

# SERENA BONARETTI

## Curriculum Vitae

### PERSONAL INFORMATION

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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>
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>
LinkedIn	<a href="https://www.linkedin.com/in/serena-bonaretti-1bb9b239/">https://www.linkedin.com/in/serena-bonaretti-1bb9b239/</a>
Twitter	<a href="https://twitter.com/SerenaBonaretti">@SerenaBonaretti</a>

### 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: <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: <i>Segmentation of brain image for electromagnetic field estimation</i> 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	<a href="#"><i>Sharing and curating open data in musculoskeletal imaging research</i></a> Role: Main applicant. Funder: Swiss National Science Foundation (Switzerland). Amount: 20K CHF
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	<a href="#"><i>Building the Jupyter Community in Musculoskeletal Imaging Research</i></a> 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).

**PENDING PROPOSALS**

06.2023	<i>Creation of the Swiss Center for Musculoskeletal Computing at Balgrist Campus</i> Role: Main applicant. Funder: State Secretariat for Education, Research, and Innovation (Switzerland). Requested amount: 9.5M CHF
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**NON-FUNDED PROPOSALS (as main or single applicant)**

03.2024	<i>Quantifying in-vivo bone changes using photon counting detector computed tomography imaging</i> Role: Single applicant. Funder: Swiss National Science Foundation (Switzerland). Requested amount: 100K CHF
09.2022	<a href="#"><i>Unifying and disseminating musculoskeletal imaging software</i></a> Role: Main applicant. Funder: Chan Zuckerberg Initiative (USA). Requested amount: 350K CHF
04.2022	<i>pyMSK: Making MSK imaging workflows open and reproducible.</i> Role: Main applicant. Funder: Chan Zuckerberg Initiative (USA). Requested amount: 346K CHF
01.2017	<i>Quantitative analysis of morphology and biomechanics in femoroacetabular impingement</i> Role: Single applicant. Grant type: PRIMA (career grant). Funder: Swiss National Science Foundation (Switzerland). Requested amount: 750K CHF
04.2014	<i>Osteoporosis due to celiac disease</i> 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 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

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

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

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 – 08.2024	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 – 02.2024	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**

01.11.2024	<i>Why and how to do open and reproducible MSK imaging research</i> BME & GCI Mini-Symposium “Reproducible and Reliable Data Science for Health Applications”. University of Melbourne
03.10.2024	<a href="#">Why and how to do open and reproducible MSK imaging research</a> 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 [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](#)  
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	<a href="#">Jupyter Community Workshop: Building the Jupyter Community in MSK Imaging</a> . Maastricht, The Netherlands Role: Chair, organizer, and lecturer
25.02.2019	<a href="#">Hands-on transparent QMSKI: Open-access data, reproducible workflows, and interactive publications</a> . 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	<i>16th Congress of the European Society of Biomechanics</i> . Lucerne, Switzerland Role: Staff member
9-12.05.2007	<i>Objective Measures in Cochlear and Brainstem Implants – 5<sup>th</sup> International Symposium and Related Additional Events</i> . Varese, Italy Role: Organizing committee and staff member

## DISSEMINATION

### VIDEOS

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

19.08.2023	<a href="#">La cultura del Dato</a> , by Stefano Gatti (in Italian with English translation)
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## SERVICE

### COMMUNITY AND UNIVERSITY SERVICE

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 coordinator of the Open and Reproducible MSK Imaging Research (ORMIR) community ( <a href="http://ormir.org">ormir.org</a> )
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
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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

**PUBLISHING****BOOK**


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1. Bonaretti S. [Learn Python with Jupyter](#). 2022 (completion expected in 2025)

**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

**PREPRINTS**


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1. 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. 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., Boussein 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.
5. Maier J., Aichert A., Mehninger 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.
6. 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.
7. [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.
8. [Bonaretti S.](#), Vilayphiou N., Yu A., Holets M., Nishiyama K., Liu D., Boutroy S., Ghasem-Zadeh A., Boyd S.K., Chapurlat R., McKay 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.
9. [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., Bouxein 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.
10. 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.
11. [Bonaretti S.](#), Holets M., Derrico N.P., Nishiyama K., Liu D., Boutroy S., Chapurlat R., McKay H., Shane E., Bouxein M., Lang T., Khosla S., Burghardt A.J. **Intra- and Inter-Operator Variability in HR-pQCT Scan Positioning.** American Society for Bone and Mineral Research. 12-15 September 2014. Houston, TX, USA.
12. [Bonaretti S.](#), Holets M., Saeed I., McCready L., Lang T., Khosla S., Burghardt A.J. **Comparability of HR-pQCT Bone Quality Measures Improved by Scanning Anatomically Standardized Regions.** American Society for Bone and Mineral Research. 12-15 September 2014. Houston, TX, USA.
13. Carballido-Gamio J., [Bonaretti S.](#), Saeed I., Harnish R., Recker R., Burghardt A.J., Keyak J., Harris T., Khosla S., Lang T. **Automatic QCT Quantification of the Proximal Femur: vBMD, Bone Volume, Cortical Bone Thickness and Finite Element Modeling.** American Society for Bone and Mineral Research. 12-15 September 2014. Houston, TX, USA.

14. Ghasem-Zadeh A., Burghardt A.J., Zendeli A., Bonaretti S., Bjornerem A., Wang X.-F., Kazakia G., Zebaze R., Seeman E. **Assessing Age, Sex and Racial Differences in Cortical Porosity Requires Adjustment for Site-Specific Variation in the Selected Region of Interest.** American Society for Bone and Mineral Research. 12-15 September 2014. Houston, TX, USA.
15. Bonaretti S., Saeed I., Burghardt A.J., Yu L., Bruesewitz M., Khosla S., Lang T.F. **Effect of Body Size on the Quantification of Bone Mineral Density from QCT Images Using a Novel Anthropomorphic Hip Phantom.** American Society for Bone and Mineral Research. 4-7 October 2013. Baltimore, MD, USA.
16. Carballido-Gamio J., Bonaretti S., Holets M., Saeed I., McCready L., Majumdar S., Lang T.F., Khosla S., Burghardt A.J. **Automated Scan Prescription For HR-pQCT: A Multi-Atlas Prospective Registration Approach.** American Society for Bone and Mineral Research. 4-7 October 2013. Baltimore, MD, USA.
17. Kistler M., Bonaretti S., de Oliveira M.E., Boichon C., Rochette M., Büchler P. **Statistical Model of Appearance to Accelerate Finite Element Calculations in Biomechanics.** 19<sup>th</sup> Congress of the European Society of Biomechanics. 1-4 July 2012. Lisbon, Portugal.
18. de Oliveira M.E., Kistler M., Hellmuth, R.A.D., Gerber N., Schumann S., Bonaretti S., Büchler P. **A Consistent Method for Modelling Subject Specific Musculoskeletal Systems.** 19<sup>th</sup> Congress of the European Society of Biomechanics. 1-4 July 2012. Lisbon, Portugal.
19. Sigurðardóttir B., Bonaretti S., Örylgsson G., Sigurjónsson Ó.E., Ferguson S.J., Helgason B. **Are Iso-Elastic Femoral Stems Beneficial for Secondary Implant Stability in Cementless THA?** The Annual Meeting of the Swiss Society for Biomedical Engineering. 22 August 2011. Bern, Switzerland.
20. Bonaretti S., Seiler C., Rochette M., Helgason B., Reyes M., Büchler P. **Statistical Finite Element Model for the Virtual Skeleton Database.** NCCR Co-Me Scientific Advisory Board Meeting. 9-10 February 2011. Interlaken, Switzerland.
21. Bonaretti S., Helgason B., Seiler C., Reyes M., Büchler P. **Statistical Finite Element Modeling: Application to Orthopaedic Implant Design.** Graduate School for Cellular and Biomedical Sciences Symposium. 28 January 2011. Bern, Switzerland.
22. Bonaretti S., Seiler C., Reyes M., Büchler P. **Statistical Finite Element Modeling for the Virtual Skeleton Database.** NCCR Co-Me Research Networking Workshop. 26-27 August 2010. Zürich, Switzerland.
23. Bonaretti S., Helgason B., Seiler C., Reyes M., Büchler P. **A Statistical Shape Model of Bone Anatomical Variability for Finite Element Assessment of Bone Mechanics.** 17<sup>th</sup> Congress of the European Society of Biomechanics. 5-8 July 2010. Edinburgh, UK.
24. Bonaretti S., Seiler C., Helgason B., Reyes M., Büchler P. **Statistical Finite Element Modeling for the Virtual Skeleton Database.** NCCR Co-Me Scientific Advisory Board Meeting. 19-20 February 2010. Winterthur, Switzerland.
25. Bonaretti S., Helgason B., Seiler C., Reyes M., Büchler P. **A Statistical Shape Model of Bone Anatomical Variability for Finite Element Assessment of Bone Mechanics.** Graduate School for Cellular and Biomedical Sciences Symposium. 27 January 2010. Bern, Switzerland.
26. Bonaretti S., Seiler C., Büchler P., Reyes M. **Computing Average Anatomical Images: Comparison between Thin-Plate Spline and Log-Euclidean Approach.** The Annual Meeting of the Swiss Society for Biomedical Engineering. 27-28 August 2009. Bern, Switzerland.
27. Bonaretti S., Büchler P., Reimers N., Schmidt W., Seiler C., Weber S., Reyes M. **Automatic Bone Density Evaluation from CT Images.** Computer Assisted Orthopaedic Surgery. 17-20 June 2009. Boston, MA, USA.
28. Bonaretti S., Nikitsin A., Reimers N., Joensson A., Rueckert D., Reyes M., Büchler P. **Shape and Biomechanical Model for Population-Specific Design of Anatomical Peri-Articular Implants.** CTI Medtech Event. 2 September 2008. Bern, Switzerland.
29. Bonaretti S., Reimers N., Rueckert D., Reyes M., Gonzales-Ballester M.A., Büchler P. **Statistical Finite Element Analysis for Bone Modelling.** 16<sup>th</sup> Congress of the European Society of Biomechanics. 6-9 July 2008. Lucerne, Switzerland.

30. Bonaretti S., Büchler P., Rueckert D., Reyes M., Gonzáles M.A., **Statistical Finite Element Model for Bone and Implant Modeling**. NCCR Co-Me Scientific Advisory Board Meeting. 14 February 2008. Neuchatel, Switzerland.
31. Brega F., Razza S., Bonaretti S., Burdo S. **Morphological and Functional Correlation Using X-Rays and SOE**. Objective Measures in Cochlear and Brainstem Implants – 5<sup>th</sup> International Symposium and Related Additional Events. 9-12 May 2007. Varese, Italy.
32. Razza S., Bonaretti S., Burdo S. **Acoustical Signal Check: Microphone Integrity Evaluation Through a Common Hearing Aid Analyzer**. Objective Measures in Cochlear and Brainstem Implants – 5<sup>th</sup> International Symposium and Related Additional Events. 9-12 May 2007. Varese, Italy.
33. Burdo S., Razza S., Bonaretti S., Bani Alunno M., Tognola G. **Cortical Responses and Age at Cochlear Implant**. Objective Measures in Cochlear and Brainstem Implants – 5<sup>th</sup> International Symposium and Related Additional Events. 9-12 May 2007. Varese, Italy.