

Wolfgang Johann Heinrich Mulzer

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CITIZENSHIP Germany

RESEARCH INTERESTS

- Computational geometry
- Data Structures
- Low-entropy Input Models
- Optimal triangulations

Most of my work is in the field of computational geometry, where I explore how additional structure in the inputs can be exploited to find faster algorithms for classical problems, like Delaunay triangulation and convex hull computation. Such additional structure may come in the form of bounded precision, information about the likely location of the input points, or the fact that the input points are sampled from a low-entropy distribution or come from a relatively small set of candidates. In earlier work, I considered triangulations, and helped settle the complexity status of the notorious minimum weight triangulation problem by showing that it is NP-hard.

EDUCATION **Princeton University**, Princeton, NJ USA

PhD Candidate, Computer Science (2005 – present)

- Advisor: Prof. Dr. Bernard Chazelle
- Thesis topic: *Low-Entropy Computational Geometry*
- Expected Graduation in May 2010

MA., Computer Science, September 2007

Freie Universität Berlin, Berlin, Germany

Research Assistant, Computer Science (2004 – 2005)

- Advisor: Prof. Dr. Günter Rote
- Research topic: *Optimal Triangulations*

Diplom-Informatiker, November 2004

- Advisor: Prof. Dr. Christian Knauer
- Thesis topic: *Minimum Dilation Triangulations for the Regular n -gon*

HONORS

Wallace Memorial Fellowship in Engineering

- Princeton University Honorific fellowship (2009-2010)

Studienstiftung des deutschen Volkes (German Academic Foundation)

- Scholarship (2003–2004)

Fulbright Travel Grant

- Exchange scholarship to Princeton University (2003-2004)

Freie Universität Berlin Exchange Scholarship
 • Exchange scholarship to Princeton University (2003-2004)

JOURNAL
PUBLICATIONS

B. Chazelle and W. Mulzer
Markov Incremental Constructions.
 Discrete and Computational Geometry 42(3), 2009, pp. 399–420.
 Special Issue on SoCG 2008.

W. Mulzer
A Note on Predecessor Searching in the Pointer Machine Model.
 Information Processing Letters 109(13), 2009, pp. 726–729.

W. Mulzer and G. Rote
Minimum Weight Triangulation is NP-complete.
 Journal of the ACM 55(2), Article 11, May 2008.

CONFERENCE
PROCEEDINGS

K. L. Clarkson, W. Mulzer, and C. Seshadhri
Self-Improving Algorithms for Convex Hulls.
 Proceedings of the 13th ACM-SIAM Symposium on Discrete Algorithms (SODA), 2010.
to appear

K. Buchin and W. Mulzer
Delaunay Triangulations in $O(\text{sort}(n))$ Time and More.
 Proceedings of the 50th Annual Symposium on Foundations of Computer Science (FOCS),
 2009. *to appear.*

K. Buchin, M. Löffler, P. Morin, and W. Mulzer
Delaunay Triangulation of Imprecise Points Simplified and Extended.
 Proceedings of the 11th Algorithms and Data Structures Symposium (WADS), 2009,
 pp 131–143.

B. Chazelle and W. Mulzer
Computing Hereditary Convex Structures.
 Proceedings of the 25th Annual ACM Symposium on Computational Geometry (SoCG),
 2009, pp 61–70.
 Invited to the Special Issue on SoCG 2009.

B. Chazelle and W. Mulzer
Markov Incremental Constructions.
 Proceedings of the 24th Annual ACM Symposium on Computational Geometry (SoCG),
 2008, pp. 156–163.
 Invited to the Special Issue on SoCG 2008.

W. Mulzer and G. Rote
Minimum Weight Triangulation is NP-complete.
 Proceedings of the 22nd Annual ACM Symposium on Computational Geometry (SoCG),
 2006, pp. 1–10.
 Invited to the Special Issue on SoCG 2006.

WORKSHOPS,
TECHNICAL
REPORTS,
MANUSCRIPTS,
ETC

N. Ailon, B. Chazelle, K. Clarkson, D. Liu, W. Mulzer, and C. Seshadhri
Self-Improving Algorithms.
 Submitted, 2009.

K. Buchin and W. Mulzer
Linear-Time Delaunay Triangulations Simplified.
 Proceedings of the 25th European Workshop on Computational Geometry (EWCG),
 2009, pp 33–36.

C. Knauer and W. Mulzer
Minimum Dilation Triangulations.
 Technical Report B-05-06. Freie Universität Berlin, April 2005.

C. Knauer and W. Mulzer
An Exclusion Region for the Minimum Dilation Triangulation.
 Proceedings of the 21st European Workshop on Computational Geometry (EWCG),
 2005, pp. 33–36.

TEACHING
 ASSISTANT

Princeton University, Princeton, NJ 08540 USA

COS 423: Theory of Algorithms **Spring 2007**

- Instructor: Prof. Dr. Robert Tarjan

COS 226: Algorithms and Data Structures **Fall 2006/07**

- Instructor: Dr. Kevin Wayne

Freie Universität Berlin, Berlin, Germany

Approximationsalgorithmen **Spring 2005**

(Approximation Algorithms)

- Instructor: Prof. Dr. Christian Knauer

Entwurf und Analyse von Algorithmen **Fall 2004/05**

(Algorithm Design and Analysis)

- Instructor: Prof. Dr. Christian Knauer

Grundlagen der theoretischen Informatik **Spring 2003**

(Foundations of Theoretical Computer Science)

- Instructor: Dr. Frank Hoffmann

Informatik A **Fall 2002/03**

(Computer Science A)

- Instructor: Dr. Frank Hoffmann

Informatik B **Spring 2002**

(Computer Science B)

- Instructor: Dr. Frank Hoffmann

Informatik A **Fall 2001/02**

(Computer Science A)

- Instructor: Dr. Frank Hoffmann

SERVICE

Reviewer for SoCG 2005, JACM, IJCGA, CGTA, SICOMP, LATIN 2008, SODA 2010

TECHNICAL SKILLS Programming: C, C++, Pascal, Java, PHP, Haskell, UNIX shell scripting, SQL, x86 Assembler

Languages: German (native), English (Fluent), French (Intermediate), Spanish (Basic)

REFERENCES

Prof. Dr. Bernard Chazelle

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Prof. Dr. Günter Rote

Institut für Informatik

Freie Universität Berlin

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E-mail: rote@inf.fu-berlin.de

Prof. Dr. Moses Charikar

Department of Computer Science

Princeton University

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