SERENA BONARETTI
Curriculum Vitae

PERSONAL INFORMATION

Email Address	serena.bonaretti.research@gmail.com
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PERSONAL STATEMENT

My research focuses on developing open and reproducible computational tools for standardizing, processing, and analyzing musculoskeletal (MSK) imaging data. The long-term goal is to advance the understanding, diagnosis, and treatment of age-related MSK diseases in a collaborative, reliable, and efficient approach. I am a co-founder and the coordinator of the ORMIR Community, and I authored the textbook Learn Python with Jupyter: Develop computational thinking while learning to code.

EMPLOYMENT

01.2025 – present	Independent Senior Research Scientist and Teacher, Zürich, Switzerland
10.2022 – 12.2024	Senior Research Scientist, Balgrist Campus, Zürich, Switzerland
08.2020 – 09.2022	Independent Teacher, C as in Coding (sole proprietorship), Maastricht, The Netherlands
10.2019 – 09.2022	Independent Research Scientist, Transparent MSK Research (sole proprietorship), Maastricht, The Netherlands

03.2019 – 08.2019	Research Scientist, Department of Bioinformatics, Maastricht University, The Netherlands
	    Projects: *NanoSolveIT* and *RiskGONE* (Engineered nanomaterial toxicology)
	    Advisor: Egon Willighagen

01.2016 – 07.2018	Physical Science Research Specialist, Department of Radiology, Stanford University, USA
	Research Biomedical Engineer, Department of Veterans Affairs, Palo Alto, USA
	    Projects: *Automatic segmentation of MR images of the knee* and *Weight-bearing imaging of the knee using C-arm CT*
	    Advisors: Gary Beaupre and Garry Gold

01.2015 – 12.2015	Associate Specialist, Department of Radiology and Biomedical Imaging, University of California, San Francisco, USA
	    Project: *Standardization of acquisition procedure for bone imaging for multicenter clinical research*
	    Advisors: Thomas Lang and Andrew Burghardt

03.2012 – 12.2014	Postdoctoral Scholar, Department of Radiology and Biomedical Imaging, University of California, San Francisco, USA
	    Project: *Standardization of acquisition procedure for bone imaging for multicenter clinical research*
	    Advisors: Thomas Lang and Andrew Burghardt

11.2005 – 11.2007	Clinical Engineer, Department of Audiology, Fondazione Audiologica Varese ONLUS, Ospedale di Circolo - Fondazione Macchi, Varese, Italy
	    Role: Responsible of the department instrumentation and support for scientific activities
	    Advisor: Sandro Burdo

04.2005 – 10.2005	Research Assistant, Institute of Biomedical Engineering - National Research Council of Italy (ISIB-CNR), Politecnico di Milano, Italy
	Project: *Segmentation of mandibular nerve from CT images*
	Advisors: Gabriella Tognola and Paolo Ravazzani
05.2003 – 07.2003	Research Assistant, Institute of Biomedical Engineering - National Research Council of Italy (ISIB-CNR), Politecnico di Milano, Italy
	Project: *Segmentation of brain image for electromagnetic field estimation*
	Advisors: Paolo Ravazzani and Marta Parazzini

EDUCATION

12.2007 – 01.2012	PhD in Biomedical Engineering, Institute for Surgical Technology and Biomechanics, University of Bern, Switzerland
	Thesis: *Statistical Models of Shape and Density for Population-based Analysis of Bone Mechanics with Applications to Fracture Risk Assessment and Implant Design*
	Advisors: Mauricio Reyes and Philippe Büchler
10.2003 – 10.2005	MSc in Biomedical Engineering, Politecnico di Milano, Italy
	Thesis: *Methods for 2D and 3D segmentation and rendering of CT images: Validation and application in maxillofacial surgery* (in Italian)
	Advisors: Gabriella Tognola and Paolo Ravazzani
10.2000 – 10.2003	BSc in Biomedical Engineering, Politecnico di Milano, Italy
	Advisor: Paolo Ravazzani

OPEN SOURCE SOFTWARE

Developed
1. *pyKNEEr* (GitHub repository, documentation, video)
   An image analysis workflow for open and reproducible research on femoral knee cartilage
2. *SAMforFEM* (GitHub repository, documentation)
   Statistical appearance model (SAM) of femur for finite element (FE) simulations of different populations

Contributing
1. *ORMIR-MIDS* (GitHub repository, documentation)
   A Python package and standard for the management of MSK medical images
2. *ORMIR_XCT* (GitHub repository)
   A Python package for the processing of High Resolution peripheral Quantitative Computed Tomography (HR-pQCT) images

Supervised
1. *Reference line - Training & evaluation* (Web application, GitHub repository, documentation)
   A web application to train and evaluate operators when scanning with High Resolution Peripheral Quantitative Computed Tomography (HR-pQCT).
   Student: Caroline Mai Chan, University of California, San Francisco, USA.
2. *FEM assigner* (GitHub repository, documentation)
   Assigning bone material properties to finite element (FE) meshes from quantitative computed tomography images
   Student: Andreas Siegrist, University of Bern, Switzerland.

FUNDING AND AWARDS

FUNDED PROPOSALS

11.2024	*Advancing Musculoskeletal Research through Dissemination of an Open-Source Bone Microarchitecture Analysis Toolkit*
	Role: Co-Applicant. Funder: Canadian Institutes of Health Research (Canada). Amount: 20K CAD
03.2024	*Standardizing computational workflows to create personalized image-based knee models*
	Role: Single applicant. Funder: Balgrist Foundation (Switzerland). Amount: 30K CHF (Funding redirected after approval)
08.2023	*Sharing and curating open data in musculoskeletal imaging research*
	Role: Main applicant. Funder: Swiss National Science Foundation (Switzerland). Amount: 20K CHF
07.2022	*Development of an open-source reference data set, image repository, and interactive training tool for bone damage assessment in inflammatory arthritis*
	Role: Co-Applicant. Funder: Canadian Institutes of Health Research (Canada). Amount: 10K CAD
01.2020	*Building the Jupyter Community in Musculoskeletal Imaging Research*
	Role: Main applicant. Funder: NumFOCUS (USA). Amount: 19K USD
01.2020	*Exploration of SPECTRA image metadata for database development*
	Role: Co-Applicant. Funder: Canadian Institutes of Health Research (Canada).

NON-FUNDED PROPOSALS (as main or single applicant)

03.2024	*Quantifying in-vivo bone changes using photon counting detector computed tomography imaging*
	Role: Single applicant. Funder: Swiss National Science Foundation (Switzerland). Requested amount: 100K CHF
06.2023	*Creation of the Swiss Center for Musculoskeletal Computing at Balgrist Campus*
	Role: Main applicant. Funder: State Secretariat for Education, Research, and Innovation (Switzerland). Requested amount: 9.5M CHF
09.2022	*Unifying and disseminating musculoskeletal imaging software*
	Role: Main applicant. Funder: Chan Zuckerberg Initiative (USA). Requested amount: 350K CHF
04.2022	*pyMSK: Making MSK imaging workflows open and reproducible.*
	Role: Main applicant. Funder: Chan Zuckerberg Initiative (USA). Requested amount: 346K CHF
01.2017	*Quantitative analysis of morphology and biomechanics in femoroacetabular impingement*
	Role: Single applicant. Grant type: PRIMA (career grant). Funder: Swiss National Science Foundation (Switzerland). Requested amount: 750K CHF
04.2014	*Osteoporosis due to celiac disease*
	Role: Main applicant. Funder: University of California, San Francisco, Department of Radiology (USA). Requested amount: 10K USD

AWARDS AND HONORARIA

08.2024	Faculty of Engineering and Information Technology Visiting Fellowship. Funder: University of Melbourne (Australia). Amount: 3850 AUD

07.2023	Invited speaker support to participate at the 16th Congress of the International Society for Bone Morphometry (ISBM), Toronto, Canada in 2024. Funder: International Society for Bone Morphometry (USA). Amount: conference registration and 1950 USD
03.2023	Participation to JupyterCon 2023. Funder: NumFOCUS (USA). Amount: 600 USD
07.2022	Honorarium for organizing the workshop "Building the Jupyter Community in Musculoskeletal Imaging Research" on June 9-11, 2022. Funder: NumFOCUS (USA). Amount: 500 USD
10.2014	Young Investigator Award, poster presentation, second author. Funder: American Society for Bone Mineral Research (USA). Amount: without remuneration

TEACHING AND MENTORING

TEACHING WORKSHOPS

07.06. 2024	*Open Science in Practice*
	Workshop at the Summer School of the Swiss Bone and Mineral Society. Olten, Switzerland.
16.11.2023	*Hands on bookclub workshop: "Learn Python with Jupyter"*
	PyLadies Hamburg. Hamburg, Germany
10.06.2022	*Open and reproducible second layer analysis using Jupyter Notebook and Python*
	Jupyter Community Workshop: Building the Jupyter Community in MSK Imaging. Maastricht, The Netherlands
09.06.2022	*Introduction to the Jupyter ecosystem and Python*
	Jupyter Community Workshop: Building the Jupyter Community in MSK Imaging. Maastricht, The Netherlands
22.01.2020	*Python and Jupyter Notebook for Medical Image Analysis*
	OpenMR Benelux, Nijmegen, The Netherlands

ONE-TO-ONE TEACHING

08.2020 – 09.2022	Teaching coding and computational thinking. Support for university exams and projects. Student reviews here.

IN-CLASS TEACHING

11.2017	Guest Lecturer, Surgery Without All the Blood (RAD 70N), Stanford University, USA
	Introduction to Interventional Radiology at the Zeego Lab (Laboratory)
04.2017 – 06.2017	Co-instructor (50%), Orthopaedic Bioengineering (BIOE/ME 381), Stanford University, USA
	Bone anatomy and physiology, *Bone mechanics at the organ and tissue level*, *Principles of X-ray imaging and bone imaging*, and *Bone quality, fracture, and fixation* (Lectures). Bone fixation (Laboratory)
01.2017, 01.2018	Guest Lecturer, Clinical Needs and Technology (BIOE 301B), Stanford University, USA
	Introduction to X-ray-based Imaging (Lecture)
	Minimally Invasive Therapies in Swine (Laboratory)
10.2016	Guest Lecturer, Introduction to Bioengineering Research (BIOE 390/MED 289), Stanford University, USA
	Weight-bearing Imaging of the Knee Using C-arm CT (Lecture)

03.2015	Guest Lecturer, Image Processing and Analysis II (BI 265), University of California San Francisco, USA
	Active Shape and Appearance Modeling in Medical Imaging (Blackboard lecture)
01.2014, 01.2015	Guest Lecturer, Musculoskeletal Imaging (BI 240), University of California San Francisco, USA
	Assessment of Bone Strength - Foundations of FE and microFE (Blackboard lecture)
12.2009	Guest Lecturer, Medical Image Analysis, ETH Zürich, Switzerland
	Statistical Shape Models (Lecture)
10.2009	Guest Lecturer, Medical Image Analysis, University of Bern, Switzerland
	Statistical Shape Models (Lecture)

MENTORING

07.2024 – 03.2025	Yurong Chen, M.Sc. thesis. *Interactive visualization for quality control and exploration of multimodal knee osteoarthritis data*. University of Zurich, Switzerland. Co-supervisor: Jürgen Bernard
06.2024 – 08.2024	Hemachandra Konduru, summer project. University of Winsconsin, USA
11.2023 – 11.2024	Abhishek Samanta, internship and M.Sc. thesis. *Guided few-shot segmentation of magnetic resonance images of the knee*. Saarland University, Germany. Co-supervisors: Bernd Schiele, Anjany Sekuboyina
09.2023 – 03.2023	Yannick Wattenberg, internship. *Validation of photon counting detector computed tomography femur images using deep learning*. ETH Zurich, Switzerland. Co-supervisors: Vincent Stadelmann, Bastian Wittmann
07.2023 – 02.2024	Francesco Chiumento. M.Sc. thesis. *Development, testing and evaluation of automatic methods for knee cartilage segmentation from magnetic resonance images: application to a cohort of patients affected by medial knee osteoarthritis*. Rizzoli Orthopaedic Institute Bologna and University of Padova, Italy. Co-supervisor: Fulvia Taddei
02.2022 – 07.2022	Ranjan Mishra, B.Sc. thesis. *Conformal prediction for OAI biomarkers*. University College Maastricht, The Netherlands. Co-supervisor: Christof Seiler
03.2017 – 02.2018	Fatih Chengiz, M.Sc. thesis. *Automatic segmentation of the meniscus from MR images*. University of Erlangen-Nuremberg, Germany. Co-supervisor: Andreas Meier
06.2016 – 08.2016	Alyssa Hobson and Sandra Ortellado, Summer project. *Segmentation of knee bones from weight-bearing cone-beam computed tomography images*. Stanford University, USA. Co-supervisors: Members of the Garry Gold's and Marc Levenston's labs
06.2016 – 08.2016	Francisco Lopez and Heidi Poppe, Summer project. *Subject's support platform for weight-bearing cone-beam computed tomography imaging*. Stanford University, USA. Co-supervisors: Members of the Garry Gold's and Marc Levenston's labs
05.2015 – 12.2015	Caroline Mai Chan. Development of webapp: Reference line – Training and Evaluation. University of California San Francisco, USA. Co-supervisor: Andrew Burghardt
06.2014 – 12.2015	Andrew Yu, Internship. *Data management for the MrOS project*. University of California San Francisco, USA. Co-supervisor: Andrew Burghardt
09.2010 – 03.2011	Saloni Soin, M.Sc. thesis. *Preformed cranial implants*, University of Bern, Switzerland. Co-supervisor: Mauricio Reyes
11.2009 – 10.2010	Andreas Siegrist, B.Sc. thesis on Bone material property assignment for finite element analysis, Fachhochschule Nordwestschweiz Biel and University of Bern, Switzerland. Co-supervisor: Mauricio Reyes and Benedikt Helgason

TALKS AND EVENTS

INVITED TALKS

13.02.2025	*ORMIR-MIDS: An Open Standard for Curating and Sharing Musculoskeletal Imaging Data* (video)
	International Love Data Week. University of Basel, Switzerland (virtual)
01.11.2024	*Why and how to do open and reproducible MSK imaging research*
	BME & GCI Mini-Symposium "Reproducible and Reliable Data Science for Health Applications". University of Melbourne, Australia
03.10.2024	*Why and how to do open and reproducible MSK imaging research*
	16th Congress of the International Society for Bone Morphometry (ISBM). Toronto, Canada
08.12.2023	*Introducing the ORMIR community*
	MRI Together – A Global Workshop on Open Science and Reproducible Research. Virtual
17.11.2023	*Introducing the ORMIR community and the book "Learn Python with Jupyter"* (video at 1h47')
	Python Pizza Hamburg. Hamburg, Germany
09.06.2023	*Why and how to do open and reproducible research*
	Summer school of the Swiss Bone and Mineral Society. Thun, Switzerland
11.05.2023	*Introducing the ORMIR community and the book "Learn Python with Jupyter"* (video at 58')
	Lightening talk. JupyterCon 2023.
09.02.2023	*Why and how to do open and reproducible research* (video)
	European Society of Biomechanics. Webinar.
10.11.2022	*Open and reproducible coding: Perspective of an MSK imaging researcher* (video)
	Open Science Seminar Series, University of Basel, Switzerland. Webinar.
10.05.2022	*Open Science: Perspective of a researcher who codes*
	The Reproducibility Crisis – Perspectives from Funders, Researchers, and Journal Editors, Workshop at the International Society for Magnetic Resonance in Medicine (ISMRM) Conference. London, United Kingdom.
14.03.2022	*Within the data life cycle: Perspective of an MSK imaging researcher*
	Informatics Institute, University of Amsterdam. Amsterdam, The Netherlands
13.12.2021	*Debate: Open Science in the MR Community* (video)
	MRI Together – A Global Workshop on Open Science and Reproducible Research. Virtual
12.11.2021	*Development of a centralized metadata and data syndication platform for SPECTRA*
	SPECTRA 2021 Virtual Workshop. Virtual.
02.07.2021	*Open data: Perspective of an MSK researcher who codes* (video)
	Panel discussion "The Open Data Paradigm", The International Workshop on Osteoarthritis Imaging. Rotterdam, The Netherlands.
11.07.2020	*Why we should use Jupyter notebook in Medical Image Analysis* (video)
	Think Open Rovereto Workshop. Trento University, Italy (virtual)
26.09.2019	*Transparent Quantitative Musculoskeletal Imaging*
	Department of Mechanical Engineering, Division of Biomechanics, KU Leuven. Leuven, Belgium.
12.09.2019	*Transparent Research: Open-Access Data, Reproducible Workflows, and Interactive Publications*
	7th Annual Tomography for Scientific Advancement (ToScA) Symposium. Southampton, United Kingdom.
20.06.2019	*Transparent Quantitative Musculoskeletal Imaging*
	Department of Radiology, Erasmus Medical Center. Rotterdam, The Netherlands.
02.05.2019	*Data Management for Transparent Research*
	BiGCaT Science Café, Maastricht University. Maastricht, The Netherlands.
18.04.2019	*Transparent Research: Open-Access Data, Reproducible Workflows, and Interactive Publications*
	BiGCaT Science Café. Maastricht University. Maastricht, The Netherlands.

22.12.2015	*Bone quality by QCT and HR-pQCT: Translation to multicenter clinical research*
	Istituti Ortopedici Rizzoli. Bologna, Italy
16.12.2015	*Bone quality by QCT and HR-pQCT: Translation to multicenter clinical research*
	Pattern Recognition Lab, University of Erlangen-Nuremberg. Erlangen, Germany
16.09.2014	*Intra- and inter-operator variability in HR-pQCT scan positioning*
	2nd XtremeCT User Meeting, workshop at the American Society for Bone and Mineral Research (ASBMR) conference. Houston, TX, USA

CHAIRING AND ORGANIZING WORKSHOPS AND CONFERENCES

5.11.2024	*Why and how to share musculoskeletal imaging data?* Workshop at the 24th International Workshop on Quantitative Musculoskeletal Imaging (QMSKI). Barossa Valley, Australia
	Role: Co-organizer and presenter
15-18.01.2024	*Sharing and curating open data in musculoskeletal imaging research*. Zurich, Switzerland
	Role: Chair, co-organizer
13.06.2022	*Introducing the Open and Reproducible Musculoskeletal Imaging Research (ORMIR) community*. Workshop at the 23rd International Workshop on Quantitative Musculoskeletal Imaging (QMSKI). Noordwijk, The Netherlands
	Role: Chair, co-organizer, and presenter
9-11.06.2022	*Jupyter Community Workshop: Building the Jupyter Community in MSK Imaging*. Maastricht, The Netherlands
	Role: Chair, organizer, and lecturer
25.02.2019	*Hands-on transparent QMSKI: Open-access data, reproducible workflows, and interactive publications*. Workshop at the 22nd International Workshop on Quantitative Musculoskeletal Imaging (QMSKI), Chateau Lake Louise, AB, Canada
	Role: Chair, organizer, and presenter
6-9.07.2008	*16th Congress of the European Society of Biomechanics*. Lucerne, Switzerland
	Role: Staff member
9-12.05.2007	*Objective Measures in Cochlear and Brainstem Implants – 5th International Symposium and Related Additional Events*. Varese, Italy
	Role: Organizing committee and staff member

DISSEMINATION

EVENTS

01.06.2025	Presentation of the book Learn Python with Jupyter: Develop computational thinking while learning to code at the 11th Bay Area Book Festival. Berkeley, USA

INTERVIEWS

19.08.2023	La Cultura del Dato, by Stefano Gatti (in Italian with English translation)

VIDEOS

12.2019 – present	YouTube channel with basics and hands-on tutorials on Open and Reproducible Research. Playlists with videos I created: Step-by-step Tutorials for Transparent Research, Transparent Research 101, Jupyter Notebook and Python for Scientists, and Medical Image Analysis
	Playlist with videos I collect: Serena's talks, Coding Women

SERVICE

COMMUNITY AND UNIVERSITY SERVICE

12.2019 – present	Co-founder and coordinator of the Open and Reproducible MSK Imaging Research (ORMIR) community (ormir.org)
09.2023 – 09.2024	Member of the Insight Software Consortium Council (ITK) (insightsoftwareconsortium.org)
11.2016 – 07.2018	Associate Director of the Zeego Laboratory, Department of Radiology, Stanford University, USA
01.2016 – 07.2018	Creation and maintenance of webpages of the JOINT group and of the Zeego Lab, Stanford University, USA
01.2015 – 12.2015	Contribution to the webpage of the Musculoskeletal CT Imaging Research Group, University of California San Francisco, USA
01.2010 – 12.2011	Contribution to the webpage of the Institute for Surgical Technology and Biomechanics, University of Bern, Switzerland

SCIENTIFIC REVIEWING ACTIVITIES

Conference reviewer

2024 – present	Member of the Scientific Review Committee and of the Open Science Award Committee for the 24th QMSKI workshop

Grant reviewer

2015 – 2016	American Society for Bone and Mineral Research

Journal reviewer

2016 – present	Physica Medica
2016 – present	Biomechanics and Modeling in Mechanobiology
2015 – present	Journal of Computer Methods in Biomechanics and Biomedical Engineering
2014 – present	Journal of Bone and Mineral Research
2014 – present	Journal of Medical Imaging and Health Informatics
2014 – present	Bone
2013 – present	Journal of Biomechanics
2013 – present	Medical Physics
2011 – present	IEEE - Transaction on Medical Imaging

MEMBERSHIPS IN SCIENTIFIC SOCIETIES

2016 - 2017	International Society for Magnetic Resonance in Medicine
2016 - 2017	Osteoarthritis Research Society International
2012 - 2015	American Society of Bone and Mineral Research
2008 - 2010	European Society of Biomechanics

PUBLISHING

TEXTBOOK

1. Bonaretti S. Learn Python with Jupyter: Develop computational thinking while learning to code. Amazon Kindle Direct Publishing. ISBN: 979-8284180662. 361 pages. 2025.

NON-ACADEMIC WRITING

1. Bonaretti S. Introducing "Learn Python with Jupyter" – A free course book to develop computational thinking while learning to code. 28 April 2023. Blogpost on Jupyter Blog in Medium.com.
2. Bonaretti S., Cameron D., Kuczynski M., Iori G., on behalf of the participants to the workshop. Report on the Jupyter Community Workshop "Building the Jupyter Community in Musculoskeletal Imaging Research". 30 November 2022. Blogpost on Jupyter Blog in Medium.com.

PREPRINTS

1. Bonaretti S. et al. (44 authors). Open and reproducible research in musculoskeletal imaging: Why it matters and how to implement it with the guidelines of the ORMIR community. Zenodo. 2025.
2. Bonaretti S. et al. (30 authors). Introducing the Open and Reproducible Musculoskeletal Imaging (ORMIR) community. Zenodo. 2023.

PUBLICATIONS IN PEER-REVIEWED SCIENTIFIC JOURNALS

1. Kuczynski M., Neeteson N., Stok K., Burghardt A., Espinosa Hernandez M., Vicory J., Tse J., Durongbhan P., Bonaretti S., Wong A.K.O., Boyd S., Manske S. ORMIR_XCT: A Python package for high resolution peripheral quantitative computed tomography image processing. Journal of Open Science Software, 9(97), 6084. 2024.
2. Ammar A., Bonaretti S.[*], Winckers L., Quik J., Bakker M., Maier D., Lynch I., van Rijn J., Willighagen E. A Semi-Automated Workflow for FAIR Maturity Indicators in the Life Sciences. Nanomaterials, 10, 2068. 2020. ([*]co-first author).
3. Bonaretti S., Gold G.E., Beaupre G.E. pyKNEEr: An Image Analysis Workflow for Open and Reproducible Research on Femoral Knee Cartilage. PLoS ONE 15(1): e0226501. 2020.
4. Pang E.Q., Coughlan M., Bonaretti S., Finlay A., Bellino M., Bishop J., Gardner M.J. Assessment of Open Syndesmosis Reduction Techniques in an Unbroken Fibula Model: Visualization vs. Palpation. J. Orthop Trauma. 2018.
5. Maier J., Black M., Bonaretti S., Bier B., Eskofier B., Choi J.H. Levenston M., Gold G., Fahrig R., Maier A. Comparison of Different Approaches for Measuring Tibial Cartilage Thickness. J Integr Bioinform. 14(2),1-10. 2017.
6. Bonaretti S., Vilayphiou N., Chan C. M., Yu A., Nishiyama K., Liu D., Boutroy S., Ghasem-Zadeh A., Boyd S.K., Chapurlat R., McKay H., Shane E., Bouxsein M.L., Black D.M., Majumdar S., Orwoll E.S., Lang T.F., Khosla S., Burghardt A.J. Operator variability In Scan Positioning is a Major Component of HR-pQCT Precision Error and is Reduced by Standardized Training. Osteoporos Int. 28(1), 245-257. 2017.
7. Bonaretti S.., Holets M., Majumdar S., Lang T.F., Khosla S., Burghardt A.J. The Comparability of HR-pQCT Bone Quality Measures is Improved by Scanning Anatomically Standardized Regions. Osteoporos Int. 28(7), 2115-2128. 2017.
8. Carballido-Gamio J., Bonaretti S., Kazakia G.J., Khosla S., Majumdar S., Lang T.F., Burghardt A.J. Statistical Parametric Mapping of HR-pQCT Images: A Tool for Population-Based Comparison of Micro-Scale Bone Features. Ann Biomed Eng. 45(5), 949-962. 2017.
9. Ghasem-Zadeh A., Burghardt A.J., Wang X.F., Iuliano S., Bonaretti S., Bui Q.M., Zebaze R., Seeman E. Quantifying Sex, Race and Age Specific Differences in Bone Microstructure Requires Measurement of Anatomically Equivalent Regions. Bone. 101, 206-213. 2017.
10. Carballido-Gamio J., Bonaretti S., Saeed I., Harnish R., Recker R., Burghardt A.J., Keyak J.H., Harris T., Khosla S., Lang T.F. Automatic Multi-Parametric Quantification of the Proximal Femur with QCT. Quant Imaging in Med and Surg. 5(4), 552-568. 2015.
11. Bonaretti S., Carpenter D.R., Saeed I., Burghardt A.J., Yu L., Bruesewitz M., Khosla S., Lang T. Novel Anthropomorphic Hip Phantom Corrects Systemic Interscanner Differences in Proximal Femoral vBMD. Phys Med Biol. 59, 7819-7834. 2014.
12. Carpenter R.D., Saeed I Bonaretti S., Schreck C., Keyak J.H., Streeper T., Harris T.B., Lang T.F. Inter-scanner Differences in In Vivo QCT Measurements of the Density and Strength of the Proximal Femur Remain After Correction with Anthropomorphic Standardization Phantoms. Med Eng Phys. 36, 1225-1232. 2014.

13. Bonaretti S., Seiler C., Boichon C., Reyes M., Büchler P. Image-based vs. Mesh-based Statistical Appearance Model of the Human Femur: Implications for Finite Element Simulations. Med Eng Phys. 36, 1626-1625. 2014.
14. Kistler M., Bonaretti S., Pfahrer M., Niklaus R., Büchler P. The Virtual Skeleton Database: An Open Access Repository for Biomedical Research and Collaboration. J Med Internet Res. 12;15(11):e245. 2013.
15. Schulz A.P., Reimers N., Wipf F., Vallotton M., Bonaretti S., Kozic N., Reyes M., 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. 2012.

PEER-REVIEWED CONFERENCE PAPERS

1. Kistler M., Bonaretti S., Boichon C., Rochette M., Büchler P. **Methods to Accelerate Finite Element Calculations in Biomechanics Using a Statistical Database of Pre-Calculated Simulations.** 10th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering. 11-14 April 2012. Berlin, Germany.
2. Bonaretti S., Seiler C., Boichon C., Büchler P., Reyes M. *Mesh-based vs. Image-based Statistical Model of Appearance of the Human Femur: A Preliminary Comparison Study for the Creation of Finite Element Meshes.* Mesh Processing in Medical Image Analysis - MICCAI 2011 workshop. 18 September 2011. Toronto, Canada.
3. Bonaretti S., Helgason B., Seiler C., Reyes M., Büchler P. **Combined Statistical Model of Bone Shape and Mechanical Properties for Bone Modelling.** 9th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering. 24-27 February 2010. Valencia, Spain.
4. Bonaretti S., Reimers N., Reyes M., Nikitsin A., Joensson A., Nolte L., Büchler P. **Assessment of Peri-Articular Implant Fitting Based on Statistical Finite Element Modelling.** Computational Biomechanics for Medicine III – MICCAI 2008 workshop. 10 September 2008. New York, NY, USA.

CONFERENCE ABSTRACTS

1. Bonaretti S., Espinosa M.A.E., Chiumento F., Founas Y., Froeling M., Hirvasniemi J., Iori G., Lee Y., Matuschik S., Monzon M., Santini F., Cameron D. **ORMIR-MIDS: An open standard for curating and sharing musculoskeletal Imaging Data**. 24th International Workshop on Quantitative Musculoskeletal Imaging. 3-8 November 2024. The Barossa Valley, Australia.
2. Kuczynski M.T., Neeteson N.J., Stok, K.S., Burghardt A.J., Espinosa M.A.E., Vicory J., Tse J.J., Durongbhan P., Bonaretti S. Wong A.K.O., Boyd S.K., Whittier D.E., Manske S.L. **Measuring trabecular thickness and separation from HR-pQCT using the ORMIR_XCT package.** 24th International Workshop on Quantitative Musculoskeletal Imaging. 3-8 November 2024. The Barossa Valley, Australia.
3. Sahu P., Greer T. H., Xu Z., Shen Z., Bonaretti S., McCormick M., Neithammer M. **Reproducible Workflow for Visualization and Analysis of OsteoArthritis Abnormality Progression**. 23rd International Workshop on Quantitative Musculoskeletal Imaging. 13-17 June 2022. Noordwijk, The Netherlands.
4. Bonaretti S., Gold G., Beaupre G. **pyKNEEr: Reproducible Workflow for Automatic Segmentation and Analysis of Femoral Knee Cartilage.** 22nd International Workshop on Quantitative Musculoskeletal Imaging. 24 February - 1 March 2019. Chateau Lake Louise, Canada.
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