

# SERENA BONARETTI

## Curriculum Vitae

### PERSONAL INFORMATION

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Twitter [@SerenaBonaretti](https://twitter.com/SerenaBonaretti)

### EMPLOYMENT

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10.2022 – present 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: <i>Statistical Models of Shape and Density for Population-based Analysis of Bone Mechanics with Applications to Fracture Risk Assessment and Implant Design</i> Advisors: Mauricio Reyes and Philippe Büchler
10.2003 – 10.2005	MSc in Biomedical Engineering, Politecnico di Milano, Italy Thesis: <i>Methods for 2D and 3D segmentation and rendering of CT images: Validation and application in maxillofacial surgery</i> (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](#))  
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****ACCEPTED PROPOSALS**

03.2024	<i>Standardizing computational workflows to create personalized image-based knee models</i> Role: Single applicant. Funder: Balgrist Foundation (Switzerland). Amount: 30K CHF (Funding redirected after approval)
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- 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).

### PENDING PROPOSALS

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- 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

### NON-FUNDED PROPOSALS (as main or single applicant)

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- 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

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- 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 16<sup>th</sup> 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 ACTIVITIES

### TEACHING WORKSHOPS

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

### ONE-TO-ONE TEACHING

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08.2020 – 09.2022	Teaching coding and computational thinking. Support for university exams and projects. Student reviews <a href="#">here</a> .
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### 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="#">Bone anatomy and physiology</a> , <a href="#">bone mechanics at the organ level</a> , <a href="#">bone mechanics at the tissue level</a> , <a href="#">principles of X-ray imaging</a> , <a href="#">bone imaging</a> , and <a href="#">bone quality, fracture, and fixation</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)

**MENTORING**

07.2024 – present	Yurong Chen, M.Sc. thesis. University of Zurich, Switzerland. Co-supervisor: Jürgen Bernard
06.2024 – present	Hemachandra Konduru, summer project. University of Winsconsin, USA
11.2023 – present	Abhishek Samanta, internship and M.Sc. thesis. Saarland University, Germany. Co-supervisors: Anjany Sekuboyina, Bjoern Menze
09.2023 – 03.2023	Yannick Wattenberg, internship. ETH Zurich, Switzerland. Co-supervisors: Bastian Wittmann, Vincent Stadelmann, Bjoern Menze
07.2023 – present	Francesco Chiumento. M.Sc. thesis. Rizzoli Orthopaedic Institute 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

**TALKS AND EVENTS****INVITED TALKS**

03.10.2024 (planned)	<i>Why and how to do open and reproducible MSK imaging research</i> 16 <sup>th</sup> Congress of the International Society for Bone Morphometry (ISBM). Toronto, Canada
08.12.2023	<a href="#">Introducing the ORMIR community</a> MRI Together – A Global Workshop on Open Science and Reproducible Research. Virtual
17.11.2023	<a href="#">Introducing the ORMIR community and the book “Learn Python with Jupyter”</a> (video at 1h47') Python Pizza Hamburg. Hamburg, Germany
09.06.2023	<a href="#">Why and how to do open and reproducible research</a> Summer school of the Swiss Bone and Mineral Society. Thun, Switzerland
11.05.2023	<a href="#">Introducing the ORMIR community and the book “Learn Python with Jupyter”</a> (video at 58') Lightening talk. JupyterCon 2023.
09.02.2023	<a href="#">Why and how to do open and reproducible research</a> (video) European Society of Biomechanics. Webinar.
10.11.2022	<a href="#">Open and reproducible coding: Perspective of an MSK imaging researcher</a> (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](#)  
7<sup>th</sup> 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 (planned) [Why and how to share musculoskeletal imaging data?](#) Workshop at the 24<sup>th</sup> International Workshop on Quantitative Musculoskeletal Imaging (QMSKI). Barossa Valley, Australia  
Role: Co-organizer
- 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 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

## DISSEMINATION

### VIDEOS

- 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

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

## SERVICE

### COMMUNITY AND UNIVERSITY SERVICE

- 09.2023 – present Member of the Insight Software Consortium Council (ITK)  
(<https://insightsoftwareconsortium.org/>)
- 12.2019 – present Co-founder and coordinator of the Open and Reproducible MSK Imaging Research (ORMIR) community ([ormir.org](http://ormir.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 24<sup>th</sup> 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****BOOK**

1. Bonaretti S. [Learn Python with Jupyter](#). 2022 (completion expected in 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. [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., Fahrigr 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**. 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. [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.** 24<sup>th</sup> 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.** 24<sup>th</sup> 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.** 23<sup>rd</sup> 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.** 22<sup>nd</sup> International Workshop on Quantitative Musculoskeletal Imaging. 24 February - 1 March 2019. Chateau Lake Louise, Canada.
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