

# Daniel Russel

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## *Education*

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- Stanford University: Ph.D. in Computer Science fall 2006
- Princeton University: B.S.E. in Computer Science and Engineering Physics 1999  
Graduated with summa cum laude

## *Current Research Projects*

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- Developing a new technique for computing exact arrangements of spheres in 3D with Monique Teillaud.
- Fast(er) updating of Delaunay triangulations using kinetic data structures with Menelaos Karavelas.
- Trying to understand how protein confinement affects the protein folding process. Collaboration with Vijay Pande and Del Lucent.
- Metrics for comparing ensembles of protein folding simulation trajectories.
- Developing techniques to avoid exact computation when computing kinetic data structures.

## *Publications*

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- Daniel Russel, Menelaos Karavelas, and Leonidas Guibas. A package for Exact Kinetic Data Structures and Sweepline Algorithms. accepted for publication in CGTA.
- Jun Aishima, Daniel Russel, Leonidas Guibas, Axel Brunger and Paul Adams. Automated Crystallographic Building Using the Media Axis Transform of an Electron Density Isosurface. *Acta Crystallographica D*. 2005.
- Daniel Russel and Leonidas Guibas. Exploring Protein Folding Trajectories Using Spanners. *Pacific Symposium on Biocomputing*. 2005.
- Daniel Russel and Leonidas Guibas. An Empirical Comparison of Techniques for Updating Delaunay Triangulations. *Symposium on Computational Geometry*. 2004.
- Daniel Russel, Menelaos Karavelas and Leonidas Guibas. A Computational Framework for Handling Motion. *Algorithm Engineering and Experiments*. 2004.
- Pankaj Agarwal, Leonidas Guibas, An Nguyen, Daniel Russel and Li Zhang. Collision Detection for Deforming Necklaces. *Computational Geometry: Theory and Applications*. 2004. An earlier version appeared in *Symposium on Computational Geometry*, 2002.

## *Software*

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- Kinetic: A framework for implementing kinetic data structures for the Computational Geometry Algorithms Library. Information can be found off the CGAL web page at <http://www.cgal.org>.
- A CGAL package for computing arrangements of spheres. In production.
- A CGAL package for updating Delaunay triangulations. In production.
- Polynomial: A kernel providing exact predicates on roots of polynomials also part of CGAL.
- DSRPDB: A C++ library for reading and processing geometry from PDB files.

## *Research Experience*

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- Post-doctoral fellow at INRIA, Sophia-Antipolis, France April-September inclusive 2006
- Research assistant at Stanford University under Leonidas Guibas 1999-2006
- Undergraduate research at Princeton University under Jaswinder Pal Singh 1997-1999
- Summer research program Army High Performance Computing Center, Minneapolis 1996

## *Industry Experience*

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- Protein Mechanics (later acquired by Locus Pharmaceuticals)— developed and implemented molecular surface area calculations for implicit potentials 2002
- Align Technologies—developed a pipeline for automatic segmentation of scanned meshes 2000
- Microsoft—developed tools for automating software localization 1998

## *Teaching Experience*

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- Teaching assistant CS 368, Computational Geometry 2005, 2003
- Teaching assistant CS 161, Introduction to Algorithms 2004
- Wrote biology review software for W.W. Norton to accompany their textbooks 1993-1995

## *Awards and Scholarships*

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- Chateaubriand Post-doctoral Fellowship 2006
- National Science Foundation Graduate Fellowship 1999-2004
- Phi Beta Kappa 1999
- Arthur Anderson Consulting Prize in Computer Science 1998
- Member Tau Beta Pi 1997
- National Merit Scholarship 1995-1999
- Edward J. Bloustein Distinguished Scholar 1995-1999
- Byrd Scholarship 1995-1999

## ***Reviewer For***

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- Symposium on Computational Geometry, International Journal of Computational Geometry and Applications, Shape Modeling International, Symposium on Geometry Processing, European Symposium on Algorithms

## ***Patent***

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- System and method for separating three-dimensional models. Number 6,688,886. An algorithm for automatic processing of scans of jaws for planning orthodontics. Work done at Align Technologies.

## ***References***

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- Prof. Leonidas Guibas, Stanford University. *guibas@graphics.stanford.edu*
- Monique Teillaud, INRIA, France. *monique.teillaud@sophia.inria.fr*
- Prof. Axel Brunger, Stanford University. *brunger@stanford.edu*
- Prof. Michael Levitt, Stanford University. *michael.levitt@stanford.edu*
- Prof. Menelaos Karavelas, University of Crete, Greece. *mkaravel@tem.uoc.gr*