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Curriculum Vitae — Jakob Sauer Jørgensen

Personal information

- ✧ Born: May 7, 1984 in Aarhus, Denmark
- ✧ Birth name: Jakob Heide Jørgensen
- ✧ Email: `jakj@dtu.dk`
- ✧ URL: `www.compute.dtu.dk/~jakj`
- ✧ Home address: H. P. Olsens Vænge 50, 2630 Taastrup, Denmark.
- ✧ Home phone: (0045) 28495504

Current position

- ✧ Postdoc, Section for Scientific Computing, Department of Applied Mathematics and Computer Science, Technical University of Denmark.
- ✧ Project: "High-Definition Tomography" – funded by ERC Advanced Grant, headed by Prof. Per Christian Hansen.

Education

- ✧ Ph.D. (applied mathematics), Technical University of Denmark (DTU), 2013
  Thesis: *Sparse Image Reconstruction in Computed Tomography*
  Advisor: Prof. Per Christian Hansen, `pcha@dtu.dk`
- ✧ M.Sc. (applied mathematics), DTU, 2009
  Thesis: *Knowledge-Based Tomography Algorithms*
  Advisor: Prof. Per Christian Hansen, `pcha@dtu.dk`
- ✧ B.Sc. (applied mathematics), DTU, 2007
  Thesis: *Frames and Their Application on Robust Signal Transmission*
  Advisor: Prof. Ole Christensen, `ochr@dtu.dk`

Research interests

- ✧ Mathematical and computational aspects of tomographic image reconstruction
- ✧ Inverse problems and regularization
- ✧ Sparse approximation and compressed sensing
- ✧ Large-scale, smooth and non-smooth optimization theory and algorithms

Awards and scholarships

- ✧ Trainee Grant, ASTRA Tomography Toolbox Training Days, 2014, Antwerp, Belgium
- ✧ Elite Research Scholarship from Danish Ministry of Science, Innovation and Higher Education
- ✧ SIAM Student Travel Award, SIAM IS12, Philadelphia, PA, United States
- ✧ Kaj og Hermilla Ostenfeld's Fond
- ✧ Trainee Grant, 2011 IEEE NSS-MIC, Valencia, Spain
- ✧ Early Career Researcher Accommodation Grant, SPARS'11, Edinburgh, Scotland
- ✧ NIH Travel Grant, IEEE ISBI'11, Chicago, IL, United States
- ✧ Vital Imaging Travel Grant, IEEE ISBI'11, Chicago, IL, United States
- ✧ Oticon Fonden
- ✧ Otto Mønsteds Fond

- ✧ Ingeniør Alexandre Haynman og hustru Nina Haynmans Fond
- ✧ Augustinus Fonden
- ✧ ITMAN Graduate School Elite Student Scholarship (for Master Thesis).
- ✧ DTU Legat
- ✧ DTU Studierejselegat
- ✧ Frants Allings Legat
- ✧ Vera og Carl Johan Michaelsens Legat
- ✧ Frode Schöns Legat
- ✧ Ingeniørforeningen i Danmarks Låne- og Hjælpefond
- ✧ Nordea-Fonden
- ✧ Observator mag. scient. Julie Marie Vinter Hansens Rejselegat

Teaching experience

- ✧ Lecturer at *CINEMAX PhD Summer School: Methods in Imaging of Material Microstructure*, 2015. 1 day of lectures and lab-work on introductory tomographic reconstruction methods.
- ✧ Lecturer: *Advanced Matlab Programming*, 2015. Taught approx. 50% of the course including lecturing, exercises, projects, exams.
- ✧ Co-organized PhD reading course *Measurement techniques and mathematical modeling in tomography* including giving one lecture, 2014.
- ✧ Guest lecturer: *Advanced Matlab Programming*, 2011.
- ✧ Secondary education teaching: Designed and executed project *Image compression using vector calculus* for high-school students, 2011.
- ✧ Teaching assistant: *Mathematics 1* (linear algebra, calculus, analysis), *Mathematics 2* (differential equations, Fourier analysis), *Modeling and Computation* (numerical analysis, mathematical modeling), *Modeling and Programming* (introduction to mathematical models and programming) and *Matlab programming, introductory and advanced*: Class teaching, exercise instructor, assignment grading, examination, student project design and execution, 2005 – 2011.

Teaching education

- ✧ Completed *Education in University Teaching at DTU (UDTU)*, 2015: 3 modules *Teaching Methods and Course Planning*, *Teaching and Teacher Development* and *Teaching Development Project*, in total ≈ 250 hours workload including in the last module applying teaching techniques to own teaching and documenting effects in reports.
- ✧ Completed 1-day course on *Supervision of Larger Projects at DTU*, 2015: Techniques for effectively supervising PhD, Master and Bachelor projects.
- ✧ Completed 4-day course *Teaching and Learning* on effective teaching techniques, 2010.

Supervision of students

- ✧ Co-advisor on PhD project *Nano-Scale 3D reconstruction of phase contrast X-ray projections* by Tiago Ramos in collaboration with DTU Energy Conversion, 2015–?
- ✧ Co-advisor on PhD project *Tomographic reconstruction for P^3* by Leise Borg in collaboration with Dept. of Computer Science, Copenhagen University, 2014–?
- ✧ Co-advisor on Bachelor Thesis *GPU Implementation of a Toolbox for Tomographic Reconstruction* by Bjarke Hendriksen, DTU, 2015.
- ✧ Advisor on miniproject *X-ray tomography with limited data* by Leise Borg and Mads Friis Hansen, DTU, 2015.
- ✧ Co-advisor on Master Thesis *Simulated Phase-Contrast Tomography Experiments using Total Variation Regularization* by Rasmus Dalgas Rasmussen, DTU, 2014.
- ✧ Co-advisor on Master Thesis *Implementation and Evaluation of a Splitting Method for Total Variation Deblurring* by Allan Lyngby Lassen, DTU, 2010.

- ✧ Additional co-supervision: PhD student Emil Bøje Lind Petersen, 2013–2015; Special Master Course *Total Variation Reconstruction in CT Scan* by Jakob Søgaard Larsen in collaboration with GNI A/S Veterinary CT-scanner, 2013; Master Thesis *AIR Tools - A MATLAB Package for Algebraic Iterative Reconstruction Techniques* by Maria Saxild-Hansen, 2010.

Other scientific work

- ✧ Author of Danish and English versions of introductory guidebook to MATLAB, *Matlab Syntaksen / The Matlab Syntax*, published by Polyteknisk Forlag, co-author: Anders Skajaa, 2012.
- ✧ Student assistant, National Laboratory for Sustainable Energy, Risø DTU, part-time, 1 year. Developed numerical software for analysis of fuel cell impedance spectroscopy data. Planned and executed MATLAB course for scientific staff, 2007 – 2008.
- ✧ Author of 1st and 2nd editions of *Find Formlen* (in English: *Find the Formula*), a collection of mathematical formulas for engineering students, published by Polyteknisk Forlag, co-author: Anders Skajaa, 2006 and 2010.

Experience abroad

- ✧ Visiting researcher, Dept. of Radiology, Univ. of Chicago, United States, 5 months, 2012
- ✧ Visiting researcher, Dept. of Radiology, Univ. of Chicago, United States, 3 months, 2011
- ✧ Visiting student, Dept. of Mathematics, Univ. of Auckland, New Zealand, 4 months, 2008

Reviewer

- ✧ SIAM Journal on Imaging Sciences
- ✧ Inverse Problems and Imaging
- ✧ Inverse Problems in Science and Engineering
- ✧ Numerical Algorithms
- ✧ IEEE Transactions on Medical Imaging
- ✧ Physics in Medicine and Biology
- ✧ Philosophical Transactions of the Royal Society A
- ✧ Journal of Medical Imaging
- ✧ Journal of X-ray Science and Technology
- ✧ Journal of Visual Communication and Image Representation
- ✧ Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization
- ✧ CT Meeting 2016 (4th Int. Conf. on Image Formation in X-ray Computed Tomography)

Software proficiencies

- ✧ Super-user: MATLAB, LaTeX
- ✧ Experienced user: Python, C, Linux/Unix

Professional memberships

- ✧ SIAM – Society for Industrial and Applied Mathematics
- ✧ IEEE – Institute of Electrical and Electronics Engineers
- ✧ DMIN – Danish Medical Imaging Network
- ✧ DCAMM – Danish Center for Applied Mathematics and Mechanics
- ✧ IDA Matematik – Mathematics Network of the Danish Society of Engineers

References

- ✧ Prof. Xiaochuan Pan, Dept. of Radiology, University of Chicago. Scientific mentor during stays at University of Chicago. Email: `xpan@uchicago.edu`, phone: (001) 773-702-1293
- ✧ Assoc. Prof. Emil Sidky, Dept. of Radiology, University of Chicago. Co-advisor, Ph.D. project. Email: `sidky@uchicago.edu`, phone (001) 773-834-7845

- ✧ Prof. Per Christian Hansen, Dept. Applied Mathematics and Computer Science, DTU, Ph.D. and MSc advisor. Email: `pcha@dtu.dk`, phone: (0045) 45253097
- ✧ Prof. Ole Christensen, Dept. of Applied Mathematics and Computer Science, DTU. BSc advisor. Email: `ochr@dtu.dk`, phone: (0045) 45253043

Organizer work

- ✧ Organized minisymposium *Addressing the Computational Challenge of Sparsity-regularized X-ray Tomography* at the SIAM Conference on Imaging Science (IS16), May 23–26, 2016, Albuquerque, NM, USA. URL: `http://www.math.hkbu.edu.hk/SIAM-IS14`.
- ✧ Co-organized *Workshop Series on Research Software Tools*: 5 hands-on workshops for PhD students on high-performance computing, reproducible research, version control, data management, and high-quality graphics and LaTeX worksflows, Oct.–Dec. 2015.
- ✧ Co-organized minisymposium *Sparse Reconstruction for Tomographic Imaging* at the SIAM Conference on Imaging Science (IS14), May 12–14, 2014, Hong Kong.
  URL: `http://www.math.hkbu.edu.hk/SIAM-IS14`.
- ✧ Co-organized workshop *Sparse Tomo Days*, March 26–28 2014, DTU, Lyngby, Denmark.
  URL: `http://www.compute.dtu.dk/~jakj/sparsetomodays`.