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Anne Driemel

Current Position

Associate Professor (tenured) of Computer Science at the University of Bonn
Member of the Hausdorff Center for Mathematics

Education

2013 **PhD in Computing Science**, *Utrecht University*, The Netherlands.
PhD-Thesis: "Realistic Analysis for Algorithmic Problems on Geographical Data"
Advisors: Prof. Marc van Kreveld, Utrecht University
Prof. Mark de Berg, TU Eindhoven

2009 **Diplom in Computer Science**, *Free University*, Berlin, Germany.
MSc-Thesis: "Multiscale Curvature Matching for Smooth Polylines"
Advisor: Prof. Helmut Alt, Free University of Berlin

2002 **Abitur (Secondary School)**, Fürstenwalde, Germany.

Employment

(I worked part-time where indicated in connection with parental leave.)

since **Associate Professor (W2, tenured)**, *University of Bonn*, Germany.
Dec 2018 *Group:* Abteilung V, Theoretical Computer Science

Jan 2015 – **Assistant Professor (0.8 fte)**, *TU Eindhoven*, the Netherlands.
Dec 2018 *Group:* Data Mining, Prof. Mykola Pechenizkiy

Apr 2014 – **Postdoc (0.8 fte)**, *TU Eindhoven*, the Netherlands.
Jan 2015 *Group:* Information Systems/ Web Engineering, Prof. Paul de Bra

Oct 2013 – **Wissenschaftlicher Mitarbeiter (0.75 fte)**, *TU Dortmund*, Dortmund, Germany.
Mar 2014 *Group:* Algorithms and Complexity, Prof. Christian Sohler

Sep 2009 – **Assistent in opleiding (AIO)**, *Utrecht University*, Utrecht, the Netherlands.
Sep 2013 *Group:* Multimedia and Geometry, Prof. Remco Veltkamp

Sep 2008 – **Studentische Hilfskraft**, *Free University*, Berlin, Germany.
Mar 2009 Instructor for "Algorithms and Programming III"

Sep 2004 – **Studentische Hilfskraft**, *Free University*, Berlin, Germany.
Aug 2007 Dept. of Computer Science and Dept. of Comparative Literature

Awards and Grants

2018   **Bonn Junior Fellow**.
Five-year appointment at the Hausdorff Center for Mathematics in Bonn.
Funded by the Excellence Iniative of the DFG (German Research Foundation).

2016   **KNAW Visiting Professor Program**, 10,000 EUR.
Financing travel and subsistence of my visitor Rob Hyndman from Monash University.
Funded by the Royal Netherlands Academy of Arts and Sciences (KNAW).

2014   **Innovational Research Incentives Scheme Veni**, 240,000 EUR.
Project title: "Clustering time series and trajectories"
Funded by the Netherlands Organization for Scientific Research (NWO).

2007   **FU Berlin Direct Exchange Scholarship**, 18,300 USD.
To spend nine months at the *University of Pennsylvania (UPenn)*

Workshops and Schools (co-organized)

June 2020   **(scheduled) Hausdorff School Algorithmic Data Analysis**.
Hausdorff Center for Mathematics, Bonn, Germany
Organized together with:
- Melanie Schmidt, University of Cologne, DE

Apr 2019   **Computational Geometry**.
Schloss Dagstuhl - Leibniz Center for Informatics, Wadern, Germany
Organized together with:
- Siu-Wing Cheng, HKUST – Kowloon, HK
- Jeff Erickson, University of Illinois, US

Feb 2018   **Analysing large collections of time series**.
NII Shonan Meeting, Shonan Village Center, JPN
Organized together with:
- Rob Hyndman, Monash University, AU
- Galit Shmueli, NTHU, Taiwan

Apr 2017   **Computational Geometry**.
Schloss Dagstuhl - Leibniz Center for Informatics, Wadern, Germany
Organized together with:
- Otfried Cheong, KAIST - Daejeon
- Jeff Erickson, University of Illinois, US

Nov 2016   **Eurandom-SIKS Masterclass: Forecasting with R**.
Lecturer: Rob Hyndman (Monash University)
Venue: EURANDOM/TU Eindhoven, the Netherlands
Shortcourse targeted at students and practitioners organized in the context of the KNAW
visiting professor program

Program Committees

2020   **SODA**, *SIAM Symposium on Algorithms and Data Structures*.

2019   **EuroCG**, *European Workshop on Computational Geometry*.

2017   **ESA**, *25th European Symposium on Algorithms*.

2017   **SODA**, *SIAM Symposium on Algorithms and Data Structures*.

2016   **ICTOPEN**, *ICT.OPEN–The Conference for ICT-Research in the Netherlands*.

2016   **APPROX**, *19th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems*.

2015 **SOCG**, *31st International Symposium on Computational Geometry.*

2015 **ECML-PKDD**, *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases.*

Invited Talks

May 2020 **(scheduled) Clustering Curves under the Fréchet distance**.
Fixed Parameter Computational Geometry III
Lorentz Center, Leiden, NL

Sep 2019 **Clustering Curves under the Fréchet distance**.
Anticipating Human Behavior Workshop
Bonn, DE

Jul 2017 **Algorithms for Structures in Spaces of Curves**.
Workshop on Geometry and Machine Learning (part of CG Week 2017)
Brisbane, AUS

May 2016 **Two decades of algorithms for the Fréchet distance**.
NII Shonan Meeting: Theory and Applications of Geometric Optimization
Shonan Village Center, JPN

Sep 2016 **Lower Bounds for Fréchet Range Reporting**.
Host: Rasmus Pagh, Professor of Computer Science at ITU Copenhagen, DK

Aug 2014 **Datastructures for Trajectories**.
Host: Lars Arge, Professor of Computer Science at Aarhus University, DK

Research Visits

Oct 2017 **Monash University**, Melbourne, AU.
Host: Rob Hyndman, Professor of Statistics
Duration: 7 days

Jul 2017 **The University of Sydney**, Sydney, AU.
Host: Joachim Gudmundsson, Associate Professor (Computer Science)
Duration: 5 days

Sep 2016 **ITU Copenhagen**, Copenhagen, DK.
Host: Francesco Silvestri, Postdoc at ERC Scalable Similarity Search (Rasmus Pagh)
Duration: 4 days

Aug 2014 **Aarhus University**, Aarhus, DK.
Host: Peyman Afshani, Associate Professor at MADALGO (Lars Arge)
Duration: 12 days

Jan 2013 **Tulane University**, New Orleans, LA, USA.
Host: Carola Wenk, Professor of Computer Science
Duration: 10 days

Aug 2010 **University of Illinois at Urbana-Champaign**, Urbana, IL, USA.
Host: Sariel Har-Peled, Professor of Computer Science
Duration: 3 weeks

Jul 2010 **University of North Carolina at Chapel Hill**, Chapel Hill, NC, USA.
Host: Jack Snoeyink, Professor of Computer Science
Duration: 3 days

Publications

Refereed Conference Publications

[1] Anne Driemel, Jeff M. Phillips, and Ioannis Psarros. The VC dimension of metric balls under Fréchet and Hausdorff distances. In *Proceedings of the 35th International Symposium on Computational Geometry, SoCG*, pages 28:1–28:16, 2019.

[2] Kevin Buchin, Anne Driemel, Joachim Gudmundsson, Michael Horton, Irina Kostitsyna, Maarten Löffler, and Martijn Struijs. Approximating (k,l)-center clustering for curves. In *Proceedings of the Thirtieth Annual ACM-SIAM Symposium on Discrete Algorithms, SODA*, pages 2922–2938, 2019.

[3] Matteo Ceccarello, Anne Driemel, and Francesco Silvestri. FRESH: Fréchet similarity with hashing. In *Proceedings of Algorithms and Data Structures - 16th International Symposium, WADS*, pages 254–268, 2019.

[4] Anne Driemel and Amer Krivosija. Probabilistic embeddings of the fréchet distance. In *Approximation and Online Algorithms - 16th International Workshop, WAOA 2018*, pages 218–237, 2018.

[5] Peyman Afshani and Anne Driemel. On the complexity of range searching among curves. In *Proceedings of the 29th ACM-SIAM Symposium on Discrete Algorithms, SODA*, pages 898–917, 2018.

[6] Anne Driemel and Francesco Silvestri. Locality-sensitive hashing of curves. In *Proceedings of the 33rd International Symposium of Computational Geometry, SoCG*, pages 37:1–37:16, 2017.

[7] Anne Driemel, Amer Krivošija, and Christian Sohler. Clustering time series under the Fréchet distance. In *Proceedings of the 27th ACM-SIAM Symposium on Discrete Algorithms, SODA*, pages 766–785, 2016.

[8] Maike Buchin, Anne Driemel, and Bettina Speckmann. Computing the Fréchet distance with shortcuts is NP-hard. In *Proceedings of the 30th Symposium on Computational Geometry, SoCG*, pages 367–376, 2014.

[9] Boris Aronov, Anne Driemel, Marc van Kreveld, Maarten Löffler, and Frank Staals. Segmentation of trajectories on non-monotone criteria. In *Proceedings of the 24th ACM-SIAM Symposium on Discrete Algorithms, SODA*, 2013.

[10] Anne Driemel, Sariel Har-Peled, and Benjamin Raichel. On the expected complexity of Voronoi diagrams on terrains. In *Proceedings of the 28th ACM Symposium on Computational Geometry, SoCG*, pages 101–110, 2012.

[11] Anne Driemel and Sariel Har-Peled. Jaywalking your dog: computing the Fréchet distance with shortcuts. In *Proceedings of the 23rd Annual ACM-SIAM Symposium on Discrete Algorithms, SODA*, pages 318–337, 2012.

[12] Atlas F. Cook, Anne Driemel, Sariel Har-Peled, Jessica Sherette, and Carola Wenk. Computing the Fréchet distance between folded polygons. In *Algorithms and Data Structures - 12th International Symposium, WADS*, pages 267–278, 2011.

[13] Anne Driemel, Herman Haverkort, Maarten Löffler, and Rodrigo I. Silveira. Flow computations on imprecise terrains. In *Algorithms and Data Structures - 12th International Symposium, WADS*, pages 350–361, 2011.

[14] Daniel Chen, Anne Driemel, Leonidas J. Guibas, Andy Nguyen, and Carola Wenk. Approximate map matching with respect to the Fréchet distance. In *Proceedings of the Workshop on Algorithm Engineering and Experiments, ALENEX*, pages 75–83, 2011.

[15] Maike Buchin, Anne Driemel, Marc van Kreveld, and Vera Sacristán. An algorithmic framework for segmenting trajectories based on spatio-temporal criteria. In *18th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pages 202–211, 2010.

[16] Anne Driemel, Sariel Har-Peled, and Carola Wenk. Approximating the Fréchet distance for realistic curves in near linear time. In *Proceedings of the 26th ACM Symposium on Computational Geometry, SoCG*, pages 365–374, 2010.

Refereed Journal Publications

[17] Anne Driemel, Sariel Har-Peled, and Benjamin Raichel. On the expected complexity of Voronoi diagrams on terrains. *ACM Transactions on Algorithms*, 12(3):37:1–37:20, April 2016.

[18] Boris Aronov, Anne Driemel, Marc Van Kreveld, Maarten Löffler, and Frank Staals. Segmentation of trajectories on nonmonotone criteria. *ACM Transactions on Algorithms*, 12(2):26:1–26:28, December 2015.

[19] Atlas F. Cook IV, Anne Driemel, Jessica Sherette, and Carola Wenk. Computing the fréchet distance between folded polygons. *Computational Geometry*, 50:1 – 16, 2015.

[20] Anne Driemel and Sariel Har-Peled. Jaywalking your dog: computing the Fréchet distance with shortcuts. *SIAM Journal on Computing*, 42(5):1830–1866, 2013.

[21] Anne Driemel, Herman Haverkort, Maarten Löffler, and Rodrigo Silveira. Flow computations on imprecise terrains. *Journal of Computational Geometry*, 4(1):38–78, 2013.

[22] Anne Driemel, Sariel Har-Peled, and Carola Wenk. Approximating the Fréchet distance for realistic curves in near linear time. *Discrete & Computational Geometry*, 48(1):94–127, 2012.

[23] Maike Buchin, Anne Driemel, Marc van Kreveld, and Vera Sacristán. Segmenting trajectories: A framework and algorithms using spatiotemporal criteria. *Journal of Spatial Information Science*, 3(1):33–63, 2011.

Theses

[24] Anne Driemel. *Realistic analysis for algorithmic problems on geographical data*. PhD thesis, Utrecht University, 2013.

[25] Anne Driemel. Multiscale curvature matching for smooth polylines. Master's thesis, Free University of Berlin, 2009.