CV – Christof Seiler

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Paul-Henri Spaaklaan 1, 6229 EN, Maastricht, The Netherlands
https://christofseiler.github.io/

Education

01/2013–12/2017	Stanford University, CA, United States Advisor: Susan Holmes Postdoctoral Fellow in Statistics
07/2008–09/2012	Inria, France & University of Bern, Switzerland Advisors: Xavier Pennec & Mauricio Reyes PhD in Computer Science & Biomedical Engineering
02/2006–07/2008	University of Bern, Switzerland MSc in Biomedical Engineering
09/2001–01/2006	University of Applied Sciences, Biel, Switzerland Dipl. Ing. FH (equivalent to BSc) in Computer Science

Employment

01/2022–present 10/2018–12/2021	Tenured Assistant Professor of Statistics, Tenure-Track Assistant Professor of Statistics, Department of Advanced Computing Sciences, and Mathematics Centre Maastricht, Maastricht University, The Netherlands
01/2018–07/2018 01/2013–12/2017	Research Scientist in Statistics, Postdoctoral Researcher in Statistics, Department of Statistics, Stanford University, CA, United States
03/2017–05/2017	EPFL-Stanford Exchange Fellow, Hosted by Dimitri Van De Ville, EPFL, MIP:Lab, Switzerland
10/2010–09/2012	Doctoral Researcher, Asclepios (now Epione) Research Group, Inria Sophia Antipolis, France
07/2008–09/2012	Doctoral Researcher, Institute for Surgical Technology and Biomechanics, University of Bern, Switzerland
09/2010–12/2010	Visiting Graduate Fellow, Statistical and Applied Mathematical Sciences Institute (SAMSI), Durham, NC, United States
12/2006–05/2008	Software Engineer, Integrated Scientific Services AG, Biel, Switzerland
02/2006–12/2006	Software Engineer, Institute for Evaluative Research in Medicine, University of Bern, Switzerland
02/2005–04/2005	Software Engineering Consultant, Oridus Inc., Biel, Switzerland
09/2003–08/2004	Software Engineering Intern, Oridus Inc., Fremont, CA, United States

Fellowships, Grants, and Awards

2017	EPFL-Stanford exchange program fellowship ($11,000)
2016	ISBA new researchers travel award, Sardinia, Italy (gratefully declined)
2015	Conference on Bayesian Nonparametrics travel award, Raleigh, NC
2015	Swiss NSF Fellowship for Advanced Researchers ($49,400)
2013–2014	France-Stanford collaborative project grant ($14,850)
2013–2014	Swiss NSF Fellowship for Prospective Researchers ($89,000)
2011	MICCAI Young Scientist Award, Toronto, Canada (top 5 of about 819 submitted papers by PhD students and postdocs)
2011	MICCAI student travel award, Toronto, Canada
2011	Paper invitation for the journal Medical Image Analysis (invitation rate ≈1.5%)
2010	Swiss SERI scholarship for joint PhD in France and Switzerland (≈$10,000)

Supervised Student Awards

2020/21	Anna-Lena Krause, MORSE Award in the sustainability theme across faculties BSc thesis, Maastricht University
	Krzysztof Cybulski, Student Prize for the best thesis of the faculty BSc thesis, Maastricht University

Teaching

	Courses at Maastricht University
2019/20–	KEN4258: Computational Statistics (MSc): Designer & lecturer
2019/20–	KEN2130: Probability and Statistics (BSc): Designer & lecturer
2018/19–2021/22	KEN1520: Software Engineering (BSc): Designer & co-lecturer
2018/19	MAT2006: Calculus (BSc): Lecturer
2018/19	Data Science School (BSc/MSc/PhD/Postdoc): Co-designer & co-lecturer
	Courses at Stanford University
2016/17–2017/18	STATS 366/BIOS 221: Modern Statistics for Modern Biology (PhD/Postdoc): Teaching assistant & guest lecturer
2015/16	STATS 205: Introduction to Nonparametric Statistics (MSc): Designer & lecturer Course website: https://christofseiler.github.io/stats205/
	Courses at ETH Zürich and University of Bern
2008/09–2009/10	Medical Image Analysis (MSc): Guest lecturer

Supervision and Mentoring

	Postdoctoral Student at Stanford University
2016/17–2017/18	Diana Proctor (Stanford University School of Medicine)
	MSc Students at Maastricht University
	Theses (15 students):
2021/22	Ammar Bitar (Intel Labs, Germany), Philip Randall (Generali, Germany)
2020/21	Alexander Reisach (Helmholtz Center Munich, Germany), Ariadna Saladrigas Pernias (AkzoNobel, The Netherlands), Thomas Wall (Eurocontrol MUAC, The Netherlands), Aleksander Michoński, Magnus Kinder, Stephan Delhey (HotSprings GmbH, Germany)
2019/20	Casper Hogenboom (ING, The Netherlands), Christian Heil (Deutsche Bahn, Germany), Philippe Debie (School of Business and Economics), Kamil Bujnarowski, Martyna Mikos (EDGE Technologies, The Netherlands), Max Bremer (IVU Traffic Technologies AG, Germany), Yeritsyan Armen (EUtech Scientific Engineering GmbH, Germany)
	Internships (16 students):
2021/22	Mathieu Renault (NOS Telecomunicacoes, Portugal), Filip Schlembach (Accenture, The Netherlands), Arthur Dorzée (Accenture, The Netherlands), Sven Kerstjens (Accenture, The Netherlands), Prakash Gupta (Omron Healthcare Europe)
2020/21	Lucy Quirant (Boehringer Ingelheim, Germany), Pranav Bapat (AMF Bakery Systems, The Netherlands), Ammar Bitar (Intel Labs, Germany), Alexander Reisach (Copenhagen Causality Lab, University of Copenhagen, Denmark), Julian Posch (Maastro), Vasco Prudent (Maastro), Roya Shahkouei (Coca-Cola, The Netherlands), Tom Dooney (SABIC, The Netherlands)
2019/20	Julius Haring (HotSprings GmbH, Germany), Stephan Delhey (HotSprings GmbH, Germany), Martyna Mikos (EDGE Technologies, The Netherlands)
	BSc Students at Maastricht University
	Thesis (7 students):
2021/22	Natalia Guseva
2020/21	Thomas Sijpkens, Anna-Lena Krause (Statistics Netherlands), Arabi Alhumsi (University College Maastricht), Krzysztof Cybulski (Statistics Netherlands), Iga Joanna Skorupska (Aucos AG, Germany)
2018/19	Lucy Quirant (University College Maastricht)
	Internships (4 students):
2018/19–2020/21	Anna-Lena Krause (Statistics Netherlands), Yiping Huang (Statistics Netherlands), Tu Anh Dinh (Mediaan, The Netherlands)
2018/19–2019/20	Laura Joegi (Mediaan, The Netherlands)
	BSc Student at Stanford University
2016/17–2017/18	Samuel Walker (UCSF)
	BSc Student at University of Bern
2009/10	Konrad Moser (University of Applied Sciences, Brugg, Switzerland)

Open Source Software Contributions

	`R` packages:
2019	`CytoGLMM`: Conditional differential analysis for flow and mass cytometry experiments https://bioconductor.org/packages/CytoGLMM/
2019	`cytoeffect`: Multivariate outcomes regression for mass cytometry experiments https://christofseiler.github.io/cytoeffect/
2017	`CovRegFC`: Multivariate heteroscedasticity models for fMRI https://github.com/ChristofSeiler/CovRegFC
2017	`braincog`: Differential correlation analysis between MRI and cognitive tests https://github.com/ChristofSeiler/braincog
2017	`curvature`: Convergence diagnosis of Hamiltonian Monte Carlo https://github.com/ChristofSeiler/curvature
	`C++`, `C`, and `C` for Graphics (`Cg`) tools:
2015	Bayesian medical image registration https://github.com/ChristofSeiler/BayesianImageRegistration
2014	Bayesian nonparametric clustering of vector fields for medical images https://github.com/ChristofSeiler/BayesianNonparametrics
2012	Tree structured medical image registration https://github.com/ChristofSeiler/PolyaffineTransformationTrees
2009	Soft tissue deformations with Markov random fields on the GPU https://github.com/ChristofSeiler/SoftTissueDeformations
	`MATLAB` workflow:
2012	Cell shape classifier for time-lapse microscopy https://github.com/ChristofSeiler/CellShapeClassifier

Reviewer for Journals and Conferences

Since 2022	MIDL (Medical Imaging with Deep Learning)
Since 2021	MELBA (Machine Learning for Biomedical Imaging)
Since 2020	Electronic Journal of Statistics, IEEE Journal of Biomedical and Health Informatics, Briefings in Bioinformatics
Since 2019	Journal of Machine Learning Research, Journal of Computational and Graphical Statistics
Since 2014	Annals of Applied Statistics
Since 2012	IPMI (Information Processing in Medical Imaging)
2019	Neurocomputing
2013	Medical Image Analysis
2012–2017	MICCAI (Medical Image Computing and Computer Assisted Intervention)

Invited and Contributed Talks

09/2020	Colloquium Meeting, Department of Methodology and Statistics, Maastricht University, The Netherlands
10/2019	Second Dutch Stan Meetup 2019, Utrecht, The Netherlands
09/2019	Basel Life, Basel, Switzerland
12/2018	Data Science Research Seminar, Maastricht University, The Netherlands
03/2018	Department of Statistics, Ludwig-Maximilians-Universität München, Germany
02/2018	School of Mathematical Sciences, Queen Mary University of London, UK
05/2017	Workshop on Statistical Challenges in Single-Cell Biology, Ascona, Switzerland
04/2017	Division of Immunology and Allergy, Lausanne University Hospital (CHUV), Lausanne, Switzerland
04/2017	CyTOF Working Group, Institute for Immunity, Transplantation and Infection, Stanford University, CA, United States
03/2017	MIP:Lab, EPFL, Campus Biotech, Geneva, Switzerland
03/2017	Bioinformatics Core Facility, SIB Swiss Institute of Bioinformatics, Lausanne, Switzerland
6/2015	10th Conference on Bayesian Nonparametrics, Raleigh, NC, United States
3/2015	Center for Imaging Science, Johns Hopkins, Baltimore, MD, United States
10/2014	Workshop in Biostatistics, Stanford School of Medicine, CA, United States
8/2014	JSM (the Joint Statistical Meetings), Boston, MA, United States
5/2014	Inria Sophia Antipolis, Sophia Antipolis, France
3/2014	Institut de Mathématiques de Toulouse, Université Paul Sabatier, France
10/2013	Stanford Statistics Seminar, CA, United States
8/2013	Geometric Science of Information, Paris, France
3/2013	Computational People United at Stanford, CA, United States
3/2013	Artorg Center, University of Bern, Switzerland
9/2011	MICCAI, Toronto, Canada (acceptance rate 4.2% out of 819 papers)
2/2011	SPIE Medical Imaging, Orlando, FL, United States
6/2010	TERMIS, Galway, Ireland
6/2009	CAOS, Boston, MA, United States
12/2008	3D Physiological Human, Zermatt, Switzerland

List of Publications

Same list with links to articles: https://christofseiler.github.io/publications/

Peer-Reviewed Journal Articles

1. `CytoGLMM`: Conditional Differential Analysis for Flow and Mass Cytometry Experiments
   C. Seiler, A.-M. Ferreira, L. Kronstad, L. Simpson, M. Le Gars, E. Vendrame, C. Blish, and S. Holmes
   BMC Bioinformatics, Volume 22, Article 137, March 2021, Pages 1–14

2. Natural Killer Cell Phenotype is Altered in HIV-Exposed Seronegative Women
   N. Zhao, E. Vendrame, A.-M. Ferreira, **C. Seiler**, T. Ranganath, M. Alary, A.-C. Labbé, F. Guédou, J. Poudrier, S. Holmes, M. Roger, and C. Blish
   PLOS ONE, Volume 15, Issue 9, September 2020, Pages 1–17

3. Characterization of the Impact of Daclizumab Beta on Circulating Natural Killer Cells by Mass Cytometry
   T. Ranganath, L. Simpson, A.-M. Ferreira, **C. Seiler**, E. Vendrame, N. Zhao, J. Fontenot, S. Holmes, and C. Blish
   Frontiers in Immunology, Volume 11, Article 714, April 2020, Pages 1–13

4. Influenza-Induced Interferon Lambda Response Is Associated with Longer Time to Delivery Among Pregnant Kenyan Women
   C. Seiler, N. Bayless, R. Vergara, J. Pintye, J. Kinuthia, L. Osborn, D. Matemo, B. Richardson, G. John-Stewart, S. Holmes, and C. Blish
   Frontiers in Immunology, Volume 11, Article 452, March 2020, Pages 1–10

5. TIGIT is Upregulated by HIV-1 Infection and Marks a Highly Functional Adaptive and Mature Subset of Natural Killer Cells
   E. Vendrame, **C. Seiler**, T. Ranganath, N. Zhao, R. Vergara, M. Alary, AC. Labbé, F. Guédou, J. Poudrier, S. Holmes, M. Roger, and C. Blish
   AIDS, Volume 34, Issue 6, May 2020, Pages 801–813

6. Pregnancy-Induced Alterations in NK Cell Phenotype and Function
   M. Le Gars, **C. Seiler**, A. Kay N. Bayless, E. Starosvetsky, L. Moore, S. Shen-Orr, N. Aziz, P. Khatri, C. Dekker, G. Swan, M. Davis, S. Holmes, and C. Blish
   Frontiers in Immunology, Volume 10, Article 2469, October 2019, Pages 1–13

7. Differential Induction of IFN-α and Modulation of CD112 and CD54 Expression Govern the Magnitude of NK Cell IFN-γ Response to Influenza A Viruses
   L.M. Kronstad, **C. Seiler**, R. Vergara, S. Holmes, and C. Blish,
   The Journal of Immunology, Volume 201, Issue 7, October 2018, Pages 2117–2131

8. Multi-Table Differential Correlation Analysis of Neuroanatomical and Cognitive Interactions in Turner Syndrome
   C. Seiler, T. Green, D. Hong, L. Chromik, L. Huffman, S. Holmes, and A.L. Reiss
   Neuroinformatics, Volume 16, Issue 1, January 2018, Pages 81–93

9. Multivariate Heteroscedasticity Models for Functional Brain Connectivity
   C. Seiler and S. Holmes
   Frontiers in Neuroscience, Volume 11, Article 696, December 2017, Pages 1–11

10. Image-based vs. Mesh-based Statistical Appearance Model of the Human Femur: Implications for Finite Element Simulations
    S. Bonaretti, **C. Seiler**, C. Boichon, M. Reyes, and P. Büchler
    Medical Engineering and Physics, Volume 36, Issue 12, December 2014, Pages 1626–1635

11. Time-Lapse Microscopy and Classification of 2D Human Mesenchymal Stem Cells Based on Cell Shape Picks Up Myogenic from Osteogenic and Adipogenic Differentiation
C. Seiler, A. Gazdhar, M. Reyes, L.M. Benneker, T. Geiser, K.A. Siebenrock, and B. Gantenbein-Ritter
Journal of Tissue Engineering and Regenerative Medicine,
Volume 8, Issue 9, September 2014, Pages 737–746

12. Discussion of "Geodesic Monte Carlo on Embedded Manifolds"
P. Diaconis, **C. Seiler**, and S. Holmes
Scandinavian Journal of Statistics, Volume 41, Issue 1, March 2014, Pages 3–7

13. Validity of an Automatic Measure Protocol in Distal Femur for Allograft Selection from a Three-Dimensional Virtual Bone Bank System
L. Ritacco, **C. Seiler**, G. Farfalli, L. Nolte, M. Reyes, D. Muscolo, and L. Tinao
Cell and Tissue Banking, Volume 14, Issue 2, June 2013, Pages 213–220

14. Capturing the Multiscale Anatomical Shape Variability with Polyaffine Transformation Trees
C. Seiler, X. Pennec, and M. Reyes
Medical Image Analysis, Volume 16, Issue 7, October 2012, Pages 1371–1384

15. Statistical Model Based Shape Prediction from a Combination of Direct Observations and Various Surrogates: Application to Orthopaedic Research
R. Blanc, **C. Seiler**, G. Székely, L. Nolte, and M. Reyes
Medical Image Analysis, Volume 16, Issue 6, August 2012, Pages 1156–1166

Peer-Reviewed Conference and Workshop Papers

1. Beware of the Simulated DAG! Causal Discovery Benchmarks May Be Easy To Game
A. Reisach, **C. Seiler**, and S. Weichwald
NeurIPS, Virtual-only Conference, 2021
(acceptance rate: 2338 of 9122 papers = 26%)

2. Positive Curvature and Hamiltonian Monte Carlo
C. Seiler, S. Rubinstein-Salzedo, and S. Holmes
NIPS, Montreal, Canada, December, 2014, Pages 586–594
(acceptance rate: 414 of 1678 papers = 25%)

3. Spatio-Temporal Dimension Reduction of Cardiac Motion for Group-Wise Analysis and Statistical Testing
K. McLeod, **C. Seiler**, M. Sermesant, and X. Pennec
MICCAI, Nagoya, Japan, LNCS, Volume 8150, Part II, September 2013, Pages 501–508
(acceptance rate: 262 of 798 papers = 33%)

4. Random Spatial Structure of Geometric Deformations and Bayesian Nonparametrics
C. Seiler, X. Pennec, and S. Holmes
GSI, Paris, France, LNCS, Volume 8085, Part III, August 2013, Pages 120–127

5. Regional Analysis of Left Ventricle Function using a Cardiac-Specific Polyaffine Motion Model
K. McLeod, **C. Seiler**, Nicolas Toussaint, M. Sermesant, and X. Pennec
FIMH, London, UK, LNCS, Volume 7945, June 2013, Pages 483–490

6. Simultaneous Multiscale Polyaffine Registration by Incorporating Deformation Statistics
C. Seiler, X. Pennec, and M. Reyes
MICCAI, Nice, France, LNCS, Volume 7511, Part II, October 2012, Pages 130–137
(acceptance rate: 248 of 779 papers = 32%)

7. Population-Based Design of Mandibular Plates Based on Bone Quality and Morphology
   H. Bou-Sleiman, **C. Seiler**, T. Iizuka, L. Nolte, and M. Reyes
   MICCAI, Nice, France, LNCS, Volume 7510, Part I, October 2012, Pages 66–73
   (acceptance rate: 248 of 779 papers = 32%)

8. A Near-Incompressible Poly-Affine Motion Model for Cardiac Function Analysis
   K. McLeod, **C. Seiler**, A. Prakosa, M. Sermesant, and X. Pennec
   STATCOM Workshop, MICCAI, Nice, France, October 2012

9. Geometry-Aware Multiscale Image Registration Via OBBTree-Based Polyaffine Log-Demons
   C. Seiler, X. Pennec, and M. Reyes
   MICCAI, Toronto, Canada, LNCS, Volume 6892, Part II, September 2011, Pages 631–638
   Young Scientist Award
   (top 5 out of the majority of 819 papers written by PhD students and postdocs)
   Student Travel Award and Oral Podium Presentation
   (acceptance rate: 34 of 819 papers = 4.2%)

10. Mesh-based vs. Image-based Statistical Model of Appearance of the Human Femur: A Preliminary Comparison Study for the Creation of Finite Element Meshes
    S. Bonaretti, **C. Seiler**, C. Boichon, P. Büchler, and M. Reyes
    MeshMed Workshop, MICCAI, Toronto, Canada, September 2011

11. Femur Specific Polyaffine Model to Regularize the Log-domain Demons Registration
    C. Seiler, X. Pennec, L. Ritacco, and M. Reyes
    SPIE Medical Imaging (Image Processing), Orlando, USA, February 2011

12. Atlas-Based Segmentation of Brain Tumor Images Using a Markov Random Field-Based Tumor Growth Model and Non-Rigid Registration
    S. Bauer, **C. Seiler**, T. Bardyn, P. Büchler, and M. Reyes
    EMBC, Buenos Aires, Argentina, September 2010, Pages 4080–4083

13. Parametric Regression of 3D Medical Images Through the Exploration of Non-Parametric Regression Models
    C. Seiler, X. Pennec, and M. Reyes
    ISBI, Rotterdam, The Netherlands, April 2010, Pages 452–455

14. Combined Statistical Model of Bone Shape and Mechanical Properties for Bone and Implant Modeling
    S. Bonaretti, M. Kistler, **C. Seiler**, M. Reyes, and P. Büchler
    CMBBE, Valencia, Spain, February 2010

15. Conditional Variability of Statistical Shape Models Based on Surrogate Variables
    R. Blanc, M. Reyes, **C. Seiler**, and G. Székely
    MICCAI, London, UK, LNCS, Volume 5762, Part II, September 2009, Pages 84–91
    (acceptance rate: 32%)

Peer-Reviewed Book Chapters

1. Bayesian Statistics in Computational Anatomy
   C. Seiler
   Statistical Shape and Deformation Analysis: Methods, Implementations & Applications (G. Zheng, S. Li, and G. Székely, eds.), Chapter 8, Academic Press, March 2017, Pages 193–214

2. Hierarchical Markov Random Fields Applied to Model Soft Tissue Deformations on Graphics Hardware

C. Seiler, P. Büchler, L.-P. Nolte, R. Paulsen, and M. Reyes
Recent Advances in the 3D Physiological Human (N. Magnenat-Thalmann, J.J. Zhang, and D.D. Feng, eds.), Chapter 9, Springer London, July 2009, Pages 133–148

Unrefereed Preprints

1. Spatial Patterns of Dental Disease in Patients with Low Salivary Flow
   D. Proctor, **C. Seiler**, A. Burns, S. Walker, T. Jung, J. Weng, S. Sastiel, Y. Rajendran, Y. Kapila, M. Millman, G. Armitage, P. Loomer, S. Holmes, M. Ryder, and D. Relman
   https://doi.org/10.1101/2021.10.04.21264534

2. Uncertainty Quantification in Multivariate Mixed Models for Mass Cytometry Data
   C. Seiler, L. Kronstad, L. Simpson, M. Le Gars, E. Vendrame, C. Blish, and S. Holmes
   https://arxiv.org/abs/1903.07976

3. CD38 Contributes to Human Natural Killer Cell Responses Through a Role in Immune Synapse Formation
   M. Le Gars, **C. Seiler**, A. Kay, N. Bayless, E. Sola, E. Starosvetsky, L. Moore, S. Shen-Orr, N. Aziz, P. Khatri, C. Dekker, G. Swan, M. Davis, S. Holmes, Catherine A. Blish
   https://doi.org/10.1101/349084

4. Curvature and Concentration of Hamiltonian Monte Carlo in High Dimensions
   S. Holmes, S. Rubinstein-Salzedo, and **C. Seiler**
   https://arxiv.org/abs/1407.1114