

Curriculum Vitae

Jörn Schulz

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Education

- 01.2008 – 12.2013 Ph.D. in Statistics at the Department of Mathematics and Statistics, University of Tromsø, Norway. Dissertation title: Statistical Analysis of Medical Shapes and Directional Data. Supervisor: Professor Fred Godtlielsen.
- 04.1998 – 01.2007 Diploma Study of Mathematics, Humboldt Universität zu Berlin, Germany, Degree: Diplom-Mathematiker (similar to Master degree). Area of concentration: Statistics. Diploma thesis: Study of PET Data employing Adaptive Smoothing Methods. Supervisor: Professor Vladimir Spokoiny.
- 08.1992 – 05.1997 Abitur (general qualification for university entrance), Kurt - Schwitters - Oberschule in Berlin, Germany. Major courses: Mathematics, Art.

Work Experience

- 09.2020 – **Department of Mathematics and Physics, University of Stavanger, Norway**, Associated Professor, teaching and supervision.
- 05.2014 – 08.2022 **Stavanger University Hospital, Norway**, Research and supervision of statistical analyses.
- 12.2017 – 09.2020 **Department of Mathematics and Physics, University of Stavanger, Norway**, Adjunct Associated Professor II, teaching and supervision.
- 06.2015 – 11.2019 **Department of Electrical Engineering and Computer Science, University of Stavanger, Norway**, Postdoctoral researcher.
- 05.2019 – 09.2019 **University of Tsukuba, Japan**, Three-month postdoctoral research stay, collaboration with the Faculty of Pure and Applied Sciences and the Aoshima Laboratory, work on non-linear high dimensional low sample size data.

- 06.2016 – 12.2016 **Department of Mathematics and Natural Sciences, University of Stavanger, Norway**, teaching position.
- 01.2008 – 12.2013 **Department of Mathematics and Statistics, University of Tromsø**, Ph.D. Scholarship.
- 03.2013 – 04.2013 **Universitetsforlaget**, Revision of book “Statistikk” av Gunnar G. Løvås.
- 02.2011 – 04.2011 **University of North Carolina at Chapel Hill, USA**, Six-month doctoral research trip, collaboration with the Department of Statistics and Medical Image Display and Analysis Group at the Department of Computer Science, shape modelling using s-reps applied to prostate, hippocampus and parotis.
- 02.2010 – 04.2010
- 03.2007–12.2007 **Dr. Manfred Köhler GmbH (Germany)**, Contract Research Organization (CRO), statistical analyses of clinical studies, writing of a “statistical analysis plan”, “final study report”, programming in SAS.
- 11.2004–03.2006 **Humboldt Universität zu Berlin, Germany**, Worked with LaTeX and Fortran on publishing of the book “Solution Methods in Non-convex Optimization: Pathfollowing and Jumps” of J. Guddat et al.
- 04.2003–06.2004 **Weierstraß-Institut für Angewandte Analysis und Stochastik (WIAS) Berlin, Germany**, Programming and implementation of adaptive weights smoothing methods in Matlab.
- 03.2001–10.2001 **Vereinte Krankenversicherung AG, Berlin**, Internship at the department of controlling, expansion of a controlling database using software Access.
- 10.1997–08.1998 **Allianz Versicherungs-Aktiengesellschaft, (Allianz Group), Berlin**, Internship and assistant at the department of controlling.

Teaching Experience

at the Department of Mathematics and Natural Science, University of Stavanger

Full course responsibility

- STA500 **Introduction to Probability and Statistics 2**, 2016, 2020, 2021, 2022.
- STA510 **Statistical Modeling and Simulation**, 2023.
- STA600 **Generalized Linear Models**, 2019, 2020
- Matematikk **Forkurs for ingeniørutdanning**, 2021, 2023, 2024.
- PhD students **PhD in Mathematics and Physics**, supervision of a PhD student on statistical shape analysis, since 2020.
- Master students **Master Thesis in Mathematics and Physics**, supervision of 2 master students (2019-2020 within statistical shape analysis, 2022-2023 within functional data analysis) (both students received a PhD grant afterwards).

Partial course responsibility

STA903 **General Statistical Methods**, 2021, 2023.

BIO908 **Statistical Methods in Medical Research**, 2020.

BIO907 **Statistical Methods in Medical Research**, 2020.

Professional affiliations

2023 – Deutsche Statistische Gesellschaft, Member.

2019 – Norwegian Statistical Association (NSF), Section Stavanger, Co-leader.

2011 – Norwegian Statistical Association (NSF), Member.

2010 – Norsk Forening for Bildebehandling og Mønster-gjenkjenning, Member.

2019 20. Norwegian Statistical Meeting, Part of the organization committee.

Stavanger, February 23, 2024

List of publications and conferences

Publications

- 2023 Taheri M, SM Pizer, J Schulz. “Fitting the Discrete Swept Skeletal Representation to Slabular Objects”, under review.
- Taheri M, J Schulz. “Statistical Analysis of Locally Parameterized Shapes”, *Journal of Computational and Graphical Statistics*, 32:2, 658-670.
- Liu Z; J Schulz, M Taheri, et al. “Analysis of Joint Shape Variation from Multi-Object Complexes”, *Journal of Mathematical Imaging and Vision*, 65, pp. 542-562.
- 2020 Schulz J; JT Kvaløy, K Engan, T Eftestøl, S Jatosh, H Kidanto, HL Ersdal. “State transition modeling of complex monitored health data”, *Journal of Applied Statistics*, 47:11, 1915-1935.
- Kim B; J Schulz, S Jung. “Kurtosis test of modality for rotationally symmetric distributions on hyperspheres”, 178, *Journal of Multivariate Analysis*, DOI: 10.1016/j.jmva.2020.104603.
- Kim B; S Huckemann, J Schulz, S Jung. “Small-sphere distributions for directional data with application to medical imaging”, 46:4, pp. 1047-1071, *Scandinavian Journal of Statistics*, DOI: 10.1111/sjos.12381.
- Pizer SM; J Hong, J Vicory, Z Liu, JS Marron, H Choi, J Damon, S Jung, B Paniagua, J Schulz, A Sharma, L Tu, J Wang. “Object Shape Representation via Skeletal Models (s-reps) and Statistical Analysis”, book chapter in *Riemannian Geometric Statistics in Medical Image Analysis*, editors: X Pennec, S Sommer, T Fletcher, 1st Edition, Academic Press.
- 2018 Linde, JE; JM Perlman, K Øymar, J Schulz, J Eilevstjønn, M Thallinger, S Kusulla, HL Kidanto, HL Ersdal. “Predictors of 24-h outcome in newborns in need of positive pressure ventilation at birth”, *Resuscitation*, 129, pp. 1-5.
- Storm M; J Schulz, K Aase, “Patient safety in transitional care of the elderly: Effects of a quasi-experimental inter-organizational educational intervention”, *BMJ Open*, Volume 8, DOI: 10.1136/bmjopen-2017-017852.
- 2017 Linde JE; J Schulz, JM Perlman, K Øymar, L Blacy, HL Kidanto, HL Ersdal. “The relation between given volume and heart rate during newborn resuscitation.”, *Resuscitation*, 117:1, pp. 80-86, DOI: 10.1016/j.resuscitation.2017.06.007.
- Tholfen, LK.; JP Larsen, J Schulz, OB Tysnes, MD Gjerstad. “Changes in insomnia subtypes in early Parkinson’s disease”, *Neurology*, 88:4, pp. 352-358,

DOI: 10.1212/WNL.0000000000003540.

- 2016 Schulz, J; SM Pizer, JS Marron, F Godtlielsen. “Nonlinear hypothesis testing of geometrical object properties of shapes applied to hippocampi”, *Journal of Mathematical Imaging and Vision*, 54:1, pp. 15-34, DOI: 10.1007/s10851-015-0587-7.
- Hong J; J Vicory, J Schulz, M Styner, JS Marron, SM Pizer, “Non-Euclidean classification of medically imaged objects via s-reps”, *Medical Image Analysis*, 31, pp. 37-45, DOI: 10.1016/j.media.2016.01.007.
- Hiorth, YH; A Guido, JP Larsen, J Schulz, OB Tysnes, KF Pedersen. “Long-term risk of falls in an incident Parkinson’s disease cohort: the Norwegian ParkWest study”, *Journal of Neurology*, 264:2, pp. 364-372, DOI: 10.1007/s00415-016-8365-z.
- Linde JE, J Schulz, JM Perlman, K Øymar, F Francis, J Eilevstjønn, HL Ersdal. “Normal newborn heart rate in the first five minutes of life assessed by dry-electrode electrocardiography”, *Resuscitation*, 110:3, pp. 231-237.
- Thorsen, O; M Hartveit, JO Johannessen, L Fosse, GE Eide, J Schulz, A Baerheim. “Typologies in GP’s referral practice”, *BMC Family Practice*, 17:1.
- 2015 Schulz, J; S Jung, S Huckemann, M Pierrynowski, JS Marron, SM Pizer. “Analysis of rotational deformations from directional data”, *Journal of Computational and Graphical Statistics*, 24:2, pp. 539-550, DOI: 10.1080/10618600.2014.
- Tholfsen, LK.; JP Larsen, J Schulz, OB Tysnes, MD Gjerstad. “Development of excessive daytime sleepiness in early Parkinson disease”, *Neurology*, 85:2, pp. 162-168, DOI: 10.1212/WNL.0000000000001737.
- Rossen, J; TB Østborg, E Lindtjørn, J Schulz, TM Eggebø. “Judicious use of oxytocin augmentation for the management of prolonged labor”, *Acta Obstet Gynecol Scand.*, 95:3, pp. 355-61.
- 2014 Schulz, J; SO Skrøvseth, VK Tømmerås, K Marienhagen, F Godtlielsen. “A semiautomatic tool for prostate segmentation in radiotherapy treatment planning”, *BMC Medical Imaging*, 14:4, DOI:10.1186/1471-2342-14-4.
- Pizer, SM; J Hong, S Jung, JS Marron, J Schulz. “Relative statistical performance of s-reps with principal nested spheres vs. PDMs”, Proceedings to *Shape Symposium on Statistical Shape and Applications, SICAS*.
- Zortea, M; TR Schopf, K Thon, M Geilhufe, K Hindberg, H Kirchesch, K Møllersen, J Schulz, SO Skrøvseth, F Godtlielsen. “Performance of a dermoscopy-based computer vision system for the diagnosis of pigmented skin lesions compared with visual evaluation by experienced dermatologists”, *Artificial Intelligence in Medicine*, 60:1, pp 13-26.
- 2013 Schulz, J “Statistical Analysis of Medical Shapes and Directional Data”, PhD thesis, ISBN 978-82-8236-118-7.

- 2007 Schulz, J. “Analyse von PET-Daten unter Einsatz adaptiver Glättungsverfahren”, Diploma Thesis, Hochschulschrift Humboldt-University, Berlin, 2007, <http://opac.hu-berlin.de>.

Invited talks

- 2019 “Data beyond the euclidean space”, International Symposium on Theories and Methodologies for Large Complex Data (21.-23. November 2019), Tsukuba, Japan.
- “Statistics in medicine and beyond”, Department of Statistics (8. August 2019), Seoul National University, Seoul, South-Korea.
- “Statistics in medicine and beyond”, Institute of Statistical Mathematics (28. June 2019), Tachikawa, Japan.
- 2014 “Statistical analysis of medical shapes and directional data”, Institute for Mathematical Stochastics (24. February 2014), Göttingen, Germany.

Selected presentations/conferences

- 2022 Organization of the Session “Statistics on shapes and manifolds”, 5th International Conference on Econometrics and Statistics, Kyoto, Japan.
- 2019 “State transition modeling of complex monitored health data”, DAGStat 2019, 5th Joint Statistical Meeting at LMU Munich (18.-22. March 2019), Germany.
- 2017 “Small-sphere distributions for directional data with application to rotationally deformed objects”, 10th Int. Conference of the ERCIM WG on Computational and Methodological Statistics (16.-18. December 2017), London, UK.
- 2016 “Analysis of rotational deformations from directional data”, 22nd Int. Conference on Computational Statistics (23.-26. August 2016), Oviedo, Spain.
- 2015 “Statistical shape analysis with medical applications”, 18th Norwegian Statistical Conference (15.-18. June 2015), Bergen.