique Fédérale de Lausanne, Switzerland; Thierry Blu, The Chinese University of Hong Kong, Hong Kong SAR of China; Dimitri van de Ville, École Polytechnique Fédérale de Lausanne, Switzerland</i> |                  |
| <b>SA-PO.PA.7: A DUAL ALGORITHM FOR L1-REGULARIZED RECONSTRUCTION OF VECTOR FIELDS</b>  | <b>.....1579</b> |
| <i>Emrah Bostan, Pouya Dehgani Tafti, Michael Unser, École Polytechnique Fédérale de Lausanne, Switzerland</i>  |                  |
| <b>SA-PO.PA.8: A LOGNORMAL MULTIPLICATIVE CASCADE MODEL FOR MULTIFRACTAL CHARACTERIZATION OF SKIN ULTRASOUND IMAGES</b>   | <b>.....1583</b> |
| <i>Meriem Djeddi, Zehor Ouksili, Hadj Batatia, University of Toulouse / IRIT - INPT, France</i>   |                  |
| <b>SA-PO.PA.9: LEARNING-BASED AUTOMATIC BREAST TUMOR DETECTION AND SEGMENTATION IN ULTRASOUND IMAGES</b>  | <b>.....1587</b> |
| <i>Peng Jiang, Jingliang Peng, Shandong University, China; Guoquan Zhang, Shandong Provincial Hospital Affiliated to Shandong University, China; Erkang Cheng, Vasileios Megalooikonomou, Haibin Ling, Temple University, United States</i>       |                  |
| <b>SA-PO.PA.10: 3D TRANSLATION ESTIMATION USING THE MONOGENIC ORIENTATION VECTOR</b>  | <b>.....1591</b> |
| <i>Remi Abbal, Adrian Basarab, Denis Kouame, Université de Toulouse, France</i>   |                  |
| <b>SA-PO.PA.11: ALTERNATING DIRECTION METHOD OF MULTIPLIERS FRAMEWORK FOR SUPER-RESOLUTION IN ULTRASOUND IMAGING</b>  | <b>.....1595</b> |
| <i>Renaud Morin, Adrian Basarab, Denis Kouame, University of Toulouse, France</i>   |                  |
| <b>SA-PO.PA.12: MULTISCALE EDGE DETECTION AND GRADIENT VECTOR FLOW SNAKES FOR AUTOMATED IDENTIFICATION OF THE CAROTID ARTERY WALL IN LONGITUDINAL B-MODE ULTRASOUND IMAGES</b>  | <b>.....1599</b> |
| <i>Aikaterini Matsakou, Nikolaos Tsiaparas, National Technical University of Athens, Greece; Spyretta Golemati, National and Kapodistrian University of Athens, Greece; Konstantina Nikita, National Technical University of Athens, Greece</i>   |                  |
| <br><b>SA-PO.PA: LUNG AND MUSCULOSKELETAL IMAGING</b>   |                  |
| <b>SA-PO.PA.1: LOCATION CLASSIFICATION OF LUNG NODULES WITH OPTIMIZED GRAPH CONSTRUCTION</b>  | <b>.....1439</b> |
| <i>Yang Song, Weidong Cai, University of Sydney, Australia; Yue Wang, Virginia Polytechnic Institute and State University, United States; David Dagan Feng, University of Sydney, Australia</i>   |                  |

|  |             |
|--|-------------|
| <b>SA-PO.PA.2: RECONSTRUCTION OF BONE MICROSTRUCTURE FROM FEW PROJECTIONS WITH CONVEX-CONCAVE AND NON LOCAL REGULARIZATION</b>   | <b>1443</b> |
| <i>Bruno Sixou, CREATIS, CNRS UMR5220; Inserm U630; INSA-Lyon; Universite Lyon 1, France; Françoise Peyrin, CREATIS, CNRS UMR5220; Inserm U630; INSA-Lyon; Universite Lyon 1; European Synchrotron Radiation Facility, France</i>  |             |
| <b>SA-PO.PA.3: CHARACTERIZATION OF EMPHYSEMA IN LOW DOSE COMPUTED TOMOGRAPHY IMAGES USING MAXIMUM LIKELIHOOD ESTIMATION OF THE SCALE EXPONENT</b>  | <b>1447</b> |
| <i>Mario Ceresa, Arrate Muñoz-Barrutia, Carlos Ortiz-de-Solórzano, Center for Applied Medical Research, University of Navarra, Spain</i>   |             |
| <b>SA-PO.PA.4: FEMORAL STRENGTH PREDICTION USING A 3D RECONSTRUCTION METHOD FROM DUAL-ENERGY X-RAY ABSORPTIOMETRY</b>  | <b>1451</b> |
| <i>Ludovic Humbert, Tristan Whitmarsh, Universitat Pompeu Fabra, Spain; Karl Fritscher, UMIT, Austria; Luis Miguel del Río Barquero, CETIR, Spain; Felix Eckstein, Paracelsus Medical University, Austria; Thomas Link, University of California at San Francisco, United States; Rainer Schubert, UMIT, Austria; Alejandro F. Frangi, Universitat Pompeu Fabra, Spain</i> |             |
| <b>SA-PO.PA.5: AUTOMATIC DETECTION AND SEGMENTATION OF ABDOMINOPELVIC LYMPH NODES ON COMPUTED TOMOGRAPHY SCANS</b>   | <b>1455</b> |
| <i>Jiamin Liu, Chin-Hsiang Feng, Jeremy Hua, Jianhua Yao, Jacob White, Ronald Summers, National Institutes of Health, United States</i>  |             |
| <b>SA-PO.PA.6: AUTOMATIC QUANTIFICATION OF TREE-IN-BUD PATTERNS FROM CT SCANS</b>  | <b>1459</b> |
| <i>Ulas Bagci, Kirsten Miller-Jaster, Jianhua Yao, Albert Wu, National Institutes of Health, United States; Jesus Caban, Naval Medical Center, United States; Kenneth Olivier, Omer Aras, Daniel Mollura, National Institutes of Health, United States</i>   |             |
| <b>SA-PO.PA.7: EARLY ASSESSMENT OF MALIGNANT LUNG NODULES BASED ON THE SPATIAL ANALYSIS OF DETECTED LUNG NODULES</b>   | <b>1463</b> |
| <i>Ayman El-Baz, University of Louisville, United States; Ahmed Soliman, Patrick McClure, BioImaging Lab., University of Louisville, United States; Georgy Gimel'farb, University of Auckland, New Zealand; Mohamed Abo El-Ghar, University of Mansoura, Egypt; Robert Falk, Jewish Hospital, United States</i>  |             |
| <b>SA-PO.PA.8: AUTOMATIC AIRWAY ANALYSIS FOR GENOME-WIDE ASSOCIATION STUDIES IN COPD</b>   | <b>1467</b> |
| <i>Raúl San José Estépar, James C. Ross, Brigham and Women's Hospital, United States; Gordon Kindlmann, University of Chicago, United States; Alejandro A. Díaz, Yuka Okajima, Ron Kikinis, Carl-Fredrik Westin, Edwin Silverman, George R. Washko, Brigham and Women's Hospital, United States</i>  |             |
| <b>SA-PO.PA.9: TEXTURAL MUTUAL INFORMATION BASED ON CLUSTER TREES FOR MULTIMODAL DEFORMABLE REGISTRATION</b>   | <b>1471</b> |
| <i>Mattias P. Heinrich, Mark Jenkinson, Michael Brady, Julia A. Schnabel, University of Oxford, United Kingdom</i>   |             |
| <b>SA-PO.PA.10: REGIONAL LUNG STRAINS VIA A VOLUMETRIC MASS CONSERVING OPTICAL FLOW MODEL</b>  | <b>1475</b> |
| <i>Mohammadreza Negahdar, Amir Amini, University of Louisville, United States</i>  |             |

**SA-PO.PA.11: COMPUTATIONAL VASCULAR MORPHOMETRY FOR THE .....1479  
ASSESSMENT OF PULMONARY VASCULAR DISEASE BASED ON SCALE-SPACE  
PARTICLES**

*Raúl San José Estépar, James C. Ross, Brigham and Women's Hospital, United States; Karl Krissian, University of Las Palmas de Gran Canaria, Spain; Thomas Schultz, Max-Planck-Institute for Intelligent Systems, Germany; George R. Washko, Brigham and Women's Hospital, United States; Gordon Kindlmann, University of Chicago, United States*

**SA-PO.PA.12: A SEMIAUTOMATIC SEGMENTATION METHOD, SOLID TISSUE .....1483  
CLASSIFICATION AND 3D RECONSTRUCTION OF MANDIBLE FROM  
COMPUTED TOMOGRAPHY IMAGING FOR BIOMECHANICAL ANALYSIS**

*Andrés Gamboa, Alejandro Cosa, Universitat Politècnica de València, Spain; Francisco Benet, Universidad Rey Juan Carlos, Spain; Estanislao Arana, Fundación Instituto Valenciano de Oncología, Spain; David Moratal, Universitat Politècnica de València, Spain*

**SA-PO.PA.13: TEXTURE ANALYSIS USING DUAL TREE M-BAND AND RENYI .....1487  
ENTROPY. APPLICATION TO OSTEOPOROSIS DIAGNOSIS ON BONE  
RADIOGRAPHS**

*Ahmed Salmi El Hassani, University of Mohammed V -Agdal-, Morocco; Mohammed El Hassouni, University Mohammed V -Agdal-, Morocco; Lotfi Houam, University of Orleans, France; Mohammed Rziza, University Mohammed V -Agdal-, Morocco; Eric Lespessailles, Hospital of Orleans, France; Rachid Jennane, University of Orleans, France*

**SA-PO.PA.14: PULMONARY LOBE SEGMENTATION FROM CT IMAGES USING .....1491  
FISSURENESS, AIRWAYS, VESSELS AND MULTILEVEL B-SPLINES**

*Tom Doel, University of Oxford, United Kingdom; Tahreema Matin, Ferguson V. Gleeson, Churchill Hospital, United Kingdom; David J. Gavaghan, Vicente Grau, University of Oxford, United Kingdom*

**SA-PO.PA.15: PRECISION ANALYSIS OF AN INTELLIGENT SKIN MARKER FOR .....1495  
NON-INVASIVE KINEMATIC ANALYSIS OF KNEE JOINTS**

*Md. Abdullah Masum, Andrew J. Lambert, Mark Pickering, The University of New South Wales, Australia; Jennie Scarvell, The University of Canberra, Australia; Paul Smith, The Canberra Hospital, Australia*

**SA-PO.PB: SINGLE MOLECULE AND ELECTRON MICROSCOPY B**

**SA-PO.PB.4: A GENERIC MODEL FOR RIDGES: A NEW FRAMEWORK TO .....1675  
CHARACTERISE BIOLOGICAL PLANAR STRUCTURES**

*Antonio Martinez-Sanchez, University of Almeria, Spain; Inmaculada Garcia, University of Malaga, Spain; Jose-Jesus Fernandez, National Centre of Biotechnology, Spain*

**SA-PO.PB.5: A NEW FRAMEWORK FOR MORPHOLOGICAL AND MORPHOMETRIC .....1679  
STUDY OF FISH SPECIES BASED ON GROUPWISE REGISTRATION OF OTOLITH  
IMAGES**

*Abouzar Eslami, Technical University of Munich, Germany; Azad Teimori, Ludwig-Maximilians-University, Germany; Mehmet Yigitsoy, Nassir Navab, Technical University of Munich, Germany*

**SA-PO.PB: MEDICAL AND BIOLOGICAL APPLICATIONS OF MICROSCOPY B**

**SA-PO.PB.1: DETECTION OF PATHOLOGICAL CONDITION IN DISTAL LUNG .....1603  
IMAGES**

*David Hébert, Chesner Désir, Caroline Petitjean, Laurent Heutte, Luc Thiberville, Université de Rouen, France*



**SA-PO.PB.2: PROGNOSIS OF STAGE I LUNG CANCER PATIENTS THROUGH QUANTITATIVE ANALYSIS OF CENTROSOMAL FEATURES .....1607**

*Dansheng Song, Tatyana Zhukov, H. Lee Moffitt Cancer Center & Research Institute, United States; Olga Markov, Life Sciences Advanced Technologies, Inc., United States; Wei Qian, The University of Texas at El Paso, United States; Melvyn Tockman, H. Lee Moffitt Cancer Center & Research Institute, United States*

**SA-PO.PB.3: ICA-GUIDED DELINEATION OF BREAST CANCER PATHOLOGY .....1611**

*Alma Eguizabal, University of Cantabria, Spain; Ashley M. Laughney, Dartmouth College, United States; Pilar B Garcia-Allende, Institute for Biological and Medical Imaging, Helmholtz Zentrum München, Germany; Venkataramanan Krishnaswamy, Dartmouth College, United States; Wendy A. Wells, Dartmouth-Hitchcock Medical Center, United States; Keith D Paulsen, Brian W. Pogue, Dartmouth College, United States; Jose M Lopez-Higuera, Olga M Conde, University of Cantabria, Spain*

**SA-PO.PB.4: TEXTURAL ANALYSIS OF OPTICAL SCATTERING FOR IDENTIFICATION OF CANCER IN BREAST SURGICAL SPECIMENS .....1615**

*Alma Eguizabal, University of Cantabria, Spain; Ashley M. Laughney, Dartmouth College, United States; Pilar B Garcia-Allende, Institute for Biological and Medical Imaging, Helmholtz Zentrum München, Germany; Venkataramanan Krishnaswamy, Dartmouth College, United States; Wendy A. Wells, Dartmouth-Hitchcock Medical Center, United States; Keith D Paulsen, Brian W. Pogue, Dartmouth College, United States; Jose M Lopez-Higuera, Olga M Conde, University of Cantabria, Spain*

**SA-PO.PB.6: PDES-BASED MORPHOLOGY ON GRAPHS FOR CYTOLOGICAL SLIDES SEGMENTATION AND CLUSTERING .....1619**

*Xavier Desquesnes, Abderrahim Elmoataz, Olivier Lézoray, Université de Caen, France*

**SA-PO.PB.7: BREAST FIBROADENOMA AUTOMATIC DETECTION USING K-MEANS BASED HYBRID SEGMENTATION METHOD .....1623**

*Pawel Filipczuk, Marek Kowal, Andrzej Obuchowicz, University of Zielona Gora, Poland*

**SA-PO.PB.8: DETECTION AND CLASSIFICATION OF PARASITE EGGS FOR USE IN HELMINTHIC THERAPY .....1627**

*Johan Musaeus Bruun, Christian M. O. Kapel, University of Copenhagen, Denmark; Jens Michael Carstensen, Technical University of Denmark, Denmark*

**SA-PO.PB.9: MOLECULAR BASES OF MORPHOMETRIC COMPOSITION IN GLIOBLASTOMA MULTIFORME .....1631**

*Ju Han, Hang Chang, Gerald V. Fontenay, Lawrence Berkeley National Laboratory, United States; Paul T. Spellman, Oregon Health Sciences University, United States; Alexander Borowsky, University of California at Davis, United States; Bahram Parvin, Lawrence Berkeley National Laboratory, United States*

**SA-PO.PB.10: AUTOMATIC SEGMENTATION AND TRACKING OF THROMBUS FORMATION WITHIN IN VITRO MICROSCOPIC VIDEO SEQUENCES .....1635**

*Loic Peter, Nicolas Brieu, Technische Universität München, Germany; Sjoert Jansen, Peter Smethurst, Willem Ouwehand, University of Cambridge, United Kingdom; Nassir Navab, Technische Universität München, Germany*

**SA-PO.PB.11: THREE-DIMENSIONAL DENDRITIC SPINE DETECTION BASED ON MINIMAL CROSS-SECTIONAL CURVATURE .....1639**

*Tiancheng He, Zhong Xue, The Methodist Hospital Research Institute, United States; Yong Kim, The Rockefeller University, United States; Stephen Wong, The Methodist Hospital Research Institute, United States*

**SA-PO.PB.12: ROBUST REGISTRATION OF MULTISPECTRAL IMAGES OF THE .....1643  
CORTICAL SURFACE IN NEUROSURGERY**

*Danail Stoyanov, University College London, United Kingdom; Aleksandr Rayshubskiy, Elizabeth Hillman, Columbia University, United States*

**SA-PO.PB.13: AUTOMATIC DETECTION OF THE OPTIC CUP USING VESSEL .....1647  
KINKING IN DIGITAL RETINAL FUNDUS IMAGES**

*Damon Wing Kee Wong, Jiang Liu, Ngan Meng Tan, Fengshou Yin, Institute for Infocomm Research, Singapore; Tien Yin Wong, Singapore Eye Research Institute, Singapore*

**SA-PO.PB.14: A SYSTEM FOR THE AUTOMATIC DETECTION OF PIGMENT .....1651  
NETWORK**

*Catarina Barata, Jorge S. Marques, Instituto Superior Tecnico - 501 507 930, Portugal; Jorge Rozeira, Hospital de Matosinhos, Portugal*

**SA-PO.PB.15: OPTICAL FLOW METHOD IN PHASE-CONTRAST MICROSCOPY .....1655  
IMAGES FOR THE DIAGNOSIS OF PRIMARY CILIARY DYSKINESIA THROUGH  
MEASUREMENT OF CILIARY BEAT FREQUENCY. PRELIMINARY RESULTS.**

*Eduardo Parrilla, Biomechanics Institute of Valencia, Spain; Miguel Armengot, Manuel Mata, Julio Cortijo, Valencia University, Spain; Jaime Riera, José L. Hueso, David Moratal, Universitat Politècnica de València, Spain*

**SA-PO.PB: IMAGE SEGMENTATION B**

**SA-PO.PB.1: HYPERTHERMIA CRITICAL TISSUES AUTOMATIC SEGMENTATION OF .....1683  
HEAD AND NECK CT IMAGES USING ATLAS REGISTRATION AND GRAPH CUTS**

*Valerio Fortunati, René Verhaart, Fedde van der Lijn, Wiro J. Niessen, Jifke F. Veenland, Maarten Paulides, Theo van Walsum, Erasmus Medical Center, Netherlands*

**SA-PO.PB.2: AUTOMATED DETECTION OF PELVIC FRACTURES FROM .....1687  
VOLUMETRIC CT IMAGES**

*Ananda Chowdhury, Jadavpur University, India; Joseph Burns, University of California at Irvine, United States; Arka Mukherjee, Bhaskar Sen, Jadavpur University, India; Jianhua Yao, Ronald Summers, National Institutes of Health, United States*

**SA-PO.PB.3: A MEDIAL MAP CAPTURING THE ESSENTIAL GEOMETRY OF ORGANS .....1691**

*Sergio Vera, Miguel A. González, Alma IT Systems, Spain; Debora Gil, Universitat Autònoma de Barcelona, Spain*

**SA-PO.PB.4: 3D RECONSTRUCTION OF INTERVERTEBRAL DISCS FROM .....1695  
T1-WEIGHTED MAGNETIC RESONANCE IMAGES**

*Isaac Castro Mateos, Ludovic Humbert, Tristan Whitmarsh, Universitat Pompeu Fabra, Spain; Áron Lazary, National Center for Spinal Disorders, Hungary; Luis Miguel del Río Barquero, CETIR Centre Medic, Spain; Alejandro F. Frangi, Universitat Pompeu Fabra, Spain*

**SA-PO.PB.5: AUTOMATED SEGMENTATION OF TUMOR CHANGES IN TEMPORAL .....1699  
PET-CT DATA**

*Goodal Nyirenda, Jinman Kim, University of Sydney, Australia; Lingfeng Wen, Royal Prince Alfred Hospital, Australia; David Dagan Feng, University of Sydney, Australia*

**SA-PO.PB.6: A NOVEL SPINAL VERTEBRAE SEGMENTATION FRAMEWORK .....1703**  
**COMBINING GEOMETRIC FLOW AND SHAPE PRIOR WITH LEVEL SET**  
**METHOD**

*Poay Hoon Lim, University of Nottingham, United Kingdom; Ulas Bagci, National Institutes of Health, United States; Omer Aras, National Cancer Institute, United States; Yan Wang, University of Bradford, United Kingdom; Li Bai, University of Nottingham, United Kingdom*

**SA-PO.PB.7: A DISTRIBUTION-MATCHING APPROACH TO MRI BRAIN TUMOR .....1707**  
**SEGMENTATION**

*Ines Njeh, ATMS/ENIS, Tunisia; Ismail Ben Ayed, GE Healthcare, Canada; Ahmed Ben Hamida, ATMS/ENIS, Tunisia*

**SA-PO.PB.8: UNILATERAL HIP JOINT SEGMENTATION WITH SHAPE PRIORS .....1711**  
**LEARNED FROM MISSING DATA**

*Shekhar Chandra, Ying Xia, Australian e-Health Research Centre, Australia; Craig Engstrom, University of Queensland, Australia; Raphael Schwarz, Lars Lauer, Siemens Healthcare, Germany, Germany; Stuart Crozier, University of Queensland, Australia; Olivier Salvado, Jurgen Fripp, Australian e-Health Research Centre, Australia*

**SA-PO.PB.9: LABEL PROPAGATION WITH ROBUST INITIALIZATION FOR BRAIN .....1715**  
**TUMOR SEGMENTATION**

*Hongming Li, Yong Fan, Institute of Automation, Chinese Academy of Sciences, China*

**SA-PO.PB.10: CURVATURE DETECTION AND SEGMENTATION OF RETINAL .....1719**  
**EXUDATES**

*Ivo Soares, Miguel Castelo-Branco, University of Beira Interior, Portugal; António Pinheiro, Universidade da Beira Interior, Portugal*

**SA-PO.PB.11: SUPER-RESOLUTION RECONSTRUCTION OF WHOLE-BODY MRI .....1723**  
**MOUSE DATA: AN INTERACTIVE APPROACH**

*Artem Khmelinskii, LUMC, Netherlands; Esben Plenge, Erasmus Medical Center, Netherlands; Peter Kok, TU Delft, LUMC, Netherlands; Oleh Dzyubachyk, LUMC, Netherlands; Dirk Poot, Erasmus Medical Center, Netherlands; Ernst Suidgeest, LUMC, Netherlands; Charl P. Botha, TU Delft, Netherlands; Wiro J. Niessen, Erasmus Medical Center, Netherlands; Louise van der Weerd, LUMC, Netherlands; Erik Meijering, Erasmus Medical Center, Netherlands; Boudewijn P. F. Lelieveldt, LUMC, TU Delft, Netherlands*

**SA-PO.PB.12: AUTOMATIC DIFFERENTIAL SEGMENTATION OF THE PROSTATE IN .....1727**  
**3-D MRI USING RANDOM FOREST CLASSIFICATION AND GRAPH-CUTS**  
**OPTIMIZATION**

*Emmanouil Moschidis, Jim Graham, The University of Manchester, United Kingdom*

**SA-PO.PB: COMPUTATIONAL TECHNIQUES IN MICROSCOPY A**

**SA-PO.PB.2: STITCHING TERABYTE-SIZED 3D IMAGES ACQUIRED IN CONFOCAL .....1659**  
**ULTRAMICROSCOPY**

*Alessandro Bria, University of Cassino, Italy; Ludovico Silvestri, Leonardo Sacconi, Francesco Pavone, University of Florence, Italy; Giulio Iannello, University Campus Bio-Medico di Roma, Italy*

**SA-PO.PB.3: POISSON-GAUSSIAN NOISE PARAMETER ESTIMATION IN .....1663**  
**FLUORESCENCE MICROSCOPY IMAGING**

*Anna Jezierska, Hugues Talbot, Caroline Chaux, Jean-Christophe Pesquet, Université Paris-Est, Lab. Informatique Gaspard Monge, France; Gilbert Engler, IBSV Unit, INRA, France*

**SA-PO.PB.4: QUANTITATIVE THREE-DIMENSIONAL RECONSTRUCTION OF LIMITED-ANGLE EXPERIMENTAL MEASUREMENTS IN DIFFRACTION TOMOGRAPHY .....1667**

*Chen-Hao Chang, Jing-Wei Su, Wei-Chen Hsu, Kung-Bin Sung, Cheng-Ying Chou, National Taiwan University, Taiwan*

**SA-PO.PB.5: DEPTH-VARIANT IMAGE RESTORATION IN 3D FLUORESCENCE MICROSCOPY: TWO APPROACHES UNDER GAUSSIAN AND POISSONIAN NOISE CONDITIONS .....1671**

*Saima Ben Hadj, Laure Blanc-Féraud, I3S, France; Elie Maalouf, Bruno Colicchio, Alain Dieterlen, Mips Laboratory, France*

**SA-PO.PB: IMAGE SEGMENTATION: APPLICATIONS**

**SA-PM1.01: MICROSCOPY 3D IMAGE ANALYSIS**

**SA-PM1.01.1: HESSIAN-BASED REGULARIZATION FOR 3-D MICROSCOPY IMAGE RESTORATION .....1731**

*Stamatios Lefkimmiatis, Aurélien Bourquard, Michael Unser, Swiss Federal Institute of Technology Lausanne, Switzerland*

**SA-PM1.01.2: BLIND DECONVOLUTION OF 3D DATA IN WIDE FIELD FLUORESCENCE MICROSCOPY .....1735**

*Ferréol Soulez, Université Lyon 1, France; Loic Denis, Université Jean Monnet St Etienne, France; Yves Tourneur, Eric Thiebaut, Université Lyon 1, France*

**SA-PM1.01.3: COMPUTATIONAL OPTICAL SECTIONING MICROSCOPY USING AN ENGINEERED PSF WITH REDUCED DEPTH VARIABILITY-- PROOF OF CONCEPT .....1739**

*Shuai Yuan, Chrysanthe Preza, The University of Memphis, United States*

**SA-PM1.01.4: SCALED HEAVY-BALL ACCELERATION OF THE RICHARDSON-LUCY ALGORITHM .....1743**

*Hongbin Wang, Paul Miller, Queen's University of Belfast, United Kingdom*

**SA-PM1.01.5: SPHERICAL SPATIAL STATISTICS FOR 3D FLUORESCENCE VIDEO-MICROSCOPY .....1747**

*Anatole Chessel, James Dodgson, Rafael Carazo-Salas, Cambridge University, United Kingdom*

**SA-PM1.02: FUNCTIONAL MRI**

**SA-PM1.02.1: CANONICAL GRANGER CAUSALITY APPLIED TO FUNCTIONAL BRAIN DATA .....1751**

*Syed Ashrafulla, Justin P. Haldar, Anand Joshi, Richard M. Leahy, University of Southern California, United States*

**SA-PM1.O2.2: ADAPTIVE EXPERIMENTAL CONDITION SELECTION IN .....1755  
EVENT-RELATED FMRI**

*Christine Bakhous, Florence Forbes, INRIA (institut national de recherche en informatique et automatique), France; Thomas Vincent, Neurospin-CEA(Commisariat a l'energie atomique), France; Lotfi Chaari, INRIA (institut national de recherche en informatique et automatique), France; Michel Dojat, Grenoble Institut des Neurosciences, France; Philippe Ciuciu, Neurospin-CEA(Commisariat a l'energie atomique), France*

**SA-PM1.O2.3: ASSESSING STATISTICAL SIGNIFICANCE WHEN PARTITIONING .....1759  
LARGE-SCALE BRAIN NETWORKS**

*Yu-Teng Chang, University of Southern California, United States; Dimitrios Pantazis, Massachusetts Institute of Technology, United States; Richard M. Leahy, University of Southern California, United States*

**SA-PM1.O2.4: GROUPWISE FMRI REGISTRATION USING MULTI-RANGE .....1763  
FUNCTIONAL CONNECTIVITY PATTERNS**

*Di Jiang, Zhejiang University, China; Tianzi Jiang, Yong Fan, Institute of Automation, Chinese Academy of Sciences, China*

**SA-PM1.O3: COMPUTER AIDED DIAGNOSIS**

**SA-PM1.O3.1: SCLEROTIC RIB METASTASES DETECTION ON ROUTINE CT IMAGES .....1767**

*Jianhua Yao, National Institutes of Health, United States; Joseph Burns, University of California at Irvine, United States; Ronald Summers, National Institutes of Health, United States*

**SA-PM1.O3.2: AUTOMATIC VIEW CLASSIFICATION FOR CARDIAC MRI.....1771**

*Yan Zhou, Elekta Inc., United States; Zhigang Peng, Xiang Sean Zhou, Siemens Medical Solutions, United States*

**SA-PM1.O3.3: REGRESSION AND CLASSIFICATION BASED DISTANCE METRIC .....1775  
LEARNING FOR MEDICAL IMAGE RETRIEVAL**

*Weidong Cai, Yang Song, David Dagan Feng, University of Sydney, Australia*

**SA-PM1.O3.4: QUANTITATIVE IMAGE ANALYTICS FOR STRATIFIED PULMONARY .....1779  
MEDICINE**

*Sushravya Raghunath, Srinivasan Rajagopalan, Ronald A. Karwoski, Brian J. Bartholmai, Richard A. Robb, Mayo Clinic College of Medicine, United States*

**SA-PM1.O3.5: A LESION SHAPE AND MARGIN CHARACTERIZATION METHOD IN .....1783  
DYNAMIC CONTRAST ENHANCED MAGNETIC RESONANCE IMAGING OF  
BREAST**

*Xi Liang, Kotagiri Ramamohanarao, University of Melbourne, Australia; Helen Frazer, St Vincent's, Australia; Qing Yang, Apollo Medical Imaging Technology Pty. Ltd., Australia*

**SA-PM1.O4: DETECTION AND CHARACTERIZATION OF BIOMEDICAL  
NETWORKS (SS)**

**SA-PM1.O4.1: RECONSTRUCTION AND QUANTIFICATION OF NEURONAL .....1787  
MORPHOLOGY**

*Erik Meijering, Erasmus Medical Center, Netherlands*

**SA-PM1.04.2: 3D X-RAY CT IMAGING OF THE BONE LACUNO-CANALICULAR NETWORK .....1788**

*Françoise Peyrin, Alexandra Pacureanu, Maria Alexjndra Zuluaga, Pei Dong, Max Langer, CREATIS, France*

**SA-PM1.04.3: RETINAL VASCULATURE SEGMENTATION USING PRINCIPAL SPANNING FORESTS .....1792**

*Erhan Bas, Howard Hughes Medical Institute, United States; Esra Ataer-Cansizoglu, Deniz Erdogmus, Northeastern University, United States; Jayashree Kalpathy-Cramer, Harvard Medical School, United States*

**SA-PM1.04.4: LOCAL PHASE APPROACHES TO EXTRACT BIOMEDICAL NETWORKS.....1796**

*Boguslaw Obara, Mark Fricker, Vicente Grau, University of Oxford, United Kingdom*