

Alexander Rand

CONTACT INFORMATION

<http://www.ices.utexas.edu/~arand>

arand@ices.utexas.edu

EMPLOYMENT

The University of Texas at Austin, Austin, Texas

Fall 2009-present

Postdoctoral Fellow, Institute for Computational Engineering and Sciences
Supervised by Chandrajit Bajaj

EDUCATION

Carnegie Mellon University, Pittsburgh, Pennsylvania

Ph.D. Mathematical Sciences, May 2009

Thesis Title: “3D Delaunay Refinement For Numerical Methods”

Advised by Noel Walkington

New Mexico Institute of Mining and Technology, Socorro, New Mexico

B.S. Computer Science, B.S. Mathematics, May 2004

JOURNAL PUBLICATIONS

A. Gillette, A. Rand, and C. Bajaj. “Error Estimates for Generalized Barycentric Interpolation,” to appear in *Advances in Computational Mathematics*, arXiv:1010.5005 [math.NA].

A. Rand and N. Walkington. “Delaunay Refinement Algorithms for Estimating Local Feature Size,” *International Journal of Computational Geometry and Applications*, 21(5):507-543, 2011.

C. Bajaj, S.-C. Chen, and A. Rand. “An Efficient Higher-Order Fast Multipole Boundary Element Solution For Poisson-Boltzmann Based Molecular Electrostatics,” *SIAM Journal on Scientific Computing*, 33(2): 802–825, 2011.

M. Emelianenko, L. Ju, and A. Rand. “Nondegeneracy and Weak Global Convergence of the Lloyd Algorithm in R^d ,” *SIAM Journal on Numerical Analysis*. 46(3): 1423–1441, 2008.

B. Deng, S. Jessie, G. Ledder, A. Rand, and S. Srodulski. “Biological Control Does Not Imply Paradox,” *Mathematical Biosciences*, 208(1): 26–32, 2008.

CONTRIBUTED BOOK CHAPTER

“Practical 3D Delaunay Mesh Generation” with K. Gartner, H. Si, and N. Walkington, to appear in *Combinatorial Scientific Computing*, Chapman & Hall/CRC, 2012.

CONFERENCE PUBLICATIONS

A. Rand. “Where and How Chew’s Second Algorithm Works,” *Proceedings of the 23rd Canadian Conference on Computational Geometry*, pages 157–162, 2011.

A. Rand. “On the Termination of Ruppert’s Algorithm,” *Research Notes of the 19th International Meshing Roundtable*, 2010.

C. Bajaj, R. Bettadapura, N. Lei, A. Mollere, and C. Peng, and A. Rand. “Constructing A-Spline Weight Functions for Stable WEB-Spline Finite Element Methods,” *Proceedings of the 14th ACM Symposium on Solid and Physical Modeling*, pages 153–158, 2010.

A. Rand and N. Walkington. “Collars and Intestines: Practical Conforming Delaunay Refinement,” *Proceedings of the 18th International Meshing Roundtable*, pages 481–497, 2009.

A. Rand and N. Walkington. “3D Delaunay Refinement of Sharp Domains Without a Local Feature Size Oracle,” *Proceedings of the 17th International Meshing Roundtable*, pages 37–54, 2008.

A. Rand. “Reordering Ruppert’s Algorithm,” *Proceedings of the 18th Fall Workshop on Computational Geometry*, pages 43–44, 2008.

WORKING PAPERS	A. Rand. “Triangulating Convex Polygons Without Large Angles or Subdividing Boundary Edges,” submitted to ACM Symposium on Computational Geometry.		
	A. Rand, A. Gillette, and C. Bajaj. “Interpolation Error Estimates for Mean Value Coordinates,” arXiv:1111.5588 [math.NA].		
	A. Rand, A. Gillette, and C. Bajaj. “Quadratic Serendipity Finite Elements on Polygons Using Generalized Barycentric Coordinates,” arXiv:1109.3259 [math.NA].		
	A. Rand. “Average Interpolation Under the Maximum Angle Condition,” arXiv:1112.4100 [math.NA].		
RESEARCH SOFTWARE	DIR3 (Delaunay Incremental Refinement in 3D) http://www.math.cmu.edu/~arand/DIR3		
TEACHING EXPERIENCE	Instructor		
	CMU	21-260 Differential Equations	Summer 2008
	CMU	21-120 Differential and Integral Calculus	Summer 2005
	Teaching Assistant		
	CMU	21-256 Multivariate Analysis and Approximation	Spring 2008
	CMU	21-126 Intro to Math Software	Fall 2006
	CMU	21-122 Integration, Differential Equations and Approximation	Summer 2006
	CMU	21-260 Differential Equations	Spring 2006
	CMU	21-259 Calculus in Three Dimensions	Fall 2005
	CMU	21-120 Differential and Integral Calculus	Fall 2004