Florian Schäfer

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EDUCATION

California Institute of Technology (Caltech), Pasadena CA

- Ph.D. in Applied and Computational Mathematics *expected June 2020*

Rheinische Friedrich-Wilhelms Universität, Bonn, Germany

- M.S. in Mathematics *fall 2015*
- B.S. in Mathematics, with Physics as secondary subject (*Nebenfach*) *fall 2013*

University of Paris VI *Pierre et Marie Curie*, Paris, France

- Exchange student in Mathematics, via the Erasmus Programme *2013-2014*

SOFTWARE AND PROGRAMMING SKILLS

Julia, Matlab, LaTeX: high proficiency

C, C++, UNIX: intermediate proficiency

FELLOWSHIPS AND AWARDS

Inaugural IST/Amazon Fellow in Artificial Intelligence *November 2017*

- $40,000 fellowship awarded to five Caltech graduate students or postdocs

RESEARCH EXPERIENCE

Graduate Student Researcher, California Institute of Technology *September 2015 - present*

- My research interests lie at the interface of partial differential equations, fast algorithms, and statistical inference.

Visiting Researcher, Alan Turing Institute *July - August 2017*

- I performed research in computational statistics, exploring applications to Bayesian inverse problems, probabilistic numerics, and spatial statistics.

Master's Student Researcher, University of Bonn *November 2014 - September 2015*

- I worked on the theoretical analysis and practical implementation (in C++) of a differential geometric method in image analysis.

Visiting Graduate Student, Johns Hopkins University *June - September 2014*

- I worked on combining SVM– and diffeomorphism group based approaches for the segmentation of MRI-images of the heart. I developed a new method and implemented it in Matlab and C++.

Research Intern, Indian Institute of Technology (IIT) Mandi, India *July - September 2012*

- With a "RISE Worldwise"-scholarship of the German Academic Exchange Service. I worked on the solution of a boundary value problem arising in the study of single-molecule transistors.

TEACHING EXPERIENCE

Teaching Assistant at Caltech *four terms from fall 2016 to present*

- ACM201 (Partial Differential Equations)
- ACM216 (Markov Chains, Discrete Stochastic Processes and Applications)
- ACM95/100b (Introductory Methods of Applied Mathematics)
- ACM104 (Applied Linear Algebra)

German Language Assistant at a High School in Stara Zagora, Bulgaria *2009-2010*

- As part of the "Kulturweit" programme of the German UNESCO-Comission.
  I assisted in high school-level German classes, ran a conversation group and a math circle.

LANGUAGE PROFICIENCY

English: fluent German: native French: high proficiency

Spanish, Bulgarian: intermediate proficiency Polish, Finnish: basic proficiency

PUBLICATIONS

- **Florian Schäfer**, T. J. Sullivan, and Houman Owhadi,
  Compression, inversion, and approximate PCA of dense kernel matrices at near-linear computational complexity, 2017
  `http://arxiv.org/abs/1706.02205`
- A.Effland, M. Rumpf, and **F. Schäfer**,
  Image extrapolation for the time discrete metamorphosis model - existence and applications, 2017.
  In SIAM J. Imaging Sci., 11(1):834-862, 2018.
- A.Effland, M. Rumpf, and **F. Schäfer**,
  Time discrete extrapolation in a Riemannian space of images.
  In Proc. of International Conference on Scale Space and Variational Methods in Computer Vision, volume 10302, pages 473-485. Springer, Cham, 2017. Lecture Notes in Computer Science.

TALKS AND PRESENTATIONS

"Compression, inversion, and approximate PCA of dense kernel matrices at near-linear computational complexity"

- Topical Workshop: "Probabilistic Scientific Computing: Statistical inference approaches to numerical analysis and algorithm design" *June 2017, ICERM, Providence*
  Video available online: `http://icerm.brown.edu/video_archive/#/play/1309`
- Tea Talk *July 2017 Oxford-Man Institute, Oxford, UK*
- Conference: "Multiscale Problems in Materials Science and Biology Analysis and Computation" *January 2018, Tsinghua Sanya Int. Math. Forum, Sanya, China*
- "SIAM Conference on Uncertainty Quantification" *April 2018, Garden Grove, California*
  Minisymposium on Probabilistic Numerical Methods for Quantification of Discretization Error
- Research Seminar: "Mathematical Statistics" *May 2018, Weierstrass Institute, Berlin, Germany*