

Publications

- Gerardo Ivar Sanchez-Ortiz -

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Cardiac MRI

Journals (refereed articles)

- Simulation of cardiac pathologies using an electromechanical biventricular model and XMR interventional imaging. M. Sermesant, K. Rhode, G.I. Sanchez-Ortiz, O. Camara, R. Andriantsmianova, S. Hedge, D.Rueckert, P. Lambiase, C. Bucknall, E. Rosenthal, H. Delingette, D.L.G. Hill, N. Ayache, and R. Razavi. *Medical Image Analysis*, 9(5):467-480, October 2005.
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- Segmentation of 4D cardiac MR images using a probabilistic atlas and the EM algorithm. M. Lorenzo-Valdes, G. I. Sanchez-Ortiz, A. Elkington, R. Mohiaddin, and D. Rueckert. *Medical Image Analysis*, 8(3):255-265, 2004.
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- Spatial transformation of motion and deformation fields using non-rigid registration. A. Rao, R. Chandrashekar, G. I. Sanchez-Ortiz, P. Aljabar, R. Mohiaddin, J. V. Hajnal, B. K. Puri, and D. Rueckert. *IEEE Transactions on Medical Imaging*, 23(9):1065-1076, 2004.
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- Registration and tracking to integrate X-ray and MR images in an XMR facility. K.S. Rhode, D.L.G. Hill, P.J. Edwards, J.Hipwell, D.Rueckert, G.I. Sanchez-Ortiz, S.Hegde, V.Rahunathan, and R.Razavi. *IEEE Transactions on Medical Imaging*, 22(11):1369-- 1378, 2003.
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- Localization of abnormal conduction pathways for treatment of tachyarrhythmia using tagged MRI. G.I. Sanchez-Ortiz, M. Sermesant, K.S. Rhode, R. Chandrashekar, R. Razavi, D.L.G. Hill and D. Rueckert. In *Eighth Int. Conf. on Medical Image Computing and Computer-Assisted Intervention (MICCAI '05)*, Lecture Notes in Computer Science (LNCS 3749), Springer-Verlag, pages 425-433, Palm Springs, USA, 2005.
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- Detecting and comparing the onset of myocardial activation and regional motion changes in tagged MR for XMR-guided RF ablation. G.I. Sanchez-Ortiz, M. Sermesant, K.S. Rhode, R. Chandrashekar, R. Razavi, D.L.G. Hill and D. Rueckert. In *Functional Imaging and Modeling of the Heart (FIMH'05)*, Lecture Notes in Computer Science, LNCS 3504, Springer-Verlag, pages 348-358, Barcelona, Spain, June 2005.
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- Determination of aortic distensibility using non-rigid registration of cine MR images. M. Lorenzo-Valdes, G. I. Sanchez-Ortiz, H. Bogren, R. Mohiaddin, and D. Rueckert. In *Seventh Int. Conf. on Medical Image Computing and Computer-Assisted Intervention (MICCAI '04)*, St Malo, France, Vol I, pages 754-762, 2004.
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- Simulation of the electromechanical activity of the heart using XMR interventional imaging. M. Sermesant, K. Rhode, A. Anjorin, S. Hedge, G. Sanchez-Ortiz, D. Rueckert, P. Lambiase, C. Bucknall, D. Hill, and R. Razavi. In *Seventh Int. Conf. on Medical Image Computing and Computer-Assisted Intervention (MICCAI '04)*, St Malo, France, Vol II, pages 786-794, 2004.
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- Measuring myocardial motion changes in tagged MR to establish inverse electro-mechanical coupling for XMR-guided RF ablation. G.I. Sanchez-Ortiz, M. Sermesant, R. Chandrashekar, K.S. Rhode, R. Razavi, D.L.G. Hill and D. Rueckert. In *International Workshop on Augmented environments for Medical Imaging and Computer-aided Surgery (AMI-ARCS'04)*, Rennes, France, pages 32-40, 2004.
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- Building a 4D atlas of the cardiac anatomy and motion using MR imaging. D. Perperidis, M. Lorenzo-Valdes, R. Chandrashekar, A. Rao, R. Modiaddin, G.I. Sanchez-Ortiz and D. Rueckert. In *Medical Image Understanding and Analysis (MIUA'04)*, pages 9-12, London, UK, 2004.
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- Detecting the onset of myocardial contraction for establishing inverse electro-mechanical coupling in XMR guided RF ablation. G.I. Sanchez-Ortiz, R. Chandrashekar, K.S. Rhode, R. Razavi, D.L.G. Hill and D. Rueckert. In *IEEE International Symposium on Biomedical Imaging (ISBI'04)*, pages 1055-1058, Arlington, USA, Apr 2004.
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- Building a 4D atlas of the cardiac anatomy and motion using MR imaging. D. Perperidis, M. Lorenzo-Valdes, R. Chandrashekar, R. Mohiaddin, G.I. Sanchez-Ortiz and D. Rueckert. In *IEEE International Symposium on Biomedical Imaging (ISBI'04)*, pages 412-415, Arlington, USA, Apr 2004.
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- Detecting regional changes in myocardial contraction patterns using MRI. G.I. Sanchez-Ortiz, R. Chandrashekar, K.S. Rhode, R. Razavi, D.L.G. Hill and D. Rueckert. In *SPIE Medical Imaging 2004: Physiology, Function, and Structure from Medical Images (SPIE'04)*, pages 710-721, San Diego, USA, Feb 2004.
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- XMR guided cardiac electrophysiology study and radio frequency ablation. K. S. Rhode, M. Sermesant, S. Hegde, G. I. Sanchez-Ortiz, D. Rueckert, R. Razavi, and D. L. Hill. In *Proc. SPIE Medical Imaging 2004: Physiology, Function, and Structure from Medical Images (SPIE'04)*, pages 10-21, San Diego, USA, Feb 2004.
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- Electromechanical Modelling of the Myocardium using XMR Interventional Imaging. M. Sermesant, K.S. Rhode, S. Hegde, G.I. Sanchez-Ortiz, D. Rueckert, P. Lambiase, C.A. Bucknall, D.L.G. Hill and R. Razavi. In *Proc. of the Society for Cardiovascular Magnetic Resonance (SCMR'04)*, Barcelona, Spain, Feb 2004.
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- Segmentation of 4D cardiac MR images using a probabilistic atlas and the EM algorithm. M. Lorenzo-Valdes, G. I. Sanchez-Ortiz, R. Mohiaddin, and Daniel Rueckert. In *Sixth Int. Conf. on Medical Image Computing and Computer-Assisted Intervention (MICCAI '03)*, Lecture Notes in Computer Science, pages 440-450, Montreal, Canada, Nov 2003.
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- Application of XMR 2D-3D registration to cardiac interventional guidance. K. Rhode, D. Hill, P. Edwards, J. Hipwell, D. Rueckert, G. I. Sanchez-Ortiz, S. Hegde, V. Rahunathan, and R. Razavi. In *Sixth Int. Conf. on Medical Image Computing and Computer-Assisted Intervention (MICCAI '03)*, Lecture Notes in Computer Science, pages 295-302, Montreal, Canada, Nov 2003.
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- Construction of a statistical model for cardiac motion analysis using non-rigid image registration. R. Chandrashekar, A. Rao, G. I. Sanchez-Ortiz, R. H. Mohiaddin, and D. Rueckert. In *Information Processing in Medical Imaging: Proc. 18th International Conference (IPMI'03)*, Lecture Notes in Computer Science, pages 599-610, Ambleside, UK, July 2003.
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- Segmentation of cardiac MR images using the EM algorithm with 4D probabilistic atlas and a global connectivity filter. M. Lorenzo-Valdes, D. Rueckert, R. Mohiaddin, and G. I. Sanchez-Ortiz. In *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS'03)*, Cancun, Sep 2003.
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- Construction of a cardiac motion atlas from mr using non-rigid registration. A. Rao, G.I. Sanchez-Ortiz, R. Chandrashekar, M. Lorenzo-Valds, R. Mohiaddin, and D. Rueckert. In *Functional Imaging and Modeling of the Heart (FIMH '03)*, Lecture Notes in Computer Science, pages 141-150, Lyon, France, June 2003.
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- Atlas-based segmentation and tracking of 3D cardiac MR images using non-rigid registration. M.Lorenzo-Valdes, G.I. Sanchez-Ortiz, R.Mohiaddin and D.Rueckert. In *Medical Image Computing and Computer-Assisted Intervention (MICCAI'02)*, Lecture Notes in Computer Science, pages 642-650, Springer-Verlag, Tokio, Japan, Sep 2002.
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- Comparison of Cardiac Motion Across Subjects Using Non-Rigid Registration. A.Rao, G.I. Sanchez-Ortiz, R.Chandrashekar, M.Lorenzo-Valdes, R.Mohiaddin and D.Rueckert. *Medical Image Computing and Computer-Assisted Intervention (MICCAI'02)*, Lecture Notes in Computer Science, pages 722-729, Springer-Verlag, Tokio, Japan, Sep 2002.
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- Non-rigid registration of cardiac MR: application to motion modelling and atlas-based segmentation. D.Rueckert, G.I. Sanchez-Ortiz, M.Lorenzo-Valdes, R.Chandrashekar and R.Mohiaddin. In *IEEE International Symposium on Biomedical Imaging (ISBI'02)*, pages 481-484, Washington DC, USA, July 2002.
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- Atlas-based segmentation of 4D cardiac MR sequences using non-rigid registration. M. Lorenzo-Valdes, G. I. Sanchez-Ortiz, R. Mohiaddin, and D. Rueckert. In *Proc. of Medical Image Understanding and Analysis (MIUA'02)*, pages 189-192, Portsmouth, UK, July 2002.
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Abstracts

- Detecting the onset of myocardial contraction and regional motion changes for XMR guided RF ablation. G.I. Sanchez-Ortiz, M. Sermesant, K.S. Rhode, R. Chandrashekar, R. Razavi, D.L.G. Hill and D.Rueckert. In *Proc. of the International Society for Magnetic Resonance in Medicine (ISMRM'05)*, Miami, USA, 2005.
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- Estimation of distensibility of the aorta using non-rigid registration of cine MR images. M. Lorenzo-Valdes, G. I. Sanchez-Ortiz, H. Bogren, R. Mohiaddin, and D. Rueckert. In *Proc. of the International Society for Magnetic Resonance in Medicine (ISMRM'04)*, Kyoto, Japan, 2004.
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- Modelling the cardiac electromechanical activity for integration of electrophysiological studies with MR. M. Sermesant, K. Rhode, S. Hedge, G. Sanchez-Ortiz, D. Rueckert, P. Lambiase, C. Bucknall, D. Hill, and R. Razavi. In *Proc. of the International Society for Magnetic Resonance in Medicine (ISMRM'04)*, Kyoto, Japan, 2004.
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Others

- ECG Databases and Arrhythmia Detection and Forecast. G.I. Sanchez-Ortiz. *Technical report*, Visual Information Processing, Department of Computing, Imperial College London, pp. 23, March 2005.
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3D Echocardiography

([Introduction to 3D Ultrasound](#))

Journals (refereed articles)

- Automated 3-D Echocardiography Analysis Compared With Manual Delineations and SPECT MUGA. G.I. Sanchez-Ortiz, G.J.T. Wright, N. Clarke, J. Declerck, and J.A. Noble. *IEEE Transactions on Medical Imaging*, 21(9):1069--1076, September 2002.
 - [Article \(pdf\)](#) or [\(ps.gz\)](#)

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- Automating 3D Echocardiographic Image Analysis. G.I. Sanchez-Ortiz, J. Declerck, J.A. Noble and M. Mulet-Parada. In *Medical Image Computing and Computer-Assisted Intervention (MICCAI'00)*, Lecture Notes in Computer Science, pages 687--696, Pittsburgh, USA, October 2000.
 - [Article \(pdf\)](#) or [\(ps.gz\)](#)
- Automated LV motion analysis from 3D echocardiography. G.I. Sanchez-Ortiz, J.A. Noble, G.J.T. Wright, J. Feldmar and M. Mulet-Parada. In *Medical Image Understanding and Analysis, MIUA'99*, Oxford, UK, July, 1999.
 - [Article \(HTML\)](#) or [\(pdf\)](#) or [\(ps.gz\)](#)

Others

- Multi-scale fuzzy clustering algorithm. G.I. Sanchez-Ortiz. *Technical report*, Medical Vision Laboratory, University of Oxford, pp. 24, June 2000.

- 3D Echocardiographic Image Analysis Tools. G.I. Sanchez-Ortiz. *Technical report*, Medical Vision Laboratory, University of Oxford, pp. 21, May 2000.
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Medical Image Processing

Journals (refereed articles)

- Knowledge-based tensor anisotropic diffusion of cardiac MR images. G.I. Sanchez-Ortiz, D. Rueckert and P. Burger. *Medical Image Analysis*, **3**(1):77-101, 1999.
 - [Article \(pdf\)](#)
 - [Movies](#) from the CDROM, showing the diffusion process.
 - [MIA issue](#)

Conferences (refereed articles)

- Fuzzy Clustering Driven Anisotropic Diffusion: Enhancement and Segmentation of Cardiac MR Images. G.I. Sanchez-Ortiz. In *IEEE Nuclear Science Symposium and Medical Imaging Conference*, Toronto, Canada, November 1998.
 - [Summary \(HTML\)](#) or [\(ps\)](#) or [\(ps.gz\)](#)
- Knowledge-Based Anisotropic Diffusion of Cardiac Cine MR Images. G.I. Sanchez-Ortiz, D. Rueckert and P. Burger. In *Medical Image Understanding and Analysis (MIUA'97)*, Oxford, UK, July 7-8, 1997.
 - [Summary \(HTML\)](#) or [\(ps.gz\)](#)
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- Knowledge-Based Anisotropic Diffusion of Vector-Valued 4-Dimensional Cardiac MR Images. G.I. Sanchez-Ortiz, D. Rueckert and P. Burger. In *British Machine Vision Conference (BMVC'96)*, pages 605-614, Edinburgh, UK, Sept. 10-12, 1996.
 - [Summary \(HTML\)](#) or [\(ps\)](#)
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- Motion and Deformation Analysis of the Heart using Thin-Plate Splines and Density and Velocity Encoded MR Images. G.I. Sanchez-Ortiz, D. Rueckert and P. Burger. In *16th Statistical Workshop on Image Fusion and Shape Variability*, pages 71-78, Leeds, UK, July 1996.
 - [Summary \(HTML\)](#) or [\(ps.gz\)](#)
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- Motion and Deformation Analysis of the Myocardium using Density and Velocity Encoded MR Images. D. Rueckert, G.I. Sanchez-Ortiz and P. Burger. In *10th International Symposium on Computer Assisted Radiology (CAR'96)*, pages 125-130, Paris, June 1996. Springer Verlag.
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- Vector Field Analysis of the Dynamics of the Heart using Velocity Encoded Cine MR Imaging. G.I. Sanchez-Ortiz and P. Burger. In *9th International Symposium on Computer Assisted Radiology (CAR'95)*,

pages 228-233, Berlin, June 1995. Springer Verlag.

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Non-linear Dynamical Systems (Chaos)

Journals (refereed articles)

- Chaos in a Variable Mass Relaxation Oscillator Model for the Leaky Tap. G.I. Sanchez-Ortiz and A.L. Salas-Brito. *Physica D* **89** (1995) 1-2: 151-168.
 - [Article \(pdf\)](#)
 - [High-Resolution Figures \(ps.gz\)](#) (2.3 MB)
- Strange Attractors in a Relaxation Oscillator Model for the Dripping Water Faucet. G.I. Sanchez-Ortiz and A.L. Salas-Brito. *Physics Letters A* **203** (1995) 5-6: 300-311.
 - [Article \(pdf\)](#)
 - [High Resolution Figures \(ps.gz\)](#) (1.7 MB)

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- A Novel Gating Technique for Cardiac NMR Imaging using Heartbeat Time Intervals Forecast. G.I. Sanchez-Ortiz and P. Burger. In *International Workshop on Nonlinear Dynamics, Fractality and Self Organization of Complex Systems*, p. D7, Wuerzburg, Germany, October 1994.
 - [Extended Abstract \(HTML\)](#) or [\(ps\)](#)

Others

- Dinamica de un Grifo Goteante: Estudio Numerico de un Modelo Mecanico, Gerardo I. Sanchez Ortiz. *Senior Thesis*, pp. 105, [Facultad de Ciencias](#), [UNAM](#), CU, DF, Mexico. 1991.

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