Elsa D. ANGELINI, Ph.D.

Senior Data Scientist[1]
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[1]**Imperial College London,** (London, UK), Institute for Translational Medicine and Therapeutics (ITMAT), NIHR Imperial Biomedical Research Centre.
Location: Room 362, Sir Alexander Fleming Building, Department of Surgery & Cancer, Faculty of Medicine, South Kensington Campus.

[2]**Columbia University** (New York, NY USA), Heffner Biomedical Imaging Laboratory, Department of Biomedical Engineering, and Department of Radiology.

[3]**Telecom ParisTech** (Paris, France), Institut Mines Telecom, Dpt. of Image-Data-Signal.

Fields of Expertise

Healthcare data, bio-medical imaging, machine-learning, image computing (segmentation, texture analysis, denoising, pattern recognition), applied mathematics (sparse decomposition, wavelet and time-frequency analysis, variational methods, statistical models, graphical models). Applications related to disease quantification and subtyping, patient stratification, population-based discovery.

Education

2011 — **Habilitation à Diriger des Recherches (HDR), University of Nice Sophia Antipolis.**
The HDR is the highest academic diploma granted in France. It validates 5 to 10 years of post-PhD research via the submission of a thesis, the written evaluations from two senior researchers and a public oral defense. HDR grants the holder to independently supervise PhD students and apply to full professorship positions. Title of my HDR thesis: "Geometrical models, formulation of constraints, information extraction, for the segmentation of healthy and pathological medical images".

1998–2002 — **PhD Research, Department of Biomedical Engineering, Columbia University, New York, NY, USA.** (Graduate Research Assistant and Teaching Assistant fellowships):

- In charge of a project for denoising and segmentation of real-time 3D cardiac ultrasound with multi-dimensional complex wavelet transforms and level-sets.
  - Implemented a novel brushlet-based denoising method and a level-set segmentation method. Ran an evaluation study with clinical collaborators.
  - Brushlet denoising technique was patented.
  - Published results in leading conferences and journals.
- Collaboration with ITK Kitware as part of the Itk Original Developers[1] team.
  - Implemented (C++) and tested a hybrid segmentation tool for multidimensional segmentation.
  - Attended ITK developers meetings.

1997– 1998 — **Master of Science, Department of Biomedical Engineering, Columbia University, New York, NY, USA.** (Whitaker fellowship):

[1] http://www.itk.org/Wiki/ITK/Original_Developers

- In charge of a project on knee joint cartilage segmentation from MRI. Developed an algorithm for cartilage surface extraction using statistical shape models (PCA). Built a statistical shape model from a database of segmented knee cartilage surfaces.
- Published results in a journal paper.

1993–1996 **Engineering Diploma, Ecole Centrale de Nantes, France.**
Major in Signal and Image Processing. Graduated with Honors.
Integration via a national competitive examination, after 2 years of preparatory school.
- Computer programming projects in C and Fortran.
- Specialization courses in numerical analysis, automatics, linear command, signal processing, probabilities and statistics, advanced mathematics.

Work Experience

2016-current **Senior Data Scientist and co-lead of the ITMAT Data Science Group,** Institute for Translational Medicine and Therapeutics (ITMAT), NIHR Imperial Biomedical Research Centre, **Imperial College London, UK.**
- Manage a team of data-science engineers and researchers in machine learning and data science for imaging, electronic health records, phenotypic and physiologic data.
- Research and development projects, grant writing and training activities.
- Co-I on several machine-learning projects (funded by Imperial BRC, MRC) involving electronic health records, lung CT images of fungal diseases, contrast-enhanced liver ultrasound, gene expression data for lymphoma.

2012- current **Adjunct (since 2016)/Associate Senior Research Scientist, Heffner Biomedical Imaging Laboratory, Department of Biomedical Engineering and Department of Radiology, Columbia University, USA**.
Co-director of the Heffner Biomedical Imaging Laboratory. *Currently affiliated as Adjunct Senior Research Scientist.* In charge of scientific supervision of PhD students, and writing papers and grants.
(1) Active project on "Quantitative lung analysis on cohorts of CT images for COPD patients":
    a. Co-investigator of the NIH NHLBI – 5R01HL121270 grant (2014-18, $1.7M Total cost). Lead the writing of the grant proposal.
    b. Supervised 3 PhD students and 2 post-doctoral fellows.
    c. Design of the unsupervised learning of lung texture patterns.
(2) Co-I on previous NIH-funded projects on: "Comparison of cardiac strain quantification on 3DUS and tagged MRI images for various cardiac pathologies" (NIH R01) – "Enhancement of PET images via algorithmic solutions for sparsity enhancement with OSEM".

2004-2012 **Associate Professor, Telecom ParisTech, Paris, France.**
On leave since January 2012. Double affiliation remains.
- Co-head of the Medical Image Processing Group, at Telecom ParisTech.
- Founder and Co-Chair of the international Master Program BME-Paris (link[2]).
    a. Part of the group of founders who designed the Master program curriculum.
    b. Co-chair of the Bioimaging Specialty, recruiting 20 students each year, teaching courses on the principles of medical imaging modalities, basics and advanced medical image analysis, recruiting engineering and medical faculties to teach advanced courses, part of the supervision team of a 4-days interdisciplinary seminar focusing on designing novel bioengineering devices.

[2] http://www.bme-paris.com/

- Teaching basic and advanced signal and image processing methods and medical image technologies (Master-level courses at Telecom ParisTech, University of Paris 6 and Arts et Métiers ParisTech).
- Multiple research projects in medical image analysis and biological image acquisition, through the supervision of 11 PhD students and 5 post-doctoral fellows.
- Industrial grants with: Siemens Corporate Research (50% academic supervision), Echosens (50% academic supervision), Philips Healthcare (50% academic supervision), Renault (100% academic supervision), Miniara (50% academic supervision).
- Research highlights: level sets and deformable models, detection of longitudinal changes on brain MRI (C++ Osirix plugin and patent, review paper with >100 citations), atlas of brain tumors (>200 citations), fuzzy image processing of brain MRI, tracking methods for coronary vessel segmentation on CTA (review paper with >800 citations, C++ code transferred to Siemens Corporate Research), anatomical modeling of the fetus (code, distribution of anatomical models on the FEMONUM website[3]), numerical models for shear-wave elastography, compressed acquisition for microscopy imaging (code, >130 citations on 2 precursor papers).

2010 (Mar.-Aug.) **Visiting Scientist, CSIRO-Australian e-Health Research Center. Brisbane, Australia**
Invited and sponsored sabbatical visit, working on two projects:
(1) Developed a novel mathematical model and image analysis pipeline for longitudinal detection of white matter lesion (WML) growth on aging population with Alzheimer disease: proposed and original statistical test to detect significant longitudinal differences corresponding to WML growth, wrote codes and a research report;
(2) GPU-based ultrasound image generation from MRI and CT data for prostate biopsy simulation: supervised an intern coding with CUDA a tool to simulate ultrasound data.

2007-2012 **Visiting Professor of Biomedical Engineering, Columbia University, New York, NY USA.**
- Collaborations with the Heffner Biomedical Imaging Laboratory (A. Laine).
- Several visiting periods per year.
- Joint projects and co-supervision of 2 PhD students.
- Lead a collaboration with INRIA (France) for the simulation of real-time three-dimensional ultrasound using a cardiac numerical model.

2002-2004 **Post-Doctoral Fellow, Department of Biomedical Engineering, Columbia University, New York, NY, USA.**
Lead scientist on four research projects:
(1) Denoising of ultrasound based on anisotropic filtering (technique and code transferred to Philips Healthcare, scientific publication);
(2) Quantifying cardiac wall deformations with real-time three-dimensional ultrasound (code and scientific publications);
(3) Neural network classification of protein crystals images (code and scientific publications);
(4) Multi-phase segmentation of brain MRI structures (code and scientific publications).

Oct 96–Sept 97 **Crédit Lyonnais, New York, NY, USA.**
Consulting in risk management. Validated mathematical models and pricing software tools for derivative products.

Apr 96-Sept 96 **Neuromuscular Research Center, Boston University, Boston, MA, USA.**
Developed a software analysis tool for diagnosis of Carpal Tunnel Syndrome. Set up of clinical experiments, acquired EMG data on volunteers, processed and classified EMG signals with Time-Frequency analysis tools.

[3] http://femonum.telecom-paristech.fr/

Current Grants

NIH (USA): NIH NHLBI – 5R01HL121270. "Quantitative Lung Analysis on Cohort of CT Images for COPD Patients" (PI: G. Barr & A. Laine). Period = 2019-22, Total cost = $1.7M. Role: Co-investigator. PhD students supervision, design of unsupervised deep-learning methods for emphysema subtyping.

NIHR Imperial Biomedical Research Centre (UK), ITMAT Grant. "Using multimodal neuroimaging to characterize addiction and obesity: exploiting data science analytical methods for patient stratification to improve outcomes" (PI: T. Goldstone). Period = 2018-20
Role: Co-Investigator. Advising a clinical research fellow and students. Design of methodological solutions for multivariate machine-learning tools.

NIHR Imperial Biomedical Research Centre (UK), ITMAT Grant. "Developing an ultrasound image database for image analysis and machine learning studies" (PI T. Hoogenboom). Period = 2018-19. Role: Co-Investigator. Advising a clinical research fellow (image annotation setup) and supervision of students for image classification and disease scoring using deep-learning.

NIHR Imperial Biomedical Research Centre (UK), ITMAT Grant. "Data driven informatics to improve neonatal care and patient outcomes" (PI: N. Modi). Period = 2019-20
Role: Co-Investigator. Supervision of a post-doc and students. Design of machine-learning solutions to characterize patient care pathways, predict outcomes and detect factors of unusual variations.

MRC Partnership (UK). "MICA: A partnership to extend the research utility of a source of real-world health data, the UK National Neonatal Research Database" (PI: N. Modi). Period = 2020-23
Role: Co-Investigator. Supervision of a post-doc and students. Design of data curation and preparation strategies.

Language & Computer Skills

Spoken Languages	French:	Mother tongue.
	English:	Fluent (lived for 12 years in the USA and 5 years in the UK).
	Spanish:	Fair knowledge.
Scientific Languages	Matlab, Python.	
Programming Languages	C, C++, Visual Basics.	

Image analysis softwares and libraries: Itk (C++), Vtk (C++), FSL (C), 3D Slicer, Mango, Osirix, itkSnap, IDL & AVS (during PhD thesis)

Academic & Professional Honors

	Senior Member of the IEEE Society since 2012.
2020	Keynote speaker at "Medical Imaging with Deep Learning" (https://2020.midl.io/)
2014	Keynote speaker at the BioImaging Day of the Biomedical Engineering Department of Carnegie Mellon University, Pittsburgh, USA.
2011	Invited speaker at the Institute for Mathematics and Its Applications, Workshop on "Large Data Sets in Medical Informatics", University of Minnesota
2011	Invited speaker to the workshop "US-Turkey Advanced meeting on Global Healthcare Challenges and Opportunities", Antalya, Turkey.
2001	Region finalist of the student paper competition of the IEEE-EMBS annual meeting.
1997	Graduate fellowship from the Whitaker Foundation for first year of graduate studies.

Professional Activities

2017-2019	Vice President for Technical Activities, IEEE Engineering in Medicine and Biology (EMB) Society.
2013-2015	Elected Europe representative for the Administrative Committee of the IEEE Engineering in Medicine and Biology (EMB) Society.
2010-2014	Chair (2013-14) and EMBS representative member of the steering committee of the IEEE Transactions on Medical Imaging.
2011-2016	Member (elected) of the IEEE SPS Bioimaging and Signal processing (BISP) Technical Committee.
2013-curr.	Member (chair 2013-15) of the IEEE EMBS Biomedical Imaging and Image Processing (BIIP) Technical Committee.
2011-2014	Elected member of the CNRS Scientific Advisory Board for the Computer Science Dpt. (INS2I).
2009-2012	Elected representative of the professors and researchers on the ParisTech Administrative committee.
2008-2011	External member of the Evaluation Commission of the INRIA.

Journal Editorial:

2016-curr.	Associate Editor of the IEEE Journal on Biomedical and Health Informatics.
2008-2012	Associate Editor of the IEEE Transactions on Biomedical Engineering.
2015-curr.	Member of the Editorial Board of Medical Image Analysis.

Conference Organization Committees:

2019	Finance chair of the IEEE ISBI conference (Venezia, Italy).
2015-2019	co-Chair of the Imaging Processing conference of SPIE Medical Imaging (USA).
2015	General Chair of the IEEE ISBI conference (Brooklyn, NY, USA).
2008	Finance chair of the IEEE ISBI conference (Paris, France),
2008	Workshops co-chair of the MICCAI conference (New York, NY, USA).

Conference Program Committees: **2019:** ISBI**,** MICCAI**; 2018-19:** SPIE Medical Imaging, ISBI **2017:** SPIE Medical Imaging, ISBI, FIMH; **2016:** SPIE Medical Imaging, ISBI; **2015:** SPIE Medical Imaging, FIMH, EMBC; **2014:** SPIE Medical Imaging, EMBC; **2013:** SPIE Medical Imaging, FIMH; **2012:** SPIE Medical Imaging, MICCAI; **2011:** FIMH, MICCAI, EMBC; **2009:** FIMH, ISVC; **2008:** MICCAI; **2007:** FIMH, MICCAI, MMBIA; **2006:** EMBC.

Journal Reviews: IEEE Trans. on Image Processing, IEEE Trans. on Medical Imaging, IEEE Trans. on Biomedical Engineering, IEEE Trans. on Ultrasonics, Ferroelectrics, and Frequency Control, Signal, Image and Video Computing (Springer), Medical Image Analysis (Springer), Signal Image and Video Processing (Springer), Nature Scientific Reports.

Conference Reviews: ISBI, MICCAI, IPMI, ICCV, ICPR, CVPR, MMBIA, FIMH, ICCASP, ICIP, EMBC, MIDL.

Grant Reviews:

- Expert for the Research Foundation Flanders (FWO) – Belgium.
- Expert for the Norwegian Council of Research - Norway
- Expert for the European Commission, H2020, PHC11 - EU
- Reviewer for the ANR (French equivalent of the NSF) - France
- Reviewer for the City University of Hong Kong, Research Grant Council - China
- Laboratories evaluation committee for the French AERES – France.
- Reviewer for the UK Alzheimer's Society - UK.
- Reviewer for the EPSRC – UK.

Patents

[1] “**Spatio-Temporal Treatment of Noisy Images Using Brushlets**”, Awarded June 2, 2009. US Patent Number: US7542622. Inventors: Elsa D. Angelini (50%), Andrew F. Laine (50%).
Abstract: “Treatment and mitigation or reduction of noise effects in noisy image data and data sets is described. Various aspects include treatment of noisy data with brushlet transforms and thresholding operations along with a favorable sequence of spatial and temporal processing and thresholding. Hard and minimax thresholding operators mitigate the noise in the image data. In medical applications this can be useful in removing noise that impairs diagnosis and treatment of patient conditions. In one application, cardiac function is better studied and understood through improved imaging of the heart and cardiac structures. In an exemplary case, a favorable sequence including spatial filtering using a brushlet filter, spatial thresholding of brushlet coefficients, then temporal filtering (first in the time domain then in the frequency domain) and thresholding of temporal coefficients yields an acceptable denoised image data set.”

[2] “**Method for quantifying the development of pathologies involving changes in the volumes of bodies, notably tumors**", Awarded in 2010 in Europe, and May 2015 in the US. US Patent Number: US9026195. Additional references: CN102792336A, EP2435985A1, EP2435985B1, US20120220856, WO2010136584A1. Inventors: Elsa Angelini (70%), Emmanuel Mandonnet (30%), Julie Delon (30%).
Abstract: “A method for quantifying the development of pathologies involving changes in volume of a body represented via an imaging technique, including normalizing gray levels by a midway technique for two images I1 and I2 representing the same scene, resulting in two normalized images I′1 and I′2; calculating a map of signed differences between the two normalized images I′1 and I′2; and performing one or more statistical tests based on the assumption of a Gaussian distribution of the gray levels for healthy tissues in the normalized images I’1 and I’2 and/or in the calculated difference map. Advantageously, results of two or more of the tests can be combined for a more specific characterization of the development.”

[3] "**Regularization of images**", Application US US20170039706A1 (Feb 2017). Inventors: Arthur Mikhno, Elsa D. Angelini, Andrew F. Laine, Todd Ogden, Ramin Parsey, Joseph John Mann. -
Associated with the method “**Image-based locally weighted regularization of MLEM reconstruction for PET images**", Inventors: Elsa Angelini (40%), Arthur Mikhno (40%), Andrew Laine (20%). Licensed to XXX (Confidential) by Columbia University in 2014.

Publications

PhD & HDR Thesis

E. D. Angelini, "Spatio-Temporal Analysis of Three-Dimensional Real-Time Ultrasound for Quantification of Ventricular Function," Department of Biomedical Engineering, Columbia University, New York, 2002.

E. D. Angelini, "Geometrical models, constraints design, information extraction for pathological and healthy medical image", University of Nice Sophia Antipolis, France, 2011.

Peer-Reviewed Journal Papers

S. Ebrahimi, L. Gajny, C. Vergari, **E. Angelini**, W. Skalli, “Vertebral rotation estimation from frontal X-rays using a quasi-automated pedicle detection method”, European Spine Journal, *in press*

M. Wang, C. P. Aaron, J. Madrigano, E. A. Hoffman, **E Angelini**, J. Yang, A. Laine, T. M. Vetterli, P. L. Kinney, P. D. Sampson, L. E. Sheppard, A. A. Szpiro, S. D. Adar, K. Kirwa, B. Smith, D. J. Lederer, A. V. Diez-Roux, S. Vedal, J. D. Kaufman, R. G. Barr, “Association between long-term exposure to ambient air pollution and change in quantitatively assessed emphysema and lung function”, JAMA, Vol. 322, No. 6, pp. 546-556, 2019.

J. Yang, X. Feng, A. Laine, **E. Angelini**, “Characterizing Alzheimer's disease with image and genetic biomarkers using supervised topic models”, IEEE Journal of Biomedical and Health Informatics. 2019.

E. Roccia, A. Mikhno , R. T. Ogden, J. J. Mann, A. F. Laine, **E. D. Angelini**, F. Zanderigo, “Quantifying brain [18F]FDG uptake noninvasively by combining medical health records and dynamic PET imaging data”, IEEE Journal on Biomedical and Health Informatics, 2019.

Y. Ling, W. Meiniel, R. Singh-Moon, **E. Angelini**, J.-C. Olivo-Marin, C. P. Hendon, “Compressed sensing-enabled phase-sensitive swept-source optical coherence tomography”, Optics Express, Vol. 27, No. 2, pp. 855-871, 2019

L. Gajny, S. Ebrahimi, C. Vergari, **E. Angelini**, W. Skalli, “Quasi-automatic 3D reconstruction of the full spine from low-dose biplanar X-rays based statistical inferences and image analysis”, European Spine Journal, pp. 1-7, 2018.

S. Ebrahimi, L. Gajny, W. Skalli, **E. Angelini**, “Vertebral Corners Detection on Sagittal X-rays based on Shape Modelling, Random Forest Classifiers and Dedicated Visual Features”, Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization (TCIV), pp. 1-13, 2018.

W. Meiniel, J.-C. Olivo-Marin, **E. Angelini**, “Denoising of microscopy images: a review of the state- of-the-art, and a new sparsity-based method”, IEEE Transactions on Image Processing, Vol. 27, No.8, pp. 3842-3856, 2018.

C.P. Aaron, J.E. Schwartz, E.A. Hoffman, **E. Angelini**, J.H.M. Austin, M. Cushman, D.R. Jacobs, J.D. Kaufman, A. Laine, L. Smith, J. Yang, K.E. Watson, R.P. Tracy, R.G. Barr, "A longitudinal cohort study of aspirin use and progression of emphysema-like lung characteristics on CT imaging: The MESA Lung Study", Chest, Vol. 154, No. 1, pp. 41-50, 2018.

D. Lesage**, E. D. Angelini**, G. Funka-Lea, I. Bloch, "Adaptive particle filtering for coronary artery segmentation from 3D CT angiograms", Computer Vision and Image Understanding, Vol. 151, pp. 29-46, 2016.

A. Mikhno, F. Zanderigo, R. T. Ogden, J. J. Mann, **E. D. Angelini**, A. F. Laine, R. V. Parsey, "Toward noninvasive quantification of brain radioligand binding by combining electronic health records and dynamic PET imaging data", IEEE Journal of Biomedical and Health Informatics, Vol. 19, No. 14, pp. 1271-1282, 2015.

S. Dahdouh, **E. D. Angelini**, G. Grange, I. Bloch, "Segmentation of embryonic and fetal 3D ultrasound images based on pixel intensity distributions and shape priors", Medical Image Analysis, Vol. 24, No. 1, pp. 255-268, 2015.

N. Varsier, S. Dahdouh, A. Serrurier, J. P. de la Plata, J. Anquez, **E. Angelini**, I. Bloch, J. Wiart, " Influence of pregnancy stage and fetus position on the whole-body and local exposure of the fetus to RF-EMF", Physics in Medicine and Biology, Vol. 59, pp. 4913–4926, 2014.

S. Dahdouh, N. Varsier, A. Serrurier, J. P. de la Plata, J. Anquez, **E. Angelini**, J. Wiart, I. Bloch, "A comprehensive tool for image-based generation of fetus and pregnant women mesh models for numerical dosimetry studies", Physics in Medicine and Biology, Vol 59, pp. 4583-4602, 2014.

Y. Hame, **E. Angelini**, E. Hoffman, G. Barr, A. Laine, "Adaptive quantification and longitudinal analysis of pulmonary emphysema with a hidden Markov measure field model", IEEE Transactions on Medical Imaging, Vol. 33, No.7, pp. 1527 - 1540, 2014.

S. Audiere, **E. Angelini**, L. Sandrin, M. Charbit, "Maximum Likelihood Estimation of Shear Wave Speed in Transient Elastography", IEEE Transactions on Medical Imaging, Vol. 33, No. 6, pp. 1338 - 1349, 2014.

Y. Le Montagner, **E. Angelini**, J.-C. Olivo Marin, "An unbiased risk estimator for image denoising in the presence of mixed Poisson-Gaussian noise", IEEE Transactions on Image Processing, Vol 23, No. 3, pp. 1255-1268, 2014

V. Israel-Jost, J. Darbon, **E. D. Angelini**, I. Bloch. “Conciliating Syntactic and Semantic Constraints for Multi-Phase and Multi-Channel Region Segmentation”, Computer Vision and Image Understanding, vol 117, No 8, pp. 819–826, 2013

P. Schmitt, E. Mandonnet, A. Perdreau, **E. D. Angelini**. “Effects of slice thickness and head rotation when measuring glioma sizes on MRI: In support of volume segmentation versus two largest diameters”, Journal of Neuro-oncology, vol. 112, No 2, pp. 165-172, 2013.

J. Anquez, **E. D. Angelini,** G. Grangé, I. Bloch, “Automatic segmentation of ante-natal 3D ultrasound images”, IEEE Transactions on Biomedical Engineering , vol. 60, No 5 , pp. 1388-400, 2013.

A. Katouzian, **E. Angelini**, S. G. Carlier, J. S. Suri, N. Navab, A. F. Laine, "A state of the art review on segmentation algorithms in intravascular ultrasound (IVUS) images", IEEE Transactions on Information Technology in BioMedicine, vol. 16, No 5, pp. 823 – 834, 2012.

E. Altendorf, E. Decenciere, D. Jeulin, P. De Sa Peixoto, A. Deniset-Besseau, **E. Angelini**, G. Mosser, M.-C. Schanne-Klein, "Imaging and 3D Morphological Analysis of Collagen Fibrils", Journal of Microscopy, vol. 247, No 2, pp. 161-175, 2012.

E Angelini, J. Delon, A. Boubacar Bah, L. Capelle, E, Mandonnet, "Differential MRI Analysis for Quantification of Low Grade Glioma Growth", Medical Image Analysis, vol. 12, No 1, pp. 114-126, 2012.

T. Ius, **E. Angelini,** M. Thiebaut de Schotten, E. Mandonnet, H. Duffau, "Evidence for potentials and limitations of brain plasticity using an atlas of functional resectability of WHO grade II gliomas: towards a "minimal common brain", Neuroimage, Vol 56, No 3, pp. 992-1000, 2011.

M. de Moraes Marim, M. Atlan, **E. Angelini,** J.-C. Olivo-Marin, "Off-axis compressed holographic microscopy in low-light conditions", Optics Letter, vol. 36, n°1, pp. 79-81, 2011.

M. Marim, M. Atlan, **E. Angelini**, J.C. Olivo-Marin, “Compressed Sensing with off-axis, frequency-shifting holography”, Optics Letters, vol. 35, n°6, pp. 871-873, 2010.

Q. Duan, **E. Angelini**, A. Laine, "Real-time segmentation by Active Geometric Functions", Computer Methods and Programs in Biomedicine, vol. 98, n°3, Pages 223-230, 2010.

D. Lesage**, E. D. Angelini**, G. Funka-Lea, I. Bloch, " A review of 3D vessel lumen segmentation techniques: Models, features and extraction Schemes", Medical Image Analysis, Vol. 13, pp. 819-845, 2009.

L. Bibin, J. Anquez, **E. D. Angelini**, I. Bloch. "Hybrid 3D pregnant woman and fetus modeling from medical imaging for dosimetry studies". International Journal of Computer Assisted Radiology and Surgery, vol. 5, n° 1, pp. 49-56, 2009.

O. Nempont, J. Atif, **E. Angelini**, I. Bloch, "A new fuzzy connectivity measure for fuzzy sets and associated fuzzy attribute openings, Journal of Mathematical Imaging and Vision, vol. 34, pp. 107-136, 2009.

Q. Duan**, E. D. Angelini**, S. L. Herz, C. M. Ingrassia, K. D. Costa, J. W. Holmes, S. Homma, and A. F. Laine,, “Region-based endocardium tracking on real-time three-dimensional ultrasound”, Ultrasound in Medicine and Biology, Vol. 35, No. 2, pp. 256–265, 2009.

A. Moreno, S. Chambon, A. Santhanam, J. Rolland, **E. Angelini** and I. Bloch, "Combining a breathing model and tumor-specific rigidity constraints for registration of CT-TEP thoracic data", Computer Assisted Surgery, Vol. 13, No. 5, pp 281-298, 2008.

J. Puentes, B. Batrancourt, J. Atif, L. Lecornu, **E. Angelini**, I. Bloch, C. Roux, “Integrated Multimedia Electronic Patient Record and Graph-Based Image Information for Cerebral Tumors”, Computers in Biology and Medicine, Vol. 38, pp 425-437, 2008.

E. D. Angelini, O. Clatz, E. Mandonnet, E. Konukoglu, L. Capelle and H. Duffau, "Glioma dynamics and computational models: A review of segmentation, registration and in silico growth algorithms and their clinical validations", Current Medical Imaging Review, Vol. 3, No. 4, pp:262-276, 2007.

E. Angelini, T. Song, B. Mensh, and A. Laine, "Brain MRI Segmentation with Multiphase Minimal Partitioning: A Comparative Study", International Journal of Biomedical Imaging, Vol. 2007, Article ID 10526, 15 pages, 2007.

E. Angelini , S. Homma, G. Pearson, J. Holmes, A. Laine "Segmentation of Real-time three-dimensional ultrasound for quantification of ventricular function: a clinical study on right and left ventricles," Ultrasound in Medicine and Biology, vol. 31, issue 9, pp 1143-1158, 2005.

P.-H. G. Chao, Z. Tang, **E. Angelini** , A. C. West, K. D. Costa and C. T. Hung, " Dynamic osmotic loading of chondrocytes using a novel microfluidic device " Journal of Biomechanics 38(6), 1273-1281, 2005.

E. Angelini, E. Ciaccio, “Optimized region finding and edge detection of knee cartilage surfaces from magnetic resonance images”, Annals of Biomedical Engineering, vol. 31, issue 3, pp 336-345, 2003.

E. D. Angelini, A. Laine, S. Takuma, J. Holmes, and S. Homma, “LV volume quantification via spatio-temporal analysis of real-time 3D echocardiography,” IEEE Transactions on Medical Imaging, vol.20, issue 6, pp 457-469, 2001.

Book Chapters

A. Katouzian, **E. Angelini**, B. Sturm, E. Konofagou, S. Carlier, A. Laine, "Applications of Multiscale Overcomplete Wavelet-based Representations in Intravascular Ultrasound (IVUS) Images", in Ultrasound Imaging (Advances and Applications), Eds. J. M. Sanches, A. F. Laine, J. S. Suri, Springer, pp. 313-336, 2012.

Q. Duan, **E. Angelini**, A. F. Laine, J. S. Suri, "Real-Time 4D Cardiac Segmentation by Active Geometric Functions", in Ultrasound Imaging (Advances and Applications), Eds. J. M. Sanches, A. F. Laine, J. S. Suri, Springer, pp. 225-253, 2012. link to erratum specifying correct list of authors.

Q. Duan, **E. Angelini**, O. Gerard, K. D. Costa, J. W. Holmes, S. Homma and A. Laine, "Cardiac Motion Analysis Based on Optical-Flow of Real-Time 3-D Ultrasound Data", Chapter 9 in Advances in Diagnostic and Therapeutic Ultrasound Imaging, Eds. J. S. Suri, C. Kathuria, R.-F. Chang, F. Molinari, A. Fenster, Artech House, pp. 227-246, 2008.

C. Cavaro-Menard, A. Nait-Ali, J-Y Tanguy, **E. Angelini**, C. Le Bozec, J-J Le Jeune, “Specificities of Physiological Signals and Medical Images”, Compression of Biomedical Images and Signals, Wiley, pp. 43-74, 2008.

Q. Duan, **E. Angelini**, S. Homma and A. Laine, "Tracking Endocardium using Optical Flow along Isovalue Curve", Chapter 14 in Principles and Advanced Methods in Medical Imaging and Image Analysis, Eds. A. P. Dhawan, H. K. Huang, D.-S. Kim, World Scientific Publishing, Singapore, pp. 337-360, 2008.

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