

Mauricio Reyes

Date of Birth May 24, 1977

Place of Birth Chile

Addresses

Office:

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Education

- **PhD in Informatics (Medical Image Analysis)**
Institut National de Recherche en Informatique et en Automatique (INRIA). 2005
Epidaure Team. Sophia Antipolis, France
Specialization on Image/Vision.
- **Electrical Engineer**
Universidad de Santiago de Chile. Santiago, Chile 2000
Specialization on Automatic Control. Graduated top of the class.
- **Bachelor in Engineering Sciences**
Universidad de Santiago de Chile. Santiago, Chile 1999
- **Electromechanical Technician**
Don Orione Industrial School. Santiago, Chile. Graduated top of the class. 1994

Work History

- **Associate Professor**
University of Bern, Institute for Surgical Technology and Biomechanics March 2014
– Fach: Medical Image Analysis
- **Habilitation Privatdozent**
University of Bern, Institute for Surgical Technology and Biomechanics Dec. 2012
– Fach: Medical Image Analysis
- **Medical Image Analysis, Head Group**
Institute for Surgical Technology and Biomechanics April 2008 - Present
– Leading a team of 6 PhD students, 3 post-doc fellowships and 2 undergraduate students. Participation in EU/Swiss and industrial projects in the areas of brain cancer research, soft-tissue deformation modeling for cranio maxillo-facial surgery, image-guided orthopaedic implant design.

Institute for Surgical Technology and Biomechanics - Postdoc fellow 2006 - March 2008

- Medical image analysis, statistical shape modelling, soft tissue simulation, automatic volumetric meshing and smoothing for FEM analysis, implant design optimization, respiratory motion compensation in emission tomography, participation in preparation of EU projects.

- **Development Engineer**

CMET S.A.C.I 2002

- Development of an Internet based surveillance system.
System based on DirectX8 SDK and Java technologies.

- **Electrical Engineer practice**

LAN Chile S.A January - February 2000

- Development of communication software to test aeronautics equipments.

- **Electromechanical Technician Internship**

LAN Chile S.A January-March 1995

- Performed maintenance and reparation of aeronautic equipments.

Honors and Awards

- Award “*Ypsomed Innovation Award (20000CHF)*”
Human-Machine Learning for Brain Lesion Image Analysis
Bern, Switzerland 2017
- Award “*Second Prize Longitudinal Brain Tumor Segmentation Challenge. & BRATS 2016* ”
Medical Image Computing and Computer Assisted Interventions
Supervision of PhD student, Raphael Meier 2016
- Award “*First Prize Multiple Sclerosis Segmentation Challenge. & MSSEG 2016* ”
Medical Image Computing and Computer Assisted Interventions
In collaboration with Richard McKinley 2016
- Award “*Young Scientist Publication Impact Award*”
Medical Image Computing and Computer Assisted Interventions
Supervision of PhD student, Stefan Bauer 2016
- Award “*Second Prize Ischemic Stroke Lesion Segmentation Challenge. & ISLES 2016* ”
Medical Image Computing and Computer Assisted Interventions
In collaboration with Richard McKinley 2016
- Award “*Second Prize in Interactive Medical Image Computing*”
“*Fast Correction Method for Abdominal Multi-Organ Segmentation Using 2D/3D Free Form Deformation and Posterior Shape Models*”.
Medical Image Computing and Computer Assisted Interventions
Supervision of PhD student, Waldo Valenzuela. 2015
- Award “*First Prize Ischemic Stroke Lesion Segmentation Challenge. & ISLES 2015* ”
Medical Image Computing and Computer Assisted Interventions
In collaboration with Richard McKinley 2015

- Award “*Best paper Siemens award Workshop on Medical Computer Vision*”
“*Integrated spatio-temporal segmentation of longitudinal brain tumor imaging studies*”.
Supervision of PhD student, Stefan Bauer 2013
- Award “*2nd Prize Brain Tumor Segmentation Challenge. & BRATS 2013* ”
Medical Image Computing and Computer Assisted Interventions
Supervision of PhD student, Raphael Meier 2013
- Award “*2nd Prize Brain Tumor Segmentation Challenge. & BRATS 2012* ”
Medical Image Computing and Computer Assisted Interventions
Supervision of PhD student, Stefan Bauer 2012
- Award “*Christof Seiler recipient of Miccai Young Scientist Award. & Miccai 2011* ”
Medical Image Computing and Computer Assisted Interventions
Supervision of PhD student, Christof Seiler 2011
- Honor “*Swiss National Science Foundation, NCCR Success Stories - 2009*”
Representing the NCCR Co-Me project and the selected topic 2009
“statistical shape modeling” - SNSF press release highlighting successful NCCR stories
- Award “*Best Technical Paper Presentation & Poster - CAOS 2008* ”
Supervision of PhD students, Nina Kozic and Matthias Peterhans 2008
- Award “*Swiss National Science Foundation, Picture of the Month - October 2007*”
SNSF Press release highlighting important research projects 2007
- Award “*Roberto Ovalle Aguirre*”
Given by the Chilean Institute of Engineers for the best 2001 2001
electrical engineering thesis of the Universidad de Santiago de Chile. Santiago, Chile.
- First prize in “*First National Contest of Technologic Innovation - 2001*”
Title of work : Three-dimensional Reconstruction of a Human Embryo Hand Using
Artificial Vision Techniques. Universidad de Santiago de Chile. Santiago, Chile.
- Award: *Best Student 1994 class*
Don Orione Industrial School, Santiago, Chile 1994

Fund Raising

- **Swiss National Science Foundation**

“*Stroke treatment goes personalized: Gaining added diagnostic yield by computer-assisted treatment selection*” 2017-2020
Co-applicant (indicative budget: 105'000 CHF)

“*Longitudinal Brain Tumor Segmentation with Uncertainty Estimation using Fully-connected Conditional Random Field and Perturb-and-Maximum Posterior-Marginal Estimation*” Main applicant (178'000 CHF) 2017-2020

“*Image-guided Micro Surgery for Hearing Aid Implantation*” - Nano-Tera 2013-2017
Co-applicant (indicative budget: 400'000 CHF)

<p><i>“Inclusion of Fabric in Patient-Specific Finite Element Analysis of the Proximal Femur”</i> Co-applicant (indicative budget: 150'000 CHF)</p>	2013-2016
<p><i>“Susceptibility Correction in Echo-Planar Image Using Image Registration”</i> Main applicant (indicative budget: 87'000 CHF)</p>	2011-2012
<p><i>“Bone Shape and Density Prediction from Demographic Anthropometric and Morphological Variables”</i> Main applicant (indicative budget: 73'000 CHF)</p>	2011-2012
<p>- National Center of Competence in Research on Computer Aided and Image Guided Interventions (NCCR CO-ME)</p>	
<p><i>“Virtual Skeleton Database”</i> Co-applicant (indicative budget: 500'000 CHF)</p>	2010-2013
<p><i>“Patient Specific Intervention Planning In Cranio-Maxillo Facial Surgery”</i> Co-applicant (indicative budget: 250'000 CHF)</p>	2010-2013
<p><i>“Computer-assistance in orthopaedic surgery”</i> Co-applicant (indicative budget: 500'000 CHF)</p>	2005-2009
<p>- International Short Research Visit Project <i>“Clinical Validation and Integration into the Italian Hospital of Buenos Aires of an Automated Morphometry Software”</i> Main applicant (indicative budget: 15'000 CHF)</p>	2010

- Confederation's innovation promotion agency (CTI)**

CTI-Cranioform - Main-applicant 2014-2016
"Advanced Computer-aided Design System for Infant Cranial Shape Correction Helmet"
 (indicative budget: CHF 360'000)

CTI-Scanco - Co-applicant 2012-2015
"Fast estimation of Colles fracture load of the distal radius by non-linear finite element analysis based on high resolution peripheral computed tomography"
 (indicative budget: CHF 150'000)

CTI-Fumedica - Co-applicant 2012-2015
"Dynamic High-Resolution Microangiography"
 (indicative budget: CHF 150'000)

CTI-Crisalix - Main applicant 2011-2013
"3D Virtual Simulation for Facial and Breast Reduction Simulation Surgery"
 (indicative budget: 500'000 CHF)

CTI-Crisalix - Main applicant 2009-2011
"3D Virtual Breast Augmentation Simulation"
 (indicative budget: 500'000 CHF)

CTI-Stryker Osteosynthesis - Co-applicant 2006-2009
"Shape and biomechanical models for population specific design of anatomical peri-articular implants"
 (indicative budget: 600'000 CHF)

• EU Research Projects

EU-FP7-ICT *"Computational Horizons In Cancer (CHIC): Developing Meta- and Hyper-Multiscale Models and Repositories for In Silico Oncology"* 2013-2017
 Co-applicant (indicative budget: 400'000 CHF)

EU-FP7-HEALTH *"High-resolution image-based computational inner ear modelling for surgical planning of cochlear implantation (HEAR-EU)"* 2012-2015
 Co-applicant (indicative budget: 300'000 CHF)

EU-FP7 *"Clinically oriented translational cancer multilevel modelling (ContraCancrum)"* 2008-2011
 Co-applicant (indicative budget: 300'000 CHF)

• Foundations

Krebsliga Schweiz (Swiss Cancer League) 2017-2020
"Multidimensional RespoNse Assessment in Glioma PatiEnts MANAGE"
 Main applicant (indicative budget: 370'000 CHF)

Swiss Heart Foundation 2015-2018
"A machine learning approach towards automated tissue classification of the ischemic core and penumbra in acute ischemic stroke patients"
 Co-applicant (indicative budget: 90'000 CHF)

Krebsliga Schweiz (Swiss Cancer League) “Medical Image Analysis for Brain Tumor Studies” Main applicant (indicative budget: 230'000 CHF)	2013-2015
Bernische Krebsliga (Bernese Cancer League) “Medical Image Analysis for Brain Tumor Studies” Main applicant (indicative budget: 30'00 CHF)	2013-2014
AO-Spine “Implications of Age-Related Muscle Loss (Sarcopenia) for Spinal Posture, Loading and Fracture Risk” Co-applicant (indicative budget: 180'000 CHF)	2013-2015
• Third-party Industrial Funding	
“Brain and Bone Medical Image Processing in MRI Imaging” Main applicant (indicative budget: 200'000 CHF)	2008-2011
“Image-guided and evidence based orthopaedic implant design” Main applicant (indicative budget: 200'000 CHF)	2008-2010
“MRI Spine Segmentation” Main applicant (indicative budget: 100'000 CHF)	2008-2009
“CMF Soft Tissue Simulation” Main applicant (indicative budget: 100'000 CHF)	2008-2009
“Bone Shape Prediction From Sparse Information” Main applicant (indicative budget: 100'000 CHF)	2008-2009

Reviewer for Scientific Journals and Peer-Review Conferences

- Physics in Medicine and Biology (PMB)
- Medical Image Analysis (MedIA)
- IEEE Transactions on Medical Imaging (TMI)
- IEEE Transactions on Biomedical Engineering (TBME)
- Medical Image Computing and Computer Assisted Intervention (MICCAI)
- International Symposium on Biomedical Imaging: from Nano to Macro (ISBI)

Conferences/Workshops Organized

- Program Committee of:
MICCAI Brain Tumor Segmentation Challenge 2012-2017
- Program Committee of:
MICCAI Ischemic Stroke Lesion Segmentation 2015-2017
- Program Committee of STIA:
MICCAI Workshop on Spatio-Temporal Image Analysis for Longitudinal and Time-Series Image Data 2010-2016
- Program Committee of CLIP:
MICCAI Workshop on Clinical Image-based Procedures:
From Planning to Intervention 2012-2016

- Program Committee of MeshMed
MICCAI Workshop on Mesh Processing in Medical Image Analysis 2010 & 2011
- Co-Organizer of Summer School in Computational Oncology - EU-FP7
Institute of Computer Sciences of the Foundation for
Research and Technology, Crete, Greece June 2011
- Co-Organizer of Workshop in Statistical Shape Modeling
10th Annual Meeting of the International Society for
Computer Assisted Orthopaedic Surgery, Paris, France June 2010
- Co-Organizer of Workshop in Statistical Shape Modeling
9th Annual Meeting of the International Society for
Computer Assisted Orthopaedic Surgery, Boston, USA June 2009
- Co-Organizer of the first Summer School in Medical Imaging, Santiago, Chile
Universidad de Santiago de Chile, Santiago, Chile 2004

Invited Lectures and Teaching Experience

- Invited Talk 3rd International Workshop on Magnetic Resonance Imaging
Mumbai, India February 2017
Talk: *Machine Learning for Brain Lesion Analysis*
- Invited Talk Seminar Series Biomedical Image Analysis Univ. Basel
Basel, Switzerland September 2016
Talk: *Computational approaches to diseases of the central neural system*
- Invited Talk International Symposium in Biomedical Imaging
Prague, Czech Republic April. 2016
Talk: *From Muscle Quantification to Bone Fabric Modeling:
Experiences in Quantitative Musculoskeletal Imaging*
- Invited Talk Organization for Human Brain Mapping
Vienna, Austria Nov. 2015
Talk: *Machine Learning in Brain Lesion Analysis*
- Invited Talk Summer School EU projects PICTURE & VPH-PRISM
Multidisciplinary Advances in Personalised Breast Cancer Surgery
Porto, Portugal July 2015
Talk: *Statistical Shape Modelling for Soft-tissue Surgical Simulation*
- Invited Talk Methods in Biomechanics and Biomedical Engineering
Soft-tissue Biomechanics and Engineering, Amsterdam Oct. 2014
Talk: *Computational Anatomy for Population-based
Design and Assessment of Medical Devices*
- Invited Talk MedTech Forum
Luzern, Switzerland Sept. 2013
Talk: *Medical Image Analysis: From Population Analysis to
Patient-specific Treatment*

- Invited Talk at the Department of Computer Sciences
 Danish Technical University June 2013
 Copenhagen, Denmark
 Talk: *Multimodal Brain Tumor Image Analysis*
- Invited Talk at the Department of Radiology Brigham
 and Women's Hospital Harvard Medical School Sept. 2012
 Harvard, Boston, USA.
 Talk: *Brain Imaging and Computational Anatomy*
- Invited Talk at the Surgical Planning Laboratory Brigham
 and Women's Hospital Harvard Medical School Sept. 2012
 Harvard, Boston, USA.
 Talk: *Image-Guided Soft Tissue Deformation for CMF Surgery*
- Invited Talk at the Department of Oral & Maxillofacial Surgery, UCSF
 UCSF, San Francisco, USA. Sept. 2012
 Talk: *Image-Guided Soft Tissue Deformation for CMF Surgery*
- Invited Lecturer at the Center for Biomedical Imaging
 EPFL, Lausanne, Switzerland. June 2011
 Talk: *Brain Image analysis at the ISTB*
- Invited Lecturer at the Dept. of Magnetic Resonance
 Spectroscopy and Methodology Oct. 2010
 DKF, Bern, Switzerland.
 Talk: *Medical Image Analysis at the ISTB: Showcase of Research activities*
- Invited Lecturer at the Technology Institute of Buenos Aires, Argentina
 Talk: *Medical Image Analysis at the Institute for Surgical
 Technology and Biomechanics* Sept. 2010
- Lecturer of the MSc program in Biomedical Engineering
Medical Image Analysis 2007-present
 University of Bern/ETHZ, Switzerland.
- Invited Lecturer at Workshop in Statistical Shape Modeling
 10th Annual Meeting of the International Society for
 Computer Assisted Orthopaedic Surgery, Paris, France. June 2010
 Talk: *Computational Anatomy for Bone Analysis
 and Orthopedic Implant Design*
- Invited Lecturer at Workshop in Statistical Shape Modeling
 9th Annual Meeting of the International Society for
 Computer Assisted Orthopaedic Surgery, Boston, USA. June 2009
 Talk: *Computational Anatomy for Bone Morphometry
 and Orthopaedic Implant Design*
- Invited Lecturer at ESB-2008
 16th Congress European Society of Biomechanics July 2008
 Talk: *Integration of Statistical Modeling in Biomechanical Simulation*

- Lecturer at the Summer School in Medical Imaging, Santiago, Chile
Nuclear medicine, image reconstruction and the breathing problem
Universidad de Santiago de Chile 2004
- Laboratory Instructor of Intelligent Control
Electrical Engineering department, Universidad de Santiago de Chile 1999 - 2000
- Laboratory Instructor of Digital Control
Electrical Engineering department, Universidad de Santiago de Chile 1999 - 2000
- Participated in the preparation of the teaching project:
“Construction and Application of Educational Video Programs for Electrical Engineering Laboratories”
Universidad de Santiago de Chile, Santiago, Chile 1999

Supervised PhD Thesis

- Nina Kozic (2009) “Statistical shape space analysis based on level sets for optimization of orthopaedic implant design”.
- Hyungmin Kim (2011) “Computer-Assistance in Cranio-Maxillofacial Surgery: A Clinically-Driven Approach”.
- Thiago Oliveira dos Santos (2011) “A Soft Tissue Image Guidance System for Percutaneous Needle Interventions Based on Multimodal Images”.
- Serena Bonaretti (2012) “Statistical Finite Element Modeling: Application to Orthopaedic Implant Design”.
- Christof Seiler (2012) “Trees on Geometrical Deformations to Model the Statistical Variability of Organs in Medical Images”.
- Huanxiang Lu (2012) “Multi-modal Deformable Registration for Magnetic Resonance Image”.
- Habib Bou-Sleiman (2012) “A Computational Anatomy Approach to Orthopaedic Research”.
- Stefan Bauer (2013) “Medical Image Analysis and Image-based Modeling for Brain Tumor Studies”.
- Elham Taghizadeh (2016) “Statistical Shape Model of the Leg to Improve the Treatment of Patella Pathology in Total Knee Arthroplasty”.
- Waldo Valenzuela (2016) “Effective Human Machine Interfaces for Medical Image Analysis”.
- Carlos Correa Schokiche (2016) “MicroCT based kidney morphometry: A machine learning approach”.
- Vimal Chandran (2017) “Comprehensive and Effective Machine Learning based Computational Modelling of the Human Proximal Femur”.
- Raphael Meier (2017) “Towards Automatic Segmentation of Longitudinal Brain Tumor Imaging Data”.

- Ping Lu (2017) “Advanced Medical Image Analysis of the Human Facial Nerve based on Machine Learning Technologies”.

PhD Thesis Committee

- Ekaterina Mishina (2010) “Predictive Properties of Statistical Shape Models”. Computer Vision Laboratory, ETH Zurich.
- David Habberthür (2010) “High Resolution Tomographic Imaging of the Alveolar Region of the Mammalian Lung”. Institute of Anatomy, University of Bern.
- Oline Vinter Olesen (2012) “Markerless 3D Head Tracking for Motion Correction in High Resolution PET Brain Imaging”. Department of Informatics and Mathematical Modeling, Danish Technical University.
- Rasmus Ramsbol Jensen (2013) “Challenges in 3D scanning: Focusing on Ears and Multiple View Stereopsis”. Department of Informatics and Mathematical Modeling, Danish Technical University.
- Sebastien Barre. “X-ray Tomography: an Imaging Aid for Stereological Analysis of Lung Development”. Institute of Anatomy, University of Bern
- Tom Williamson (2015). “Sensor-guided Robotic Microsurgery”. Artificial Organ Center, University of Bern.
- Grzegorz Toporek (2015). “Image-guided Intraoperative Brachytherapy and Interventional Radiology”. Artificial Organ Center, University of Bern.
- Maryam Seif (2015) “Advanced Multi-modal MR Imaging Methods and Analysis Tools for Reliable Determination of Renal Function in Native and Transplanted Kidneys”. Magnetic Resonance Spectroscopy and Methodology, Department of Clinical Research, University of Bern.
- Thomas Demarcy (2017) “Segmentation and Study of Anatomical Variability of the Cochlea from Medical Images”. Asclepius Research Team, Sophia Antipolis, Inria, France.

Other Professional Activities

- Master Thesis Coordinator
Master of Sciences In Biomedical Engineering, Univ. Bern May 2011 - Present
- Co-Founder of Startup Company *Crisalix S.A*
Virtual Aesthetics - Simulation of soft tissue deformations March 2008 - Present
- EU H2020 Project Reviewer
Reviewer of EU Health2020 projects 2014 - Present
- Dept. of Health & Wellcome Trust Project Reviewer
Reviewer of Health Innovation Challenge Fund
Dept. of Health & Wellcome Trust 2015

- European Projects FP7
(Seventh Framework Programme).
 - Osteoporotic Virtual Physiological Human (EU VPHOP)
 - Network of Excellence (EU NoE VPH)
- Member of the Computer Assisted Surgery Expert Group (CSEG)
AO Foundation
- Memberships
 - The Institute of Electrical and Electronics Engineers (IEEE)
 - The Swiss Society of Biomedical Engineering (SSBE)
 - The Swiss Cancer League

2008

Publications

PH.D. THESIS

- [1] Reyes M. *Respiratory Motion Compensation in Emission Tomography*. PhD thesis, University of Nice, Sophia Antipolis, France, 2005.

BOOK CHAPTERS

- [1] Crimi A., Menze B., Maier O., Reyes M., and Handels H. *Brainlesion: Glioma, Multiple Sclerosis, Stroke and Traumatic Brain Injuries: First International Workshop, Brainles 2015, Held in Conjunction with MICCAI 2015, Munich, Germany, October 5, 2015, Revised Selected Papers*, volume 9556. Springer, 2016.
- [2] Reyes M., Shahim K., and Jürgens P. *Computer-Assisted Musculoskeletal Surgery: Thinking and Executing in 3D*, chapter Computational Image-Guided Technologies in Cranio-Maxillofacial Soft Tissue Planning and Simulation, pages 43–56. Springer International Publishing, Cham, 2016.
- [3] Bauer S., Wiest R., Slotboom J., and Reyes M. *Atlas-based Segmentation of Tumor-bearing Brain Images*, volume 12, pages 159–169. Springer Berlin / Heidelberg, m. a. hayat, ed. edition, 2014.
- [4] Bardyn T., Reyes M., Larrea X., and Buechler P. *Influence of Smoothing on Voxel-Based Mesh Accuracy in Micro-Finite Element*, chapter 10, pages 78–86. Springer Science+Business Media, LLC 2010, September 2009.
- [5] Seiler C., Büchler P., Nolte L.P., Paulsen R., and Reyes M. *Hierarchical Markov Random Fields Applied to Model Soft Tissue Deformations on Graphics Hardware*, chapter 9, pages 133–148. Springer, springer london edition, December 2008.
- [6] Kim H., Jürgens P., and Reyes M. *Patient-Specific Modeling in Tomorrow's Medicine*, volume 9 of *Studies in Mechanobiology, Tissue Engineering and Biomaterials*, chapter Soft-Tissue Simulation for Cranio-Maxillofacial Surgery: Clinical Needs and Technical Aspects, pages 413–440. Springer, 2012.

JOURNAL ARTICLES

- [1] Meier R., Porz N., Knecht U., Loosli T., Schucht P., Beck J., Slotboom J., Wiest R., and Reyes M. Automatic estimation of extent of resection and residual tumor volume of patients with glioblastoma. *Journal of Neurosurgery*, pages 1–9, 2017.
- [2] Lu P., Barazzetti L., Chandran V., Gavaghan K., Weber S., Gerber N., and Reyes M. Highly accurate facial nerve segmentation refinement from cbct/ct imaging using a super resolution classification approach. *IEEE Transactions on Biomedical Engineering*, PPs(99):1–1, 2017.
- [3] Porz N., Habegger S., Meier R., Verma R.K., Jilch A., Fichtner J., Knecht U., Radina C., Schucht P., Jürgen B., Raabe A., Slotboom J., Reyes M., and Wiest R. Fully automated enhanced tumor compartmentalization: Man vs. machine reloaded. *PLoS ONE*, 11(11):1–16, 11 2016.
- [4] Maier O., Menze B., Wiest R., Handels H., and Reyes M. ISLES 2015 - A public evaluation benchmark for ischemic stroke lesion segmentation from multispectral MRI. *Medical Image Analysis*, 35:250–269, aug 2016.
- [5] McKinley R., Haeni L., Gralla J., El-Koussy M., Bauer S., Arnold M., Fischer U., Jung S., Mattmann K., Reyes M., and Wiest R. Fully automated stroke tissue estimation using random forest classifiers (faster). *Journal of Cerebral Blood Flow and Metabolism*, 37(8):2728–2741, August 2017.
- [6] Meier R., Knecht U., Loosli T., Bauer S., Slotboom J., Wiest R., and Reyes M. Clinical evaluation of a fully-automatic segmentation method for longitudinal brain tumor volumetry. *Nature Scientific Reports*, 6(23376), 2016.
- [7] Valenzuela W., Ferguson S., Ignasiak D., Diserens G., Haeni L., Wiest R., Vermathen P., Boesch C., and Reyes M. Fisico: Fast image segmentation correction. *PLoS ONE*, 11(5):1–17, 05 2016.
- [8] Seif M., Mani L., Lu H., Boesch C., Reyes M., Vogt B., and Vermathen P. Diffusion tensor imaging of the human kidney: Does image registration permit scanning without respiratory triggering? *J Magn Reson Imaging*, 44(2):327–334, Feb 2016.
- [9] Taghizadeh E., Reyes M., Zysset P., Latypova A., Terrier A., and Buchler P. Biomechanical role of bone anisotropy estimated on clinical ct scans by image registration. *Ann Biomed Eng*, Jan 2016.
- [10] Rios-Velazquez E., Meier R., Dunn W., Alexander B., Wiest R., Bauer S., Gutmann D., Reyes M., and Aerts H. Fully automatic gbm segmentation in the tcga-gbm dataset: Prognosis and correlation with vasari features. *Nature Scientific Reports*, 5(16822), November 2015.
- [11] Menze B., Reyes M., and Van Leemput K. The multimodal brain tumor image segmentation benchmark (brats). *IEEE Trans Med Imaging*, 34(10), Oct 2015.
- [12] Cerrolaza J.J., Reyes M., Summers R.M., González-Ballester M.A., and Linguraru M.G. Automatic multi-resolution shape modeling of multi-organ structures. *Medical Image Analysis*, 25(1):11–21, April 2015.
- [13] V. Chappuis, O. Engel, K. Shahim, M. Reyes, C. Katsaros, and D. Buser. Soft tissue alterations in esthetic postextraction sites: A 3-dimensional analysis. *Journal of Dental Research*, 94(9 suppl):187S–193S, 2015.
- [14] Seif M., Lu H., Boesch C., Reyes M., and Vermathen P. Image registration for triggered and non-triggered dti of the human kidney: Reduced variability of diffusion parameter estimation. *J Magn Reson Imaging*, 41(5):1228–1235, Jun 2014.
- [15] Porz N., Bauer S., Pica A., Schucht P., Beck J., Verma R.K., Slotboom J., Reyes M., and Wiest R. Multi-modal glioblastoma segmentation: Man versus machine. *PLoS ONE*, 9(5):e96873, May 2014.
- [16] Bonaretti S., Seiler C., Boichon C., Reyes M., and Buechler P. Image-based vs. mesh-based statistical appearance models of the human femur: Implications for finite element simulations. *Medical Engineering & Physics*, 36(12):1626 – 1635, 2014.

- [17] Bou-Sleiman H., Paul L., Nolte L.P., and Reyes M. Comparative evaluation of pelvic allograft selection methods. *Annals of Biomedical Engineering*, 41(5):931–938, May 2013.
- [18] Oliveira-Santos T., Baumberger C., Constantinescu M., Olariu R., Nolte L.P., Alaraibi S., and Reyes M. 3d face reconstruction from 2d pictures: First results of a web-based computer aided system for aesthetic procedures. *Annals of Biomedical Engineering*, 41(5):952–966, May 2013.
- [19] Lu H., Beisteiner R., Nolte L.P., and Reyes M. Hierarchical segmentation-assisted multimodal registration for mr brain images. *Computerized Medical Imaging and Graphics*, 37(3):234–244, April 2013.
- [20] Bauer S., Lu H., May C., Nolte L.P., Buechler P., and Reyes M. Integrated segmentation of brain tumor images for radiotherapy and neurosurgery. *International Journal of Imaging Systems and Technology*, 23(1):59–63, March 2013.
- [21] Bou Sleiman H., Iizuka T., Nolte L.P., and Reyes M. Population-based design of mandibular fixation plates with bone quality and morphology considerations. *Annals of Biomedical Engineering*, 41(2):377–384, February 2013.
- [22] Bauer S., Wiest R., Nolte L.P., and Reyes M. A survey of mri-based medical image analysis for brain tumor studies. *Physics in Medicine and Biology*, 58(13):R97, 2013.
- [23] Chappuis V., Engel O., Reyes M., Shahim K., Nolte L.P., and Buser D. Ridge alterations post-extraction in the esthetic zone a 3d analysis with cbct. *Journal of Dental Research*, 92(12 suppl):195S–201S, 2013.
- [24] Kim B.R., Oh K.M., Cevdanes L.H.S., Park J.E., Sim H.S., Seo S.K., Reyes M., Kim Y.J., and Park Y.H. Analysis of 3d soft tissue changes after 1-and 2-jaw orthognathic surgery in mandibular prognathism patients. *Journal of Oral and Maxillofacial Surgery*, 71(1):151–161, January 2013.
- [25] Seiler C., Pennec X., Nolte L.P., and Reyes M. Capturing the multiscale anatomical shape variability with polyaffine transformation trees. *Medical Image Analysis*, 16(7):1371–1384, October 2012.
- [26] Bauer S., Ritacco L.E., Boesch C., Nolte L.P., and Reyes M. Automatic scan planning for magnetic resonance imaging of the knee joint. *Annals of Biomedical Engineering*, 40(9):2033–2042, September 2012.
- [27] Blanc R., Seiler C., Székely G., Nolte L.P., and Reyes M. Statistical model based shape prediction from a combination of direct observations and various surrogates. application to orthopaedic research. *Medical Image Analysis*, 16(6):1156–1166, August 2012.
- [28] Seiler C., Gazdhar A., Reyes M., Benneker L.M., Geiser T., Siebenrock K.A., and Gantenbein-Ritter B. Time-lapse microscopy and classification of 2d human mesenchymal stem cells based on cell shape picks up myogenic from osteogenic and adipogenic differentiation. *Journal of Tissue Engineering and Regenerative Medicine*, page In Press, July 2012.
- [29] Ritacco L.E., Seiler C., Farfalli G.L., Nolte L., Reyes M., Muscolo D.L., and Tinao L.A. Validity of an automatic measure protocol in distal femur for allograft selection from a three-dimensional virtual bone bank system. *Cell Tissue Bank*, 1:1–8, Apr 2012.
- [30] de Heras Ciechowski P., Constantinescu M., Garcia J., Olariu R., Dindoyal I., Le Huu S., and Reyes M. Development and implementation of a web-enabled 3d consultation tool for breast augmentation surgery based on 3d-image reconstruction of 2d pictures. *Journal of Medical Internet Research*, 14(1):e21, 2012.
- [31] Lu H., Nolte L.P., and Reyes M. Interest points localization for brain image using landmark-annotated atlas. *International Journal of Imaging Systems and Technology*, 22(2):145–152, 2012.
- [32] Schulz A.P., Reimers N. Nils, Wipf F., Vallotton M., Bonaretti S., Kozic N., Reyes M., and Kienast B.J. Evidence based development of a novel lateral fibula plate (variax fibula) using a real ct bone data based optimization process during device development. *Open Orthop J*, 6:1–7, January 2012.

- [33] Kim Y.J., Oh K.M., Hong J.S., Lee J.H., Kim H.M., Reyes M., Cevidanes L.H.S., and Park Y.H. Do patients treated with bimaxillary surgery have more stable condylar positions than those who have undergone single-jaw surgery? *Journal of Oral and Maxillofacial Surgery*, 70(9):2143–52, September 2011.
- [34] Bauer S., May C., Dionysiou D., Stamatakos G., Buechler P., and Reyes M. Multi-scale modeling for image analysis of brain tumor studies. *IEEE Trans Biomed Eng*, 59(1):25–29, Aug 2011.
- [35] Jürgens P., Klug C., Krol Z., Beinemann J., Kim H., Reyes M., Guevara-Rojas G., Zeilhofer H. F., Ewers R., and Schicho K. Navigation-guided harvesting of autologous iliac crest graft for mandibular reconstruction. *J Oral Maxillofac Surg*, 69(11):2915–2923, May 2011.
- [36] Bou Sleiman H., Ritacco L.E., Aponte-Tinao L., Muscolo D.L., Nolte L.P., and Reyes M. Allograft selection for transepiphyseal tumor resection around the knee using three-dimensional surface registration. *Annals of Biomedical Engineering*, 39(6):1720–7, March 2011.
- [37] Marias K., Dionysiou D., Sakkalis V., Graf N., Bohle RM, Coveney PV, Wan S., Folarin A., Büchler P., Reyes M., et al. Clinically driven design of multi-scale cancer models: the contracancrum project paradigm. *Interface Focus*, 1(3):450–461, 2011.
- [38] Kim H., Jürgens P., Weber S., Nolte L.P., and Reyes M. A new soft-tissue simulation strategy for cranio-maxillofacial surgery using facial muscle template model. *Progress in Biophysics and Molecular Biology. Special Issue on Soft Tissue Modelling*, 103(2-3):284–291, December 2010.
- [39] Tucker S., Cevidanes L., Styner M., Kim H., Reyes M., Proffit W., and Turvey T. Comparison of actual surgical outcomes and 3-dimensional surgical simulations. *J Oral Maxillofac Surg*, 68(10):2412–2421, Oct 2010.
- [40] Kozic N., Weber S., Büchler P., Lutz C., Reimers N., González Ballester MA., and Reyes M. Optimisation of orthopaedic implant design using statistical shape space analysis based on level sets. *Medical Image Analysis*, 14(3):265–275, June 2010.
- [41] Cevidanes L., Tucker S., Styner M., Kim H., Chapuis J., Reyes M., Proffit W., Turvey T., and Jaskolka M. Three-dimensional surgical simulation. *American Journal of Orthodontics and Dentofacial Orthopedics*, 138(3):361 – 371, 2010.
- [42] Kozic N., Weber S., González-Ballester M.A., Abdo G., Rufenacht D.A., Ferguson S., and Reyes M. Automated cement segmentation in vertebroplasty. *Comput Aided Surg*, 15(1-3):49–55, 2010.
- [43] Reyes M., Malandain G., Koulibaly P.M., González-Ballester M.A., and Darcourt J. Model-based respiratory motion compensation for emission tomography image reconstruction. *Physics in Medicine and Biology*, 52(12):3579–3600, June 2007.
- [44] Linguraru M.G., Vercauteren T., Reyes M., González-Ballester M.A., and Ayache N. Segmentation propagation from deformable atlases for brain mapping and analysis. *Brain Research Journal*, 1(4):269–287, 2007.
- [45] Reyes M., González-Ballester M.A., and Linguraru M.G. Statistical bone shape analysis for image free surgery. *Acta Universitatis Cibiniensis, Technical Series, Vol, LV*:121–129, 2007.
- [46] Malandain G. and Reyes M. La tomographie en mouvement. *Pour la science*, 338:132–137, December 2005.
- [47] Reyes M. and Pereda J. Reconstrucción virtual de la mano de un embrión humano, evaluación experimental. *Teoría y Metodologías. Clínica y Ciencia magazine*, 1(2), 2001.

- [1] Shokiche C., Baumann P., Ruslan H., Djonov V., and Reyes M. High-throughput glomeruli analysis of micro-ct kidney images using tree priors and scalable sparse computation. In Sebastien Ourselin, Leo Joskowicz, Mert R. Sabuncu, Gozde Unal, and William Wells, editors, *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2016: 19th International Conference, Athens, Greece, October 17-21, 2016, Proceedings, Part II*, pages 370–378, Cham, October 2016. Springer International Publishing.
- [2] Chandran V., Zysset P., and Reyes M. Prediction of trabecular bone anisotropy from quantitative computed tomography using supervised learning and a novel morphometric feature descriptor. In *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2015*, Lecture Notes in Computer Science, pages 621–628, October 2015.
- [3] Cerrolaza J.J., Villanueva A., M.A. Reyes M. Cabeza R. Gonzalez Ballester, and Linguraru M.G. Generalized multiresolution hierarchical shape models via automatic landmark clusterization. In *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2014*, volume 17 of *Lecture Notes in Computer Science*, pages 1–8, September 2014.
- [4] Guerig T., Shahim K., Reyes M., Vetter T., and Lüthi M. Spatially varying registration using gaussian processes. In *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2014*, volume 17 of *Lecture Notes in Computer Science*, pages 413–20, September 2014.
- [5] Meier R., Bauer S., Slotboom J., Wiest R., and Reyes M. Patient-specific semi-supervised learning for postoperative brain tumor segmentation. In *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2014*, volume 17 of *Lecture Notes in Computer Science*, pages 714–21, September 2014.
- [6] Bauer S., Gratz P., Gralla J., Reyes M., and Wiest R. Towards automatic mri volumetry for treatment selection in acute ischemic stroke patients. In *Proceedings of the 36th Annual International Conference of the IEEE EMBS Chicago, USA, Aug. 26-30*, pages 1521 – 1524, 2014.
- [7] Bauer S., Porz N., Meier R., Pica A., Slotboom J., Wiest R., and Reyes M. Interactive segmentation of mr images from brain tumor patients. In *ISBI 2014: Proceedings of the 2014 IEEE international conference on Biomedical imaging*, pages 862 – 865, Beijing, 2014.
- [8] Shahim K., Cattin P., Jürgens P., Nolte L.P., and Reyes M. Prediction of cranio-maxillofacial surgical planning using an inverse soft tissue modelling approach. In *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2013*, volume 8149 of *Lecture Notes in Computer Science*, pages 18–25, October 2013.
- [9] Bauer S., Tessier J., Krieter O., Nolte L.P., and Reyes M. Integrated spatio-temporal segmentation of longitudinal brain tumor imaging studies. In Bjoern Menze, Georg Langs, Albert Montillo, Michael Kelm, Henning Müller, and Zhuowen Tu, editors, *Medical Computer Vision. Large Data in Medical Imaging*, Lecture Notes in Computer Science, pages 74–83. Springer International Publishing, 2013.
- [10] Shahim K., Goksel O., Jürgens P., and Reyes M. Accuracy improvement in cranio-maxillofacial soft tissue simulation using a muscle embedded meshing approach. In *Proceedings of the 35th Annual International Conference of the IEEE EMBS Osaka, Japan, July 3-7*, pages 7156–9. IEEE Press, 2013.
- [11] Bou Sleiman H., Iizuka T., Nolte L.P., and Reyes M. Population-based design of mandibular plates based on bone quality and morphology. In Nicholas Ayache, Hervé Delingette, Polina Golland, and Kensaku Mori, editors, *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2012*, Lecture Notes in Computer Science, pages 66–73. Springer Berlin / Heidelberg, October 2012.
- [12] Seiler C., Pennec X., and Reyes M. Simultaneous multiscale polyaffine registration by incorporating deformation statistics. In Nicholas Ayache, Hervé Delingette, Polina Golland, and Kensaku Mori, editors, *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2012*, Lecture Notes in Computer Science, pages 130–137. Springer Berlin / Heidelberg, October 2012.

- [13] Bauer S., Nolte L.P., and Reyes M. Fully automatic segmentation of brain tumor images using support vector machine classification in combination with hierarchical conditional random field regularization. In Terry Peters Gabor Fichtinger, Anne Martel, editor, *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2011*, pages 354–361, September 2011.
- [14] Bou Sleiman H., Ritacco L.E., Nolte L.P., and Reyes M. Minimization of intra-operative shaping of orthopaedic fixation plates: A population-based design. In Terry Peters Gabor Fichtinger, Anne Martel, editor, *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2011*, pages 409–416, September 2011.
- [15] Seiler C., Pennec X., and Reyes M. Geometry-aware multiscale image registration via obbtrees-based polyaffine log-demons. In Terry Peters Gabor Fichtinger, Anne Martel, editor, *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2011*, pages 631–638, September 2011.
- [16] Bauer S., Nolte L.P., and Reyes M. Segmentation of brain tumor images based on atlas-registration combined with a markov-random-field lesion growth model. In *ISBI 2011: Proceedings of the 2011 IEEE international conference on Biomedical imaging*, pages 2018–2021, Chicago, IL, USA, March 2011. IEEE Press.
- [17] Lu H., Cattin P., Nolte L.P., and Reyes M. Diffusion weighted imaging distortion correction using hybrid multimodal image registration. In *ISBI 2011: Proceedings of the 2011 IEEE international conference on Biomedical imaging*, pages 594–597, Chicago, IL, USA, March 2011. IEEE Press.
- [18] Seiler C., Pennec X., Ritacco L.E., and Reyes M. Femur specific polyaffine model to regularize the log-domain demons registration. In *10th SPIE Medical Imaging 2011*, volume 7962, 2011.
- [19] Kim H., Jürgens P., Nolte L.P., and Reyes M. Anatomically-driven soft-tissue simulation strategy for cranio-maxillofacial surgery using facial muscle template model. In Tianzi Jiang, Nassir Navab, Josien Pluim, and Max Viergever, editors, *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2010*, volume 6361 of *Lecture Notes in Computer Science*, pages 61–68, September 2010.
- [20] Lu H., Reyes M., Serifovic A., Weber S., Sakurai Y., Yamagata H., and Cattin P. Multi-modal diffeomorphic demons registration based on point-wise mutual information. In *ISBI 2010: Proceedings of the 2010 IEEE international conference on Biomedical imaging*, pages 372–375, Piscataway, NJ, USA, April 2010. IEEE Press.
- [21] Seiler C., Pennec X., and Reyes M. Parametric regression of 3d medical images through the exploration of non-parametric regression models. In *ISBI 2010: Proceedings of the 2010 IEEE international conference on Biomedical imaging*, pages 452–455, Piscataway, NJ, USA, April 2010. IEEE Press.
- [22] Bauer S., Seiler C., Bardyn T., Büchler P., and Reyes M. Atlas-based segmentation of brain tumor images using a markov random field-based tumor growth model and non-rigid registration. In *Proceedings of the 32nd Annual International Conference of the IEEE EMBS Buenos Aires, Argentina, August 31 - September 4*, pages 4080–4083, 2010.
- [23] Lu H., Cattin P. C., and Reyes M. A hybrid multimodal non-rigid registration of mr images based on diffeomorphic demons. In *Proceedings of the 32nd Annual International Conference of the IEEE EMBS Buenos Aires, Argentina, August 31 - September 4*, pages 5951–5954, 2010.
- [24] Oliveira-Santos T., Peterhans M., Roth B., Reyes M., Nolte L.P., Thalmann G.N., and Weber S. Computer aided surgery for percutaneous nephrolithotomy: Clinical requirement analysis and system design. In *Proceedings of the 32nd Annual International Conference of the IEEE EMBS Buenos Aires, Argentina, August 31 - September 4*, volume 1, pages 442–445, 2010.
- [25] Oliveira-Santos T., Weitzel T., Klaeser B., Krause T., Nolte L.P., Weber S., and Reyes M. Multimodal target correction by local bone registration: A pet/ct evaluation. In *Proceedings of the 32nd Annual International Conference of the IEEE EMBS Buenos Aires, Argentina, August 31 - September 4*, pages 5616–5619, 2010.

- [26] Reyes M., González Ballester M.A., Kozic N., Sandberg J.K., Summers R.M., and Linguraru M.G. Hierarchical patch generation for multi-level statistical shape analysis by principal factor analysis decomposition. In *9th SPIE Medical Imaging 2010*, volume 7626 of *Biomedical Applications in Molecular, Structural, and Functional Imaging*, pages 762617–762617–8, 2010.
- [27] Blanc R., Reyes M., Seiler C., and Székely G. Conditional variability of statistical shape models based on surrogate variables. In *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2009*, volume 5762, pages 84–91. Springer Berlin / Heidelberg, September 2009.
- [28] Kozic N., Buechler P., González-Ballester M.A., Reimers N., Nolte L.P., and Reyes M. Population-specific evaluation of implant bone fitting using pca shape space and level sets. In *ISBI 2009: Proceedings of the Sixth IEEE international conference on Symposium on Biomedical Imaging*, pages 883–886, Piscataway, NJ, USA, 2009. IEEE Press.
- [29] Reyes M., González-Ballester M.A., Li Z., Kozic N., Chin S., Summers R.M., and Linguraru M.G. Anatomical variability of organs via principal factor analysis from the construction of an abdominal probabilistic atlas. In *ISBI 2009: Proceedings of the Sixth IEEE international conference on Symposium on Biomedical Imaging*, pages 682–685, Piscataway, NJ, USA, 2009. IEEE Press.
- [30] Kozic N. Reyes M., Tannast M., Nolte L.P., and González-Ballester M.A. Statistical shape space analysis based on level sets. In *4th International Workshop on Medical Imaging and Augmented Reality, Tokyo, Japan*, pages 160–167, August 2008.
- [31] Reyes M., Linguraru M.G., Nolte L.P., and González-Ballester M.A. Clusterization of deformation modes for quantitative evaluation on factor analysis techniques on statistical shape modeling. In *4th International Workshop on Medical Imaging and Augmented Reality, Tokyo, Japan*, August 2008.
- [32] Bonaretti S., Reimers N., Reyes M., Nikitsin A., Joensson A., Nolte L.P., and Buechler P. Assessment of peri-articular implant fitting based on statistical finite element modeling. In *Computational Biomechanics for Medicine III (Miccai 2008 Workshop)*, 2008.
- [33] Reyes M., González-Ballester M.A., Li Z., Kozic N., Summers R.M., and Linguraru G.M. Interpretability of anatomical variability analysis of abdominal organs via clusterization of decomposition modes. In *30th Annual International IEEE EMBS Conference, Vancouver, British Columbia, Canada*, volume 2008, pages 355–358, 2008.
- [34] Reyes M., Linguraru M.G., Marias K., Ayache N., Nolte L.P., and González-Ballester M.A. Statistical shape analysis via principal factor analysis. In *ISBI 2007: Proceedings of the Fourth IEEE international conference on Symposium on Biomedical Imaging*, pages 1216–1219, April 2007.
- [35] Reyes M., Malandain G., Darcourt J., and Koulibaly P.M. Respiratory motion correction in emission tomography imaging. In *Fully Three-Dimensional Image Reconstruction Meeting in Radiology and Nuclear Medicine, Salt Lake City, Utah, USA*, July 2005.
- [36] González-Ballester M.A., Linguraru M.G., Reyes M., and Ayache N. On the adequacy of principal factor analysis for the study of shape variability. In J. M. Fitzpatrick and J. M. Reinhardt, editors, *SPIE Medical Imaging 2005*, volume 5747, pages 1392–1399. SPIE Publishing, 2005.
- [37] Reyes M., Malandain G., Koulibaly P.M., González-Ballester M.A., and Darcourt J. Respiratory motion correction in emission tomography image reconstruction. In J. Duncan and G. Gerig, editors, *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2005*, volume 3750 of *Lecture Notes in Computer Science, Palm Springs, California*, pages 369–376, Verlag, 2005. Springer.

CONFERENCE ABSTRACTS

- [1] Taghizadeh E., Kistler M., Büchler P., and Reyes M. Fast prediction of femoral biomechanics using supervised machine learning and statistical shape modeling. In *Computational Biomechanics for Medicine X / MICCAI 2015*, pages 115–127, Oct 2015.
- [2] Lu P., Barazzetti L., Chandran V., Gavaghan K., Weber S., Gerber N., and Reyes M. Facial nerve image enhancement from cbct using supervised learning technique. In *Proceedings of the 37th Annual International Conference of the IEEE EMBS Milan, Italy August 25-29*, page In Press. IEEE Press, 2015.
- [3] Meier R., Karamitsou V., Habegger S., Wiest R., and Reyes M. Parameter learning for crf-based tissue segmentation of brain tumors. In *Brain Tumor Segmentation Challenge - BRATS / MICCAI 2015*, page In Press, 2015.
- [4] Valenzuela W., Ferguson S., Ignasiak D., Diserens G., Vermathen P., Boesch C., and Reyes M. Correction tool for active shape model based lumbar muscle segmentation. In *Proceedings of the 37th Annual International Conference of the IEEE EMBS Milan, Italy August 25-29*, page In Press. IEEE Press, 2015.
- [5] Valenzuela W., Cerrolaza J., Summers R., Linguraru M., and Reyes M. Fast correction method for abdominal multi-organ segmentation using 2d / 3d free form deformation and posterior shape models. In *Interactive Medical Image Computing - IMIC / MICCAI 2015*, page In Press, 2015.
- [6] Valenzuela W., Vermathen P., Boesch C., Nolte L.P., and Reyes M. isix - image segmentation in osirix. In *30th Annual Scientific Meeting of the European Society for Magnetic Resonance in Medicine and Biology*, October 2013.
- [7] Jürgens P., Shahim K., Cattin P., Zeilhofer H.F., and Reyes M. Backward-planning for orthognatic surgery—a new inverse modelling algorithm to define the hard-tissue position from a desired soft-tissue surface. volume 42, pages 1331–1331. Elsevier, 2013.
- [8] Lu H., Van der Zwaag W., Nolte L.P., and Reyes M. Geometric and intensity epi distortion correction for 7t fmri using simultaneous classification and registration. In *Proceedings of ESMRMB 2012, Lisbon, Portugal*. Springer, October 2012.
- [9] Seif M., Lu H., Boesch C., Reyes M., and Vermathen P. Image co-registration for triggered and non-triggered dti of the human kidney: Reduced variability of diffusion parameter estimation. In *Proceedings of ESMRMB 2012, Lisbon, Portugal*, October 2012.
- [10] Bonaretti S., Seiler C., Boichon C., Buechler P., and Reyes M. Mesh-based vs. image-based statistical appearance model of the human femur: a preliminary comparison study for the creation of finite element meshes. In *Mesh Processing in Medical Image Analysis*, Lecture Notes in Computer Science. Springer Berlin / Heidelberg, 2011.
- [11] Jürgens P., Kim H., Forter S., Beinemann J., Zeilhofer H.F., Reyes M., and Schwenzer K. Three-dimensional control of maxillary position—validation of a 3-d real time navigational prototype system for routine application in orthognathic surgery. In *Abstracts of the 20th International Conference on Oral and Maxillofacial Surgery*, volume 40, page 1064. Elsevier, 2011.
- [12] Jürgens P., Kim H., and Reyes M. Application of a new soft-tissue simulation strategy based on a mimic muscle template model to predict the outcome in orthognathic surgery. In *Abstracts of the 20th International Conference on Oral and Maxillofacial Surgery*, volume 40, page 1064. Elsevier, 2011.
- [13] Bonaretti S., Helgason B., Seiler C., Kistler M., Reyes M., and Buechler P. A statistical shape model of bone anatomical variability for finite element assessment of bone mechanics. In *17th Congress of the European Society of Biomechanics, Edinburgh, U.K.*, July 2010.
- [14] Kim H., Jürgens P., Cattin P., Weber S. Nolte L.P., and Reyes M. Patient-specific, fast soft-tissue simulation for cranio-maxillofacial surgery. In *17th Congress of the European Society of Biomechanics, Edinburgh, U.K. -Accepted for podium presentation*, July 2010.

- [15] Seiler C., Gazdhar A., Geiser T., Reyes M., and Gantenbein-Ritter B. Mesenchymal stem cell classification during differentiation based on shape information. In *TERMIS – Tissue Engineering and Regenerative Medicine International Society – EU Meeting, Galway, Ireland, June 2010*.
- [16] Stefan Bauer and Mauricio Reyes. A markov-random-field-based biomechanical tumor growth model for atlas-based segmentation of brain tumor images. In *Proceedings of the 4th International Advanced Research Workshop on In Silico Oncology and Cancer Investigation Athens, Greece September 8-9, 2010*.
- [17] Bonaretti S., Kistler M., Seiler C., Reyes M., and Buechler P. Combined statistical model of bone shape and mechanical properties for bone and implant modeling. In *9th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Valencia/Spain, Feb 24-27, 2010*.
- [18] Bou-Sleiman H., Ritacco L.E., and Reyes M. Computer-assisted allograft selection for transepiphyseal tumor resection at the knee. In *10th Annual Meeting of the International Society for Computer Assisted Surgery, Paris, France, June 16-19, 2010*.
- [19] X. Dong, H. Lu, Y. Sakurai, H. Yamagata, G. Zheng, and M. Reyes. Automated intervertebral disc detection from low resolution, sparse mri images for the planning of scan geometries. In Fei Wang, Pingkun Yan, Kenji Suzuki, and Dinggang Shen, editors, *Machine Learning in Medical Imaging*, volume 6357 of *Lecture Notes in Computer Science*, pages 10–17. Springer Berlin / Heidelberg, 2010.
- [20] Kim H., Jürgens P., Cattin P., Weber S., Nolte L.P., and Reyes M. Fast soft-tissue simulation method for cranio-maxillofacial surgery using facial muscle template models. In *14th Annual Conference of the International Society for Computer Aided Surgery, Geneva, Switzerland, June, 2010*.
- [21] K. Marias, V. Sakkalis, A. Roniotis, I. Karatzanis, G. Stamatakos, D. Dionysiou, S. Giatili, N. Uzunoglou, N. Graf, R. Bohle, E. Meese, H. Stenzhorn, Y.-J. Kim, P. Coveney, S. Zasada, S. Wan, A. Folarin, P. Büchler, T. Bardyn, S. Bauer, M. Reyes, G. Clapworthy, E. Liu, T. Bily, V. Bednar, Karasek. M., A. Franz, R. Grewer, and J. Sabczynski. Contracancrum at the project level: Clinically oriented translational cancer multilevel modelling. In *Proceedings of the 4th International Advanced Research Workshop on In Silico Oncology and Cancer Investigation Athens, Greece September 8-9, 2010*.
- [22] K. Marias, V. Sakkalis, A. Roniotis, I. Karatzanis, G. Stamatakos, D. Dionysiou, S. Giatili, N. Uzunoglou, N. Graf, R. Bohle, E. Meese, H. Stenzhorn, Y.-J. Kim, P. Coveney, S. Zasada, S. Wan, A. Folarin, P. Büchler, T. Bardyn, S. Bauer, M. Reyes, G. Clapworthy, E. Liu, T. Bily, V. Bednar, Karasek. M., A. Franz, R. Grewer, and J. Sabczynski. Clinically oriented translational cancer multilevel modelling: The contracancrum project. In *Proceedings of the Virtual Physiological Human Conference 2010 Brussels, Belgium September 30 - October 1, 2010*.
- [23] G. Stamatakos, D. Dionysiou, E. Kolokotroni, E. Georgiadi, A. Roniotis, V. Sakkalis, P. Coveney, S. Wan, S. Manos, S. Zasada, A. Folarin, P. Büchler, T. Bardyn, S. Bauer, M. Reyes, T. Bily, V. Bednar, M. Karasek., N. Graf, R.M. Bohle, E. Meese, Y.-J. Kim, H. Stenzhorn, G. Clapworthy, E. Liu, J. Sabczynski, and K. Marias. Contra cancrum at the project level: The contracancrum oncosimulator: Integrating biomechanisms across scales in the clinical context. In *Proceedings of the 4th International Advanced Research Workshop on In Silico Oncology and Cancer Investigation Athens, Greece September 8-9, 2010*.
- [24] Kim H., Jürgens P., Nolte L.P., Weber S., Zeilhofer H.F., and Reyes M. Anatomically considered, fast soft-tissue simulation for cranio-maxillofacial surgery. In *In Proceedings of Computer Aided Surgery around the Head, Paris, France, November 2009*.
- [25] Schmidt W., Reyes M., Fischer F., Geesink R., Nolte L.P., Racanelli J., and Reimers N. Quantifying human knee anthropometric differences between ethnic groups and gender using shape analysis. In *Annual Meeting of the American Society of Biomechanics, Penn State University, pages 26–29, August 2009*.
- [26] Bonaretti S., Buechler P., Reimers N., Schmidt W., Seiler C., Weber S., and Reyes M. Automatic bone density evaluation from ct images. In *9th Annual Meeting of the International Society for Computer Assisted Orthopaedic Surgery, Boston, U.S.A, June 17-20, pages 625–627, June 2009*.

- [27] Oliveira-Santos T., Weitzel T., Klaeser B., Reyes M., and Weber S. Introducing computer-assisted surgery into combined pet/ct image based biopsy. In *9th Annual Meeting of the International Society for Computer Assisted Orthopaedic Surgery, Boston, U.S.A, June 17-20*, pages 308–311, June 2009.
- [28] Seiler C., Weber S., Schmidt W., Fischer F., Reimers N., and Reyes M. Automatic landmark propagation for left and right symmetry assessment of tibia and femur: A computational anatomy based approach. In *9th Annual Meeting of the International Society for Computer Assisted Surgery, Boston, U.S.A, June 17-20*, pages 195–198, June 2009.
- [29] Kozic N., Reyes M., Tannast M., Nolte L.P., and González Ballester M.A. Assesment of anatomical criteria across populations using statistical shape models and level sets. In *8th Annual Meeting of the International Society for Computer Assisted Orthopaedic Surgery, Hong-Kong, China*, pages 46–49, June 2008.
- [30] Kozic N. Reyes M., Nolte L.P., and González-Ballester M.A. Global optimisation in pca shape space using level sets. In *12th Annual Conference of the International Society for Computer Aided Surgery, Barcelona, Spain*, pages S109–S110, June 2008.
- [31] Reyes M., Bonaretti S., Reimers N., Lutz C., and González-Ballester M.A. Evidence-based implant design using a statistical bone model and automated implant fitting. In *8th Annual Meeting of the International Society for Computer Assisted Orthopaedic Surgery, Hong-Kong, China*, June 2008.
- [32] Bonaretti S., Reimers N., Rueckert D., Reyes M., González-Ballester M.A., and Buechler P. Statistical finite element analysis for bone modeling. In *16th Congress of the European Society of Biomechanics, Lucerne, Switzerland*, pages S369–S369, 2008.
- [33] Larrea X., Reyes M., Boyd S., Buechler P., and González-Ballester M.A. Automatic mesh smoothing for finite element modelling from 3d image data. In *16th Congress of the European Society of Biomechanics, Lucerne, Switzerland*, 2008.
- [34] Reyes M., Larrea X., Boyd S., Buechler P., and González-Ballester M.A. Constrained hexahedral mesh smoothing for finite element modelling from 3d image data. In *Computer Methods in Biomechanics and Biomedical Engineering, Porto, Portugal*, 2008.
- [35] Reyes M., Nolte L.P., and González-Ballester M.A. Clustering of deformation modes for quantitative evaluation of statistical shape models. In *7th Annual Meeting of the International Society for Computer Assisted Orthopaedic Surgery, Heidelberg, Germany*, pages 271–273, June 2007.
- [36] Reyes M., Malandain G., Ayache N., Darcourt J., and Koulibaly P.M. Respiratory motion compensation within emission tomographic reconstruction. In *52nd Annual Meeting of the Society of Nuclear Medicine, Toronto, Canada*, 2005.
- [37] Pereda J. and Reyes M. Virtual reconstruction: a new approach to the study of human embryology. In *XVIII Congress of Brazilian Microscopy and Microanalysis Society. Sao Paulo, Brazil*, October 2001.
- [38] Pereda J. and Reyes M. The use of computational tools for the design, and elaboration of a teaching program on fetal anatomy. In *XVII International Symposium on Morphological Sciences, Timisoara, Rumania*, pages 11–15, September 2001.
- [39] Pereda J. and Reyes M. Nuevas tendencias educacionales: Reconstrucción tridimensional. una nueva alternativa en la enseñanza de la embriología humana. In *I Seminar of University Teaching. Universidad de Santiago de Chile, Santiago, Chile*, pages 26–28, September 2001.
- [40] Reyes M. and Salinas R. Visualización tridimensional en bioingeniería a partir de cortes seriados. In *International Conference of Engineering Systems, Communications and Information Technologies (ICSECIT), Punta Arenas, Chile*, pages 16–19, April 2001.
- [41] Reyes M. and Moisan M. Controlador difuso experimental para sistema ball and beam, usando visión artificial como realimentación. In *XIV Congress of Chilean Automatic Control Association (ACCA), Concepcion, Chile*, pages 23–27, October 2000.

TECHNICAL REPORTS

- [1] Reyes M., Malandain G., and Darcourt J. Respiratory movement correction in emission tomography. Technical Report Research Report RR-5279, INRIA, July 2004.