

## SERENA BONARETTI

### Curriculum Vitae

#### PERSONAL INFORMATION

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Current positions	Senior Research Scientist at Balgrist Campus, Zürich, Switzerland
Email Address	<a href="mailto:serena.bonaretti.research@gmail.com">serena.bonaretti.research@gmail.com</a>
Webpage	<a href="http://sbonaretti.github.io">sbonaretti.github.io</a>
GitHub	<a href="https://github.com/sbonaretti">github.com/sbonaretti</a>
Google Scholar	<a href="https://scholar.google.com/citations?hl=en&amp;user=V-S_V6sAAAAJ">scholar.google.com/citations?hl=en&amp;user=V-S_V6sAAAAJ</a>
ORCID	<a href="https://orcid.org/0000-0003-4264-1773">orcid.org/0000-0003-4264-1773</a>
YouTube	<a href="https://www.youtube.com/@serenabonaretti">www.youtube.com/@serenabonaretti</a>
Twitter	<a href="https://twitter.com/SerenaBonaretti">@SerenaBonaretti</a>

#### EMPLOYMENT

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10.2022 – present	Senior Research Scientist at 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: <i>NanoSolveIT</i> and <i>RiskGONE</i> (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: <i>Automatic segmentation of MR images of the knee</i> and <i>Weight-bearing imaging of the knee using C-arm CT</i> 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: <i>Standardization of acquisition procedure for bone imaging for multicenter clinical research</i> 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: <i>Standardization of acquisition procedure for bone imaging for multicenter clinical research</i> 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: <i>Segmentation of mandibular nerve from CT images</i> 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

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- 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

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### Developed

1. *pyKNEEr*  
 An image analysis workflow for open and reproducible research on femoral knee cartilage  
 ([GitHub repository](#), [documentation](#), [video](#))  
 Programming language: Python with Jupyter Notebook
2. *SAMforFEM*  
 Statistical appearance model (SAM) of femur for finite element (FE) simulations of different populations  
 ([GitHub repository](#), [documentation](#))  
 Programming language: C++, with ITK, VTK, and Qt

### Supervised

1. *Reference line - Training & evaluation*  
 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.  
 ([Web application](#), [GitHub repository](#), [documentation](#))  
 Programming language: HTML with CSS, Javascript
2. *FEM assigner*  
 Assigning bone material properties to finite element (FE) meshes from quantitative computed tomography images  
 Student: Andreas Siegrist, University of Bern, Switzerland.  
 ([GitHub repository](#), [documentation](#))  
 Programming language: C++, with ITK, VTK, and Qt

### Collaborated

1. *ORMIR\_XCT*  
 A Python package for High Resolution peripheral Quantitative Computed Tomography (HR-pQCT) image processing  
 ([GitHub repository](#), [preprint](#))

**COMMUNITY SERVICE** (without remuneration)

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09.2023 – present	Member of the Insight Software Consortium Council (ITK) ( <a href="https://insightsoftwareconsortium.org/">https://insightsoftwareconsortium.org/</a> )
12.2019 – present	Co-founder and leading the Open and Reproducible MSK Imaging Research (ORMIR) community ( <a href="http://ormircommunity.github.io">ormircommunity.github.io</a> )

**EXTERNAL FUNDING**


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08.2023	<i>Sharing and curating open data in musculoskeletal imaging research.</i> Role: Main applicant. Funder: Swiss National Science Foundation. Amount: 20KCHF
07.2022	<i>Development of an open-source reference data set, image repository, and interactive training tool for bone damage assessment in inflammatory arthritis.</i> Role: Co-Applicant. Funder: Canadian Institutes of Health Research (Canada). Amount: 10K CAD
01.2020	<i>Building the Jupyter Community in Musculoskeletal Imaging Research</i> Role: Main applicant. Funder: NumFOCUS (USA). Amount: 19K USD
01.2020	<i>Exploration of SPECTRA image metadata for database development</i> Role: Co-Applicant. Funder: Canadian Institutes of Health Research (Canada).

**AWARDS AND HONORARIA**


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03.2023	Scholarship to participate to JupyterCon 2023 (600 USD)
07.2022	Honorarium for organizing and producing the workshop “Building the Jupyter Community in Musculoskeletal Imaging Research” on June 9-11, 2022. (500 USD)
10.2014	Young Investigator Award, poster presentation, second author, American Society for Bone Mineral Research (without remuneration)

**TEACHING WORKSHOPS**


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16.11.2023	<a href="#"><u>Hands on bookclub workshop: “Learn Python with Jupyter”</u></a> PyLadies Hamburg. Hamburg, Germany
10.06.2022	<a href="#"><u>Open and reproducible second layer analysis using Jupyter Notebook and Python</u></a> Jupyter Community Workshop: Building the Jupyter Community in MSK Imaging. Maastricht, The Netherlands
09.06.2022	<a href="#"><u>Introduction to the Jupyter ecosystem and Python</u></a> Jupyter Community Workshop: Building the Jupyter Community in MSK Imaging. Maastricht, The Netherlands
22.01.2020	<a href="#"><u>Python and Jupyter Notebook for Medical Image Analysis</u></a> OpenMR Benelux, Nijmegen, The Netherlands
25.02.2019	<a href="#"><u>Hands-on transparent QMSKI: Open-access data, reproducible workflows, and interactive publications</u></a> 22 <sup>nd</sup> International Workshop on Quantitative Musculoskeletal Imaging (QMSKI), Chateau Lake Louise, AB, Canada. ( <a href="#"><u>Presentation</u></a> )

**IN-CLASS TEACHING**


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11.2017	Guest Lecturer, Surgery Without All the Blood (RAD 70N), Stanford University, USA <i>Introduction to Interventional Radiology at the Zeego Lab (Laboratory)</i>
04.2017 – 06.2017	Co-instructor (50%), Orthopaedic Bioengineering (BIOE/ME 381), Stanford University, USA <a href="#"><u>Bone anatomy and physiology</u></a> , <a href="#"><u>bone mechanics at the organ level</u></a> , <a href="#"><u>bone mechanics at the tissue level</u></a> , <a href="#"><u>principles of X-ray imaging</u></a> , <a href="#"><u>bone imaging</u></a> , and <a href="#"><u>bone quality, fracture, and fixation</u></a> (Lectures). Bone fixation (Laboratory)

01.2017, 01.2018	Guest Lecturer, Clinical Needs and Technology (BIOE 301B), Stanford University, USA <a href="#">Introduction to X-ray-based Imaging</a> (Lecture) <i>Minimally Invasive Therapies in Swine</i> (Laboratory)
10.2016	Guest Lecturer, Introduction to Bioengineering Research (BIOE 390/MED 289), Stanford University, USA <i>Weight-bearing Imaging of the Knee Using C-arm CT</i> (Lecture)
03.2015	Guest Lecturer, Image Processing and Analysis II (BI 265), University of California San Francisco, USA <i>Active Shape and Appearance Modeling in Medical Imaging</i> (Blackboard lecture)
01.2014, 01.2015	Guest Lecturer, Musculoskeletal Imaging (BI 240), University of California San Francisco, USA <i>Assessment of Bone Strength - Foundations of FE and microFE</i> (Blackboard lecture)
12.2009	Guest Lecturer, Medical Image Analysis, ETH Zürich, Switzerland <a href="#">Statistical Shape Models</a> (Lecture)
10.2009	Guest Lecturer, Medical Image Analysis, University of Bern, Switzerland <a href="#">Statistical Shape Models</a> (Lecture)

#### ONE-TO-ONE TEACHING

08.2020 – 09.2022	Teaching coding and computational thinking. Supporting for university exam and projects. Student reviews <a href="#">here</a> .
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#### MENTORING

11.2023 – present	Abhishek Samanta, internship and M.Sc. thesis. Saarland University, Germany. Co-supervisors: Anjany Sekuboyina, Bjoern Menze
09.2023 – present	Yannick Wattenberg, internship and M.Sc. thesis. ETH Zurich, Switzerland. Co-supervisors: Bastian Wittmann, Vincent Stadelmann, Bjoern Menze
07.2023 – present	Francesco Chiumento. M.Sc. thesis. Rizzoli Orthopaedic Institut Bologna and University of Padova, Italy. Co-supervisor: Fulvia Taddei.
02.2022 – 07.2022	Ranjan Mishra, B.Sc. thesis. <i>Conformal prediction for OAI biomarkers</i> . University College Maastricht, The Netherlands. Co-supervisor: Christof Seiler
03.2017 – 02.2018	Fatih Chengiz, M.Sc. thesis. <i>Automatic segmentation of the meniscus from MR images</i> . University of Erlangen-Nuremberg, Germany. Co-supervisor: Andreas Meier
06.2016 – 08.2016	Alyssa Hobson and Sandra Ortellado, Summer project. <i>Segmentation of knee bones from weight-bearing cone-beam computed tomography images</i> . 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. <i>Subject's support platform for weight-bearing cone-beam computed tomography imaging</i> . 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: <a href="#">Reference line – Training and Evaluation</a> . University of California San Francisco, USA. Co-supervisor: Andrew Burghardt
06.2014 – 12.2015	Andrew Yu, Internship. <i>Data management for the MrOS project</i> . University of California San Francisco, USA. Co-supervisor: Andrew Burghardt
09.2010 – 03.2011	Saloni Soin, M.Sc. thesis. <i>Preformed cranial implants</i> , 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

**INVITED TALKS**


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03.10.2024 (planned)	<i>Title to be determined.</i> Topic: Open science in musculoskeletal imaging Keynote at the Special Session on Open science in musculoskeletal imaging at the International Society for Bone Morphometry (ISBM). Toronto, Canada
08.12.2023	<a href="#"><u>Introducing the ORMIR community</u></a> MRI Together – A Global Workshop on Open Science and Reproducible Research. Virtual
17.11.2023	<a href="#"><u>Introducing the ORMIR community and the book “Learn Python with Jupyter” (video at 1h47’)</u></a> Python Pizza Hamburg. Hamburg, Germany
09.06.2023	<a href="#"><u>Why and how to do open and reproducible research</u></a> Summer school of the Swiss Bone and Mineral Society. Thun, Switzerland
11.05.2023	<a href="#"><u>Introducing the ORMIR community and the book “Learn Python with Jupyter” (video at 58’)</u></a> Lightening talk. JupyterCon 2023.
09.02.2023	<a href="#"><u>Why and how to do open and reproducible research (video)</u></a> European Society of Biomechanics. Webinar.
10.11.2022	<a href="#"><u>Open and reproducible coding: Perspective of an MSK imaging researcher (video)</u></a> Open Science Seminar Series, University of Basel, Switzerland. Webinar.
10.05.2022	<a href="#"><u>Open Science: Perspective of a researcher who codes</u></a> 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	<a href="#"><u>Within the data life cycle: Perspective of an MSK imaging researcher</u></a> Informatics Institute, University of Amsterdam. Amsterdam, The Netherlands
13.12.2021	<i>Debate: Open Science in the MR Community (video)</i> MRI Together – A Global Workshop on Open Science and Reproducible Research. Virtual
12.11.2021	<i>Development of a centralized metadata and data syndication platform for SPECTRA</i> SPECTRA 2021 Virtual Workshop. Virtual.
02.07.2021	<a href="#"><u>Open data: Perspective of an MSK researcher who codes (video)</u></a> Panel discussion “The Open Data Paradigm”, The International Workshop on Osteoarthritis Imaging. Rotterdam, The Netherlands.
11.07.2020	<a href="#"><u>Why we should use Jupyter notebook in Medical Image Analysis (video)</u></a> Think Open Rovereto Workshop. Trento University, Italy (Virtual)
26.09.2019	<a href="#"><u>Transparent Quantitative Musculoskeletal Imaging</u></a> Department of Mechanical Engineering, Division of Biomechanics, KU Leuven. Leuven, Belgium.
12.09.2019	<a href="#"><u>Transparent Research: Open-Access Data, Reproducible Workflows, and Interactive Publications</u></a> 7 <sup>th</sup> Annual Tomography for Scientific Advancement (ToScA) Symposium. Southampton, United Kingdom.
20.06.2019	<a href="#"><u>Transparent Quantitative Musculoskeletal Imaging</u></a> Department of Radiology, Erasmus Medical Center. Rotterdam, The Netherlands.
02.05.2019	<a href="#"><u>Data Management for Transparent Research</u></a> BiGCaT Science Café, Maastricht University. Maastricht, The Netherlands.
18.04.2019	<a href="#"><u>Transparent Research: Open-Access Data, Reproducible Workflows, and Interactive Publications</u></a> BiGCaT Science Café. Maastricht University. Maastricht, The Netherlands.
22.12.2015	<a href="#"><u>Bone quality by QCT and HR-pQCT: Translation to multicenter clinical research</u></a> Istituti Ortopedici Rizzoli. Bologna, Italy
16.12.2015	<a href="#"><u>Bone quality by QCT and HR-pQCT: Translation to multicenter clinical research</u></a> Pattern Recognition Lab, University of Erlangen-Nuremberg. Erlangen, Germany
16.09.2014	<i>Intra- and inter-operator variability in HR-pQCT scan positioning</i> 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

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- 15-18.01.2024 (planned) [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 23<sup>rd</sup> 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 22<sup>nd</sup> 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 – 5<sup>th</sup> International Symposium and Related Additional Events*. Varese, Italy  
Role: Organizing committee and staff member

## BOOK

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1. Bonaretti S. [Learn Python with Jupyter](#). 2022. (completion expected in 2024)

## NON-ACADEMIC WRITING

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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

## DISSEMINATION TO THE PUBLIC

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

## INTERVIEWS

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- 19.08.2023 [La cultura del Dato](#), by Stefano Gatti (in Italian with English translation)

## UNIVERSITY SERVICE (without remuneration)

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- 11.2016 – 07.2018 Associate Director of the Zeego Laboratory, Department of Radiology, Stanford University, USA
- 01.2016 – 07.2018 Creation and maintenance of the JOINT group webpage and of the Zeego Lab webpage, Stanford University, USA
- 01.2015 – 12.2015 Contribution to the Musculoskeletal CT Imaging Research Group webpage, University of California San Francisco, USA
- 01.2010 – 12.2011 Contribution to the Institute for Surgical Technology and Biomechanics webpage, University of Bern, Switzerland

## SCIENTIFIC REVIEWING ACTIVITIES

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### 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

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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

## PREPRINTS

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1. Kuczyński 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](#). arXiv. 2023.
2. Bonaretti S. et al. [Introducing the Open and Reproducible Musculoskeletal Imaging \(ORMIR\) community](#). Zenodo. 2023.

## PUBLICATIONS IN PEER-REVIEWED SCIENTIFIC JOURNALS

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1. 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).
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.



9. 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.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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**. 10<sup>th</sup> 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**. 9<sup>th</sup> 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. 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**. 23<sup>rd</sup> International Workshop on Quantitative Musculoskeletal Imaging. 13-17 June 2022. Noordwijk, The Netherlands.
2. Bonaretti S., Gold G., Beaupre G. **pyKNEER: Reproducible Workflow for Automatic Segmentation and Analysis of Femoral Knee Cartilage**. 22<sup>nd</sup> International Workshop on Quantitative Musculoskeletal Imaging. 24 February - 1 March 2019. Chateau Lake Louise, Canada.
3. Maier J., Aichert A., Mehringer W., Bier B., Eskofier B., Levenston M., Gold G., Fahrig R., Bonaretti S., Maier A. **Feasibility of Motion Compensation using Inertial Measurements in C-arm CT**. IEEE Nuclear Science Symposium & Medical Imaging Conference. 10-17 November 2018. Sydney, Australia.
4. Bier B., Berger M., Maier J., Unberath M., Hsieh S., Bonaretti S., Fahrig R., Levenston M., Gold G., Maier A. **Object Removal in Gradient Domain of Cone-Beam CT Projections**. IEEE Nuclear Science Symposium & Medical Imaging Conference. 29 October – 5 November 2016. Strasbourg, France.
5. Bonaretti S., Carballido-Gamio J., Keyak J., Saeed I., Yu L., Bruesewitz M., Burghardt A.J., Khosla S., Lang T.F. **QCT Intra- and Inter-Scanner Precision in Estimation of Proximal Femur Strength**. American Society for Bone and Mineral Research. 9-12 October 2015. Seattle, WA, USA.
6. Bonaretti S., Vilayphiou N., Yu A., Holets M., Nishiyama K., Liu D., Boutroy S., Ghasem-Zadeh A., Boyd S.K., Chapurlat R., McKey H., Shane E., Bouxein M.L., Lang T.F., Khosla S., Cawton P.M., Black D.M., Majumdar S., Orwoll E.S., Burghardt



- A.J. **Standardized Training For HR-pQCT Scan Positioning Reduces Inter-Operator Precision Errors: The MrOs Multicenter Study Experience.** American Society for Bone and Mineral Research. 9-12 October 2015. Seattle, WA, USA.
7. Bonaretti S., Holets M., Derrico N.P., Nishiyama K., Liu D., Boutroy S., Raymond D., Ghasem-Zadeh A., Seeman E., Boyd S.K., Chapurlat R., McKay H., Shane E., Bouxsein M.L., Lang T.F., Khosla S., Burghardt A.J. **The Role of Intra- and Inter-Operator Variability in HR-pQCT Precision.** International Bone Densitometric Workshop. 13-17 October 2014. Hong Kong.
  8. Carballido-Gamio J., Bonaretti S., Kazakia G.J., Khosla S., Lang T.F., Burghardt A.J. **Population-Based Local Multi-Parametric Comparisons of HR-pQCT Studies.** International Bone Densitometric Workshop. 13-17 October 2014. Hong Kong.
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