

# Sebastian Wild

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## Education

- Dr. rer. nat.** Department of Computer Science, University of Kaiserslautern, 2016  
(equiv. to Ph.D.) Dissertation Title: *Dual-Pivot Quicksort and Beyond: Analysis of Multiway Partitioning and Its Practical Potential*
- M.Sc.** Department of Computer Science, University of Kaiserslautern, 2012
- B.Sc.** Department of Computer Science, University of Kaiserslautern, 2010

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## Publications

Preprints and details at [wild-inter.net](http://wild-inter.net).

### Peer-Reviewed Journal Articles

- [J5] *Building Fences Straight and High: An Optimal Algorithm for Finding the Maximum Length You Can Cut  $k$  Times from Given Sticks*  
Raphael Reitzig and Sebastian Wild  
*Algorithmica* online early access, (2017)
- [J4] *Analysis of Pivot Sampling in Dual-Pivot Quicksort*  
Markus E. Nebel, Sebastian Wild, and Conrado Martínez  
*Algorithmica* 75, 4, pp 632–683, (2016)
- [J3] *Analysis of Quickselect under Yaroslavskiy’s Dual-Pivoting Algorithm*  
Sebastian Wild, Markus E. Nebel, and Hosam Mahmoud  
*Algorithmica* 74, 1, pp 485–506, (2016)
- [J2] *Average Case and Distributional Analysis of Dual Pivot Quicksort*  
Sebastian Wild, Markus E. Nebel, and Ralph Neininger  
*ACM Transactions on Algorithms* 11, 3, article 22, (2015)
- [J1] *JAguc – A Software Package for Environmental Diversity Analyses*  
Markus E. Nebel, Sebastian Wild, Michael Holzhauser, Lars Hüttenberger,  
Raphael Reitzig, Matthias Sperber, and Thorsten Stoeck  
*Journal of Bioinformatics and Computational Biology* 9, 6, pp 749–773, (2011)

*Peer-Reviewed Conference Papers*

- [c5] *Quicksort Is Optimal for Many Equal Keys*  
Sebastian Wild  
*Meeting on Analytic Algorithmics and Combinatorics (ANALCO) 2018*
- [c4] *Analysis of Branch Misses in Quicksort*  
Conrado Martínez, Markus E. Nebel, and Sebastian Wild  
*Meeting on Analytic Algorithmics and Combinatorics (ANALCO) 2015*  
Sedgewick R., Ward M. D. (eds.): ANALCO 2015, SIAM, pp 114–128
- [c3] *Pivot Sampling in Dual-Pivot Quicksort* · Markus E. Nebel and Sebastian Wild  
*International Conference on Probabilistic, Combinatorial and Asymptotic Methods for the Analysis of Algorithms (AofA) 2014*  
Bousquet-Mélou M., Soria M. (eds.): DMTCS-HAL Proceedings Series, vol. BA, pp 325–338
- [c2] *Engineering Java 7's Dual Pivot Quicksort Using MALIJAN*  
Sebastian Wild, Markus E. Nebel, Raphael Reitzig, and Ulrich Laube  
*Meeting on Algorithm Engineering and Experiments (ALENEX) 2013*  
Sanders P., Zeh N. (eds.): ALENEX 2013, SIAM, pp 55–69
- [c1] *Average Case Analysis of Java 7's Dual Pivot Quicksort*  
Sebastian Wild and Markus E. Nebel  
*European Symposium on Algorithms (ESA) 2012*  
Epstein L. and Ferragina P. (eds.): ESA 2012, LNCS 7501, Springer, pp 825–836.

*Theses*

- [r3] *Dual-Pivot Quicksort and Beyond: Analysis of Multiway Partitioning and Its Practical Potential*  
*Dissertation* · University of Kaiserslautern · **2016**
- [r2] *Java 7's Dual Pivot Quicksort* · *Master's Thesis* · University of Kaiserslautern · **2012**
- [r1] *An Earley-style Parser for Solving the RNA-RNA Interaction Problem*  
*Bachelor's Thesis* · University of Kaiserslautern · **2010**

*Manuscripts in Preparation & Working Papers*

- [p3] *Median-of-k Jumptests*  
Markus E. Nebel, Elisabeth Neumann, and Sebastian Wild
- [p2] *A Simple and Fast Linear-Time Algorithm for Proportional Apportionment*  
Raphael Reitzig and Sebastian Wild
- [p1] *Reputation-Based Cooperation in Local Interaction: Evolution of Indirect Reciprocity with Minimal Memory* · Jano Costard, Sándor P. Fekete, Hella-Franziska Hoffmann, Alexander Koch, Dominik Leipold, Jonas Radbruch, Maximilian Schlund, Jann Spiess, Paul Stursberg, and Sebastian Wild

## Other Publications

- [O2] *Quicksort mit zwei Pivots und mehr* · Sebastian Wild  
Sammelband Ausgezeichnete Informatikdissertationen, Lecture Notes in Informatics
- [O1] *Why is Dual-Pivot Quicksort Fast?* · Sebastian Wild  
extended abstract for *Theorietage 2015* (GI Workshop on Algorithms)

## Honors and Awards

- 2017 **GI Dissertationspreis 2016** · [T3]  
Prize for best dissertation 2016 in Germany, Austria and Switzerland
- 2013 *Preis des Freundeskreises der TU Kaiserslautern* · [T2]  
**Best Master's Thesis** of the Department 2012
- 2012 **Best Paper Award** at the *European Symposium on Algorithms 2012* · [C1]
- 2009–2012 **Scholarship** of German National Academic Foundation

## Talks

*Slides available on slideshare.net.*

### Invited Talks

- 2017 “Dual-Pivot Quicksort and Beyond”  
**Annual SPP Meeting** of the DFG Schwerpunktprogramm Algorithms for Big Data  
19 Oct. 2017
- 2016 “Dual-Pivot Quicksort and Beyond”  
Research Seminar · **Hasso-Plattner-Institut Potsdam** · 6 Sep. 2016

### Conference & Workshop Presentations

- 2017 “Median-of-k Quicksort is optimal for many equal keys”  
**AofA Meeting** · 19 June 2017
- 2016 “Quicksort with Equal Keys”  
**Dagstuhl Seminar 16 101** (Data Structures and Advanced Models of Computation on Big Data)  
7 March 2016
- 2015 “Why is Dual-Pivot Quicksort Fast?” · [O1]  
**GI Theorietage** (Workshop) · 29 Sept. 2015
- 2015 “Analysis of Branch Misses in Quicksort” · [C4]  
**ANALCO Conference** · 4 January 2015
- 2014 “Pivot Sampling in Dual-Pivot Quicksort” · [C3]  
**AofA Conference** · 16 June 2014
- 2014 “Dual-Pivot Quicksort – Asymmetries in Sorting”  
**Dagstuhl Seminar 14 091** (Data Structures and Advanced Models of Computation on Big Data)  
25 March 2014

- 2013**    “Engineering Java 7’s Dual Pivot Quicksort Using MALIJAN” · [c2]  
*ALENEX Conference* · 7 January 2013
- 2013**    “Quickselect Under Yaroslavskiy’s Dual-Pivoting Algorithm”  
*AofA Meeting* · 28 May 2013
- 2013**    “Java 7’s Dual Pivot Quicksort”  
*FORMAT Workshop* · 9 April 2013
- 2012**    “Average Case Analysis of Java 7’s Dual Pivot Quicksort” · [c1]  
*ESA Conference* · 11 Sept. 2012

### Departmental Talks

- 2017**    “Dual-Pivot Quicksort and Beyond” · University of Waterloo · 1 November 2017
- 2015**    “Dual-Pivot Quicksort” · TU Kaiserslautern · 24 March 2015

## Teaching Experience

### Instructor of Record

Sole responsibility for course (give lectures, design tutorials, take/grade exams).

- 2017**    *Advanced Algorithmics: Strategies for Hard Problems* · advanced graduate level
- 2016/17**    *Algorithms and Data Structures* · introductory undergraduate level, non-CS majors

### Teaching Assistance

Responsible for tutorials (recruit student tutors, design exercise and exam problems, give exercise classes).

- 2015/16**    *Introduction to the Mathematical Analysis of Algorithms*
- 2014**    (original title: *Algorithm Engineering*) · advanced graduate level
- 2013/14**    *Computational Biology I: Alignments and Sequencing* · advanced undergraduate level
- 2015/16**    *Computational Biology II: Signals, Phylogenetics and Structure Prediction*
- 2014**    graduate level
- 2012/13**
- 2014/15**    *Design and Analysis of Algorithms* · intermediate undergraduate level
- 2013**    *Combinatorial Algorithms: String Search, Compression, Networks, and Random Generation* · advanced undergraduate level
- 2013/14**    *Proof Techniques* · short tutorial, introductory undergraduate level
- 2012/13**

### Tutor Positions

Student Tutor (grade students’ solutions, give exercise class).

Student tutor for lectures *Formal Foundations of Programming* · *Software Development I: Introduction to Programming* · *Software Development III: Concurrency and Parallel Programming*

## Service

### To Profession

- Program committees**    *Meeting Analytic Algorithmics and Combinatorics (ANALCO)* 2018
- Review (journals)**    *ACM Journal of Experimental Algorithmics · Bulletin of Mathematical Biology · Combinatorics, Probability & Computing · IEEE Transactions on Computers · Information Processing Letters · International Journal of Computer Mathematics · Software: Practice and Experience · The Computer Journal*
- Review (conferences)**    WADS 2017 · SEA 2017 · ANALCO 2017 · AofA 2016 · SWAT 2014 · ANALCO 2014 · ESA 2013

### To Department

Representative of Scientific Employees in **Examination Board** · 2012 – 2017

## Additional Training

- 2016**    *Lehre 2.0 – Lehren mit dem Internet*  
Workshop on including social media in teaching · 13 June 2016
- 2015**    *Meetings und Projektbesprechungen effizient und zielgerichtet leiten*  
Workshop on how to effectively chair a group meeting · 9–10 April 2015

## Nonacademic Work

- Java Developer**    *marketmaker Software AG* (since 2012 part of *vwd Vereinigte Wirtschaftsdienste GmbH*)  
Jul 2010 – Apr 2012 in term breaks  
Developed server components for a web-based financial market-data solution.

## Languages

- German**    native tongue
- English**    fluently written and spoken
- French**    elementary