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Curriculum Vitae.

Education

Oct. 1996 – Jan. 2000	**University of Oxford (UK)** *Robotics Research Group, Department of Engineering Science* *Schizophrenia Research Group, Department of Clinical Neurology* PhD in Medical Image Analysis, under supervision of Prof. Sir Michael Brady and Prof. Andrew Zisserman from the Dept. of Engineering Science, and in collaboration with Prof. Timothy Crow from the Dept. of Psychiatry. Research within the Medical Vision Laboratory of the Robotics Research Group, as part of the European Community research project BIOMORPH. Thesis title: "Morphometric Analysis of Brain Structures in MRI". *Awards:* *EC BIOMORPH research scholar, 1996-2000.* *IBM / Green College computing scholar, 1998-1999.*
Oct. 1991 – Jul. 1996	**Universitat Jaume I of Castellon (Spain)** *Computer Engineering Degree* Degree thesis: "*Analysis, Design and Development of a Parametric Surface Renderer with Textures, Shading and Shadow Casting*", graded 10 with Honorific Mention (highest possible grade in Spanish academic system). *Awards:* *Spanish national scholarship for the promotion of research, 1995-1996.* *Several honorific mentions.*

Research / Professional Experience

Aug. 2004 –	**University of Bern (Switzerland)** *Group Head, Medical Imaging, Maurice E. Müller Research Center* Image-guided surgery, statistical shape models, 3D ultrasound, 3D fluoroscopy, medical applications: orthopaedic and hepatic surgery.
Dec. 2001 – July 2004	**INRIA Sophia Antipolis (France)** *Senior Researcher at the Epidaure Research Group* Medical image analysis, segmentation, statistical shape, biomechanical models.
Mar. 2000 – Oct. 2001	**Toshiba Medical Systems R&D (Japan)** *Researcher at the MRI Research Group* Algorithms for fast MRI. Development of SPEEDER, a technique for parallel MRI implemented in Toshiba's MRI scanners throughout the world.
Oct. 1996 – Feb. 2000	**University of Oxford** *Medical Vision Lab., Robotics Research Group* Processing of medical MR data sets; automatic detection, segmentation, and quantification of anatomical structures; image understanding; surface and volume modelling for the representation of complex biological shapes; rendering and development of GUIs for clinical use.

Oct. 1996 – Jan. 2000	**University of Oxford, Dept. of Clinical Neurology** *Research Assistant / System Administrator* Development of applications for analysis of medical 3D data sets. Clinical research on schizophrenia and muliple sclerosis. Design and implementation of image processing / understanding, and computer graphics applications. UNIX system administration.
1998 – 1999	**Green College, Oxford** *System Administrator* Administration of Windows NT systems.
Jul. 1995 – Jul. 1996	**Universitat Jaume I** *Computer Graphics Group, Dept. of Computer Science* Visual realism; representation of complex scenes using parametric surfaces and solid textures; rendering, illumination and fast techniques for shadow casting. Project designed following the Object-Oriented Modelling Technique (OMT).
Nov. 1995 – Oct. 1996	**EDEFSOFT, S.A. (Spain)** *Software Analyst / Programmer* Visual C++ and Visual Basic. Development of an OLE image server. Broad experience in graphic formats and image processing.
Oct. 1994 – Jan. 1995	**Universitat Jaume I, Computer Services** *System Administrator (University placement)* UNIX system administration. Programming of Internet tools. UNIX and XWindows.
Nov. 1993 – Mar. 1994	**EDEFSOFT, S.A.** *Software Analyst / Programmer (University placement)* Programming of Windows applications, using as main development tool Microsoft Visual C++.

Research Students

Sep. 2002 - present	**Guillaume Dugas-Phocion** *PhD, Ecole des Mines de Paris (co-supervised with Prof. Nicholas Ayache)* "Modélisation et Segmentation des Lésions de Sclérose en Plaques en IRM Multiséquences."
Mar. 2003 - Aug. 2003	**Romain Ollivier** *Degree Thesis, Ecole Centrale d'Electronique, Paris* "Etude, Specification Technique et Mise en Place d'une Base de Données d'Images Médicales au Sein du Projet de Recherche Epidaure."

Teaching

2003 - 2004	**Ecole Supérieure en Sciences Informatiques (Sophia Antipolis)** *Teacher / Demonstrator* Instructor for the subject *Introduction à la Programmation* (2003/04).
2003 - 2004	**Université of Nice – Sophia Antipolis** *Teacher / Demonstrator* Instructor for subject *Systèmes Informatiques* (2003/04). Instructor for the graduate course *Analyse d'Images Medicales* (2003/04).
1997 - 1999	**University of Oxford, Dept. of Engineering Science** *Teacher / Demonstrator* Instructor for the following subjects: *Design, Build, and Test* (1997/98 and 1998/99), *Numerical Computing* (1998/99), and *Computer Architecture* (1998/99).

Consulting activities

CERAVER, S.A. (Paris, France)
Scientific consultant
Computer-assisted orthopedic surgery.

Scientific Commitees

Reviewer for the journals *Medical Image Analysis* (Elsevier), *Computer Vision and Image Understanding* (Academic Press), *Transactions on Medical Imaging* (IEEE), and *NeuroImage* (Elsevier).

Reviewer for the conferences *Medical Image Computing & Computer Assisted Intervention* (*MICCAI*) 2002, 2003 and 2004, *Virtual Environment Interactions and Physical Simulation* (*VRYPHIS*) 2004.

Reviewer of grant proposals for the French Rhône-Alpes region.

Examiner for MSc theses at the University of Cape Town, South Africa.

Languages

Spanish – mother tongue.
Catalan – mother tongue.
English – expert level.
Japanese – advanced/expert level.
French – advanced/expert level.

Publications

Theses

[1] González Ballester M.A. *Morphometric Analysis of Brain Structures in MRI*. PhD thesis. University of Oxford, 1999.

[2] González Ballester M.A. *Computer-Aided MRI-Based Analysis of Brain Morphology*. PhD transfer report. University of Oxford, 1997.

[3] González Ballester M.A. *Visualizador de Superficies Parametricas con Texturas, Iluminacion y Sombreado*. [*A Parametric Surface Renderer with Textures, Illumination, and Shadow-Casting*.] Degree thesis / technical report. Universitat Jaume I, Castellon (Spain), 1996.

Book chapters

[4] González Ballester M.A. *The Partial Volume Effect in MRI: Techniques and Applications*. Medical Imaging Systems: Techniques and Applications, World Publishing Co., 2004 (to appear).

Journal articles

[5] González Ballester M.A., Pennec X., Linguraru M.G., Ayache N. *Generalized Image Models and Their Application as Statistical Models of Images*. Medical Image Analysis (ISSN 1361-8415), Ed. Elsevier Science, 2004 (to appear).

[6] Linguraru M.G., González Ballester M.A., Ayache N. *Deformable Atlases for the Segmentation of Internal Brain Nuclei in Magnetic Resonance Imaging*. Acta Universitatis Cibiniensis – Technical Series (ISSN 1221-4949), 2004 (to appear).

[7] González Ballester M.A., Zisserman A., Brady M. *Estimation of the Partial Volume Effect in MRI*. Medical Image Analysis (ISSN 1361-8415), Ed. Elsevier Science, 6(4), pp. 389-405, 2002.

[8] Machida Y., Hamamura Y., González Ballester M.A., Nozaki S., Okamoto K., Uchizono S., Ichinose N., Kassai Y., Kanazawa H., Usui Y. ＭＲＩパラレルイメージングＳＰＥＥＤＥＲの開発 [*Development of MR Parallel Imaging, SPEEDER*.] Medical Review (ISSN 0289-6826), 83, pp. 52-58, Nov. 2001.

[9] González Ballester M.A., Zisserman A., Brady M. *Segmentation and Measurement of Brain Structures in MRI Including Confidence Bounds*. Medical Image Analysis (ISSN 1361-8415), Ed. Elsevier Science, 4(3), pp. 189-200, 2000.

Patents

[10] González Ballester M.A., Machida Y. *Parallel MR Imaging Using High-Precision Coil Sensitivity Map*. US patent application no. 98G33339, September 2003.

[11] González Ballester M.A., Machida Y. *Apparatus and Method for Estimating Coil Sensitivity Map and MRI Apparatus*. International patent no. PCT/JP02/00343, January 2002.

[12] González Ballester M.A., Machida Y. コイル感度分布推定装置及びその推定方法、並びにＭＲＩ装置. [*Apparatus, Method and MRI System for Evaluating Coil Sensitivity Distribution*.] Japanese patent no. 2001-12478, January 2001.

Tutorials

[13] González Ballester M.A. *Accurate Shape Modelling and Measurement Using Estimates of Partal Volume Effects*. Tutorial on Recent Advances in Image Segmentation at the International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI), Cambridge, UK. Sept. 19, 1999.

Conference articles

[14] Dugas-Phocion G., González Ballester M.A., Malandain G., Lebrun C., Ayache N. *Improved EM-Based Tissue Segmentation and Partial Volume Effect Quantification in Multi-Sequence MRI*. Lecture Notes in Computer Science (ISSN 0302-9743) Ed. Springer-Verlag (Procs. of MICCAI'2004, Saint-Malo, France), 2004 (to appear).

[15] Linguraru M., Galanaud D., Dormont D., Faucheaux B., Haik S., Hauw J.J., Chiras J., Bardinet E., González Ballester M.A., Cozzone P., Ayache N., Brandel J.P. *Détection et Quantification Automatique des Hypersignaux en IRM dans la Maladie de Creutzfeldt-Jakob*. Journées Françaises de Radiologie, 2004 (to appear).

[16] Dugas-Phocion G., González Ballester M.A., Lebrun C., Chanalet C., Bensa C., Malandain G., Ayache N. *Hierarchical Segmentation of Multiple Sclerosis Lesions in Multi-Sequence MRI*. IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), Arlington, VA, USA, April 2004.

[17] Dugas-Phocion G., González Ballester M.A., Lebrun C., Chanalet C., Bensa C., Malandain G. *Segmentation automatique des hypersignaux de la substance blanche (HSB) sur des IRM T2 FLAIR de patients atteints de forme rémittente de sclérose en plaques*. Journées de Neurologie de Langue Française (JNLF), Strasbourg, France, April 2004.

[18] González Ballester M.A., Pennec X., Ayache N. *Generalized Image Models and Their Application as Statistical Shape Models*. Lecture Notes in Computer Science (ISSN 0302-9743), Ed. Springer-Verlag, 2879 (Procs. of MICCAI'2003, Montreal, Canada), pp. 150-157, 2003.

[19] Linguraru M.G., González Ballester M.A., Ayache N. *A Multiscale Feature Detector for Morphological Analysis of the Brain*. Lecture Notes in Computer Science (ISSN 0302-9743) Ed. Springer-Verlag, 2879 (Procs. of MICCAI'2003, Montreal, Canada), pp. 738-745, 2003.

[20] González Ballester M.A., Machida Y., Nozaki S., Uchizono S., Sugimoto H. 3D *Thin-Plate Splines for Prescan-Based Sensitivity Assessment in Parallel Imaging*. 29th Meeting of the Japanese Journal of Magnetic Resonance in Medicine (JMRM), Tsukuba, Japan, 2001.

[21] Machida Y., Kuhara S., González Ballester M.A., Nozaki S., Takai H., Kassai Y., Hamamura Y. SPEEDER 再構成の FBI への応用　－ESSR 法によるフローアーチファクトの低減－. [*Application of SPEEDER to FBI – Artifact Reduction in ESSR*.] 29th Meeting of the Japanese Journal of Magnetic Resonance in Medicine (JMRM), Tsukuba, Japan, 2001.

[22] Nozaki S., Kimura T., Takai H., González Ballester M.A., Hamamura Y., Machida Y. SPEEDER 法の頭部 Diffusion Imaging への適用. [*Application of SPEEDER to Diffusion Imaging*.] 29th Meeting of the Japanese Journal of Magnetic Resonance in Medicine (JMRM), Tsukuba, Japan, 2001.

[23] Kuhara S., Kassai Y., Yui M., Machida Y., González Ballester M.A. SPEEDER 技術を用いた 3D Interactive Locator の検討. [*3D Interactive Locator Technique Using SPEEDER Fast Imaging*.] 29th Meeting of the Japanese Journal of Magnetic Resonance in Medicine (JMRM), Tsukuba, Japan, 2001.

[24] Kobayashi Y., Tanaka O., Matsuura K., Hamada K., Machida Y., González Ballester M.A., Miyata T., Yodo K. 心臓の Black Blood Imaging におけるマルチコイル高速撮像法(SPEEDER)による画質改善の検討. [*Evaluation of Black Blood Imaging Using Multicoil High Speed Imaging (SPEEDER)*.] 29th Meeting of the Japanese Journal of Magnetic Resonance in Medicine (JMRM), Tsukuba, Japan, 2001.

[25] Machida Y., González Ballester M.A., Takai H., Hamamura Y. ＦＣ付ＦＢＩへのマルチコイル高速撮像法 (SPEEDER) 適用の有効性について. [*Application of Multiple RF Coil High Speed Imaging (SPEEDER) to Flow-Compensated Fresh Blood Imaging*.] 9th Japanese Conference on Magnetic Resonance Angiography, Tokyo, Japan, 2001.

[26] González Ballester M.A., Machida Y., Kassai Y., Hamamura Y., Sugimoto H. *Robust Estimation of Coil Sensitivities for RF Subencoding Acquisition Techniques*. 9th Scientific Meeting of the International Society of Magnetic Resonance in Medicine (ISMRM'2001), Glasgow, UK, 2001.

[27] Machida Y., Kuhara S., González Ballester M.A., Takai H., Kassai Y., Hamamura Y. *A Novel Subencoding Reconstruction Technique in 3D Half-Fourier FSE for Non-*

Contrast MRA without Flow-Related N/2 Artifacts. 9th Scientific Meeting of the International Society of Magnetic Resonance in Medicine (ISMRM'2001), Glasgow, UK, 2001.

[28] Machida Y., González Ballester M.A., Takai H., Kassai Y., Hamamura Y. *Application of RF Subencoding Acquisition to Flow Compensated 3D Half-Fourier FSE MRA*. 9th Scientific Meeting of the International Society of Magnetic Resonance in Medicine (ISMRM'2001), Glasgow, UK, 2001.

[29] Kobayashi Y., Osamu T., Imai N., Yokomizo T., Machida Y., González Ballester M.A., Yodo K. *Improvement of Image Quality in 2D/3D Half-Fourier FSE with RF Subencoding Acquisition – Clinical Applications in Thoracic Imaging*. 9th Scientific Meeting of the International Society of Magnetic Resonance in Medicine (ISMRM'2001), Glasgow, UK, 2001.

[30] Kobayashi Y., Tanaka O., Matsuura K., Hamada K., Machida Y., González Ballester M.A., Miyata T., Yodo K.. マルチコイル高速撮像法(SPEEDER)を用いた 2D/3D FASE 非造影 MRA における画質改善の検討. [*Improvement of Image Quality in 2D/3D Fase Non-Contrast MRA with Multiple RF Coil High Speed Imaging*.] Japanese Radiological Society (JRS), 2001.

[31] Yokomizo T., Koyama Y., Sagehahi M., Imai N., Chiba Y., Machida Y., González Ballester M.A., Miyata T., Yodo K. マルチコイルを用いた 高速撮像法の基本的特性の検討. [*Evaluaton of Basis Characteristics of Multiple RF Coil High Speed Imaging*.] Japanese Society of Radiological Technicians (JSRT'2001), Kobe, Japan, 2001.

[32] González Ballester M.A., Machida Y., Kassai Y., Hamamura Y., Sugimoto H. *Robust Estimation of Coil Sensitivities for PPA Reconstruction*. 3rd International Symposium of the Japanese Society of Magnetic Resonance in Medicine (JSMRM), Tokyo, Japan, 2001.

[33] Miyazaki M., Takai H., Kanazawa H., González Ballester M.A., Machida Y., Sugiura S. *Progress in Nonenhanced MRA: Dual-Phase Scan, Functional MRA, and RF Sub-Encoding Acquisition*. 3rd JSMRM International Symposium, Tokyo, Japan, 2001.

[34] Machida Y., Kassai Y., Hamamura Y., González Ballester M.A., Kuhara S., Miyazaki M. ＲＦ高速撮像法を併用したＦＡＳＥによる 非造影血流イメージング. [*High Speed Imaging Using Multiple RF Coils for FASE Non-Contrast-Enhanced Blood Flow Imaging*.] 28th Meeting of the Japanese Journal of Magnetic Resonance in Medicine (JMRM), Kyoto, Japan, 2000.

[35] Miyazaki M., Takai H., Kanazawa H., González Ballester M.A., Machida Y., Sugiura S. *Applications of Nonenhanced MRA: a Dual-Phase Acquisition, Functional MRA, and an RF Subencoding Acquisition*. XII International Workshop on Magnetic Resonance Angiography, Lyon, France, 2000.

[36] González Ballester M.A., Brady M., Zisserman A. *Narrowing Confidence Bounds Using Estimates of Partial Volume Effects*. International Workshop on Recent Advances in Brain Morphometry, Corsendonck, Belgium, 1999.

[37] Chance S., Craven R., González Ballester M.A., Crow T. *A New Method for MRI Assessment of Torque in Schizophrenic Brains*. 8th International Congress on Schizophrenia Research, Santa Fe, New Mexico, 1999. Schizophrenia Research (36)1-3, pg. 193.

[38] González Ballester M.A., Zisserman A., Brady M. *Measurement of Brain Structures based on Statistical and Geometrical 3D Segmentation*. Lecture Notes in Computer Science (ISSN 0302-9743), Ed. Springer-Verlag, 1496 (Procs. of MICCAI'98, MIT, Cambridge MA, USA), pp. 499-508, 1998.

[39] González Ballester M.A., Zisserman A., Brady M. *Segmentation and Measurement of Brain Structures from MRI*. International Workshop on Recent Advances in Brain Morphometry, Leeds Castle, Kent, UK, 1998.

[40] González Ballester M.A., Zisserman A., Brady M. *Combined Statistical and Geometrical 3D Segmentation and Measurement of Brain Structures*. Procs. of the IEEE Workshop on Biomedical Image Analysis (WBIA), Santa Barbara, California (USA), 1998.

Technical reports

[41] Linguraru M., González Ballester M.A., Bardinet E., Galanaud D., Dormont D., Brandel J.P., Ayache N. *Automated Analysis of Basal Ganglia Intensity Distribution in Multisequence MRI of the Brain – Application to Creutzfeldt-Jakob Disease*. Technical Report, INRIA, 2004 (to appear).