

Suneeta Ramaswami
Curriculum Vitae

Work Address

Department of Computer Science
Rutgers University
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RESEARCH INTERESTS

Computational geometry, i.e., the design, analysis and implementation of algorithms for geometric problems that arise in varied applications such as mesh-generation, computer graphics, medical imaging, and robotics. Current work is on geometric techniques for mesh-generation with quadrilateral mesh elements for three-dimensional surfaces, adaptive meshing techniques, and reconfiguration algorithms for self-organizing modular robots.

EDUCATION

Ph. D., University of Pennsylvania [December '94]
Computer and Information Science

B.A., Wellesley College [May '88]
Computer Science and Mathematics.
Phi Beta Kappa, Magna Cum Laude

PROFESSIONAL EXPERIENCE

Professor	Department of Computer Science Rutgers University, Camden	[July'16 - present]
Department Chair	Department of Computer Science Rutgers University, Camden	[January'16 - June'22]
Graduate Program Director	Department of Computer Science Rutgers University, Camden	[July'10 - December'15]
Associate Professor	Department of Computer Science Rutgers University, Camden	[July'04 - June'16]

RU-FAIR Professor¹	Rutgers University, Camden	[September '11 - August '13]
Visiting Professor	Dept. of Applied Math II UPC, Barcelona, Spain	[September'08 - December'08]
Visiting Professor	Department of Radiology University of Pennsylvania	[January'05 - July'05]
Assistant Professor	Department of Computer Science Rutgers University, Camden	[September'97 - June'04]
Post-doctoral Fellow	School of Computer Science McGill University	[September'94 - August'97]
Research Fellow	Department of CIS University of Pennsylvania	[Fall'90 - Spring'94]

TEACHING EXPERIENCE

Courses Taught:

- **Rutgers University:**

1. Programming Fundamentals (Python, C++, and C)
2. Object Oriented Programming (Python and C++)
3. Data Structures
4. Computer Graphics
5. Computational Geometry
6. Digital Image Processing
7. Game Design
8. Senior Design Project
9. Database Systems

- **McGill University:** Analysis of Algorithms.

Undergraduate Independent Studies, Research Projects, and Honors Theses:

- Tom DiTullio, Summer 2018 - Spring 2020. An independent study project to convert a triangle mesh with a given minimum angle bound of A into a quadrilateral mesh that has a minimum angle bound of $A/2$. Funded by NSF grant CCF-1422004.

- Sydney Truong, Spring 2019. Independent study on fundamental problems in computational geometry, including conversion of triangulations to quadrangulations. Funded by NSF grant CCF-1422004.
- Jeffrey Cave, Summer 2017 - Spring 2018. An independent study project to investigate the question of finding the "best quad", as determined by Robinson's aspect ratio, for a given set of edge lengths, and a given set of four angles. Funded by NSF grant CCF-1422004.
- Dominic Scola, Summer 2016 - Spring 2018. A guided study of fundamental problems in computational geometry, including triangulations and quadrangulations. Also investigated algorithms to generate convex quadrilaterals with specified edge lengths, and angles. Project presented at *CURCA* (Celebration of Undergraduate Research and Creative Activities) in April 2017. Funded by NSF grant CCF-1422004.
- Peter Ho, Summer 2016 - Spring 2017. A guided study of fundamental problems in computational geometry, including triangulations and quadrangulations. Project presented at *CURCA* (Celebration of Undergraduate Research and Creative Activities) in April 2017. Funded by NSF grant CCF-1422004.
- Andre Smith, Spring 2016 - Spring 2017. An independent study on Robinson's method for quadrilateral aspect ratio measurement, as well as generating quadrilaterals with specified angle measurements. Project presented at *CURCA* (Celebration of Undergraduate Research and Creative Activities) in April 2017. Funded by NSF grant CCF-1422004.
- Chris Gillespie, Summer 2015 - Spring 2017. Independent study on an experimental study of aspect ratio measurements of quadrilateral meshes generated by indirect as well as direct methods. Project presented at *CURCA* (Celebration of Undergraduate Research and Creative Activities) in April 2017. Funded by NSF grant CCF-1422004.
- Colin Brown, Spring 2015 - Spring 2016. Independent study on fundamental problems in computational geometry, including quadtree decompositions. Project presented at *CURCA* (Celebration of Undergraduate Research and Creative Activities) in April 2016. Funded by NSF grant CCF-1422004.
- Fahim Khan, Spring 2015 - Summer 2015. A research project on using quadtrees to generate quadrilateral meshes with bounded angles. Project presented at *CURCA* (Celebration of Undergraduate Research and Creative Activities) in April 2015. Funded by NSF grant CCF-1422004.
- Mark Moore, Fall 2014 - Fall 2015. Research projects on robot path planning and using quadtree decompositions to generate quadrilateral meshes with bounded angles. Project presented at *CURCA* (Celebration of Undergraduate Research and Creative Activities) in April 2015. Funded by NSF grant CCF-1422004.
- Dan Raup, Summer 2010 - Summer 2012. A research project on using approximate convex decompositions of polygons to construct quadrilateral meshes, along with implementations in Python and OpenGL. Project presented at *CURCA* (Celebration of Undergraduate Research and Creative Activities) in April 2011. Funded by NSF grant CCF-0830589.

- Alan Morin, Summer 2010. An independent study, combined with lecture attendance, on fundamental topics of computational geometry along with implementations of chosen algorithms in Python.
- Westley Propati, Summer 2010. An independent study, combined with lecture attendance, on fundamental topics of computational geometry along with implementations of chosen algorithms in Python.
- Hitaxi Kalaria, Fall 2009 and Spring 2010. A research project on Voronoi diagrams of point sets and order-k Voronoi diagrams. Project presented at *CURCA* (Celebration of Undergraduate Research and Creative Activities) in April 2010.
- Brad Greening, Spring 2009 & Summer 2009. A research project on hexahedral volume meshing from a specific quadrilateral surface mesh for convex polyhedra. Funded by NSF grant CCF-0830589.
- Vijay Kothari, Spring 2005 & Summer 2005. A research project on angle-bounded quadrilateral meshes for polygons. Funded by NSF grant CCR-0204293.
- Ryan Bowman, Summer 2003 & Fall 2003. A research project on convex quadrilateral mesh generation for polygons. Funded by NSF grant CCR-0204293.
- Jake Warren, Fall 2002. An independent study project on 3D game animation.
- Avery Keyes, Fall 2001 & Spring 2001. An honors thesis on rendering techniques in computer graphics.
- Michael Orr, Fall 2000. A research project on a visualization tool for quadrilateral mesh generation was funded by the Undergraduate Research Fellows Program (listed under *Grants*). Michael published his work titled “QMesh: An interactive visualization tool for quadrilateral mesh generation” in the Proceedings of the Southeastern Conference (of the Consortium of Computing in Small Colleges), Roanoke, VA, November 2000, pp. 177-183.
- Michael Orr, Spring 2000. An independent study on quadrilateral mesh-generation techniques for simple polygons.
- Frank Lee, Fall 98. An independent study on convex quadrangulations for polygons.

Master’s theses supervised:

- Tikeshwar Prasad, Fall 2017 and Spring 2018. Title: “A Comparative Study of Mesh Smoothing Methods with Flipping in 2D and 3D”.
- Saurabh Saini, Fall 2017 and Spring 2018. Title: “Implementation and Analysis of a Bubble Packing Method for Surface Mesh Generation”.

Master’s Projects, Independent Studies and Thesis Committees:

- Jiale Zhu, Fall 2021. Master's project on triangulations and quadrangulations.
- Parikshit Kolipaka, Fall 2015. A research project on quadrilateral meshes of three-dimensional closed surfaces of arbitrary genus. Funded by NSF grant CCF-1422004.
- Abhishek Garg, Summer 2015. Master's thesis committee member.
- Brahmaji Mutthoju, Fall 2013. Master's thesis committee member.
- Brian Toll, Fall 2013. An independent study project on audio programming.
- Zhiyuan Zhang, Fall 2011. An independent study project on computational geometry problems related to triangular and tetrahedral mesh generation.

Doctoral Committees:

- Jim Kelley, Computational and Integrative Biology, Rutgers University, Camden. Member of Thesis Committee. Dissertation proposal defense date: August 2021.
- Linlin Zhao, Computational and Integrative Biology, Rutgers University, Camden. Member of Thesis Committee. Dissertation defense date: April 2020. Title: "Computational Models for Hepatotoxicity/Nephrotoxicity Prediction in Humans and Animals Using Integrated Chemical and Biological Datasets".
- Wenyi Wang, Computational and Integrative Biology, Rutgers University, Camden. Member of Thesis Committee. Dissertation proposal date: April 2015. Title: "Quantitative Nanos-structure Toxicity Relationship".
- Bill Edison, Department of Computer Science, George Washington University. Member of Thesis Committee. Date of completion: May 2003. Title: "Random Polygons for Testing Geometric and Spatial Algorithms".

Curriculum development:

- *Cybersecurity Certificate*. Developed a cybersecurity certificate for Computer Science (CS) majors in response to the growing demand for jobs in the field of computer and network security. The first CS majors to receive the certificate graduated in 2019. (2018-2019)
- MS program in *Scientific Computing*. As graduate program director, led the Computer Science department in a major revision of its Master's program. The CS department now offers an MS in Scientific Computing, a program that harnesses the research expertise of CS faculty to provide a strong foundation in algorithms and programming relevant to current and emerging computational applications. (2012-2013)
- *Applied Computing* concentration for the MBS program. As graduate program director, led the department in developing a new concentration in Applied Computing for the MBS (Masters in Business and Science) program. (2010-2011)

- *Game Design* (50:198:491), offered for the first time in Spring 2008. The course used *Game Maker*, a game engine for the Windows environment that is accessible to students at various programming skill levels. There was coverage in the local media about the course and some final student projects. Stories appeared in the Courier Post (May 4, 2008), the Burlington County Times (May 18, 2008), and on NJN Public Television News (Science and Technology report with Patrick Regan, May 5, 2008).

PUBLICATIONS

Journals:

2. **S. Ramaswami** and M. Siqueira. “A Fast Algorithm for Computing Irreducible Triangulations of Closed Surfaces in E^d ”, *Computational Geometry: Theory and Applications*, 68, 2018, pp. 327-357.
3. F. Hurtado, E. Molina, **S. Ramaswami**, and V. Sacristán, “Distributed Reconfiguration of 2D Lattice-based Modular Robotic Systems”, *Autonomous Robots*, 38(4), Apr. 2015, pp. 383-413.
4. B. Atalay, **S. Ramaswami**, and D. Xu, “Quadrilateral Meshes with Provable Angle Bounds”, *Engineering with Computers*, 28(1), Jan. 2012, pp. 31-56.
5. G. Aloupis, S. Collette, M. Damian, E. Demaine, R. Flatland, S. Langerman, J. O’Rourke, V. Pinciu, **S. Ramaswami**, V. Sacristan, and S. Wuhler, “Efficient Constant-Velocity Reconfiguration of Crystalline Robots”, *Robotica*, 29(1), Jan. 2011, pp. 59-71.
6. M. Damian, R. Flatland, J. O’Rourke, and **S. Ramaswami**, “Connecting Polygonizations via Stretches and Twangs”, *Theory of Computing Systems*, 47(3), July 2010, pp. 674-695.
7. G. Aloupis, S. Collette, M. Damian, E. Demaine, R. Flatland, S. Langerman, J. O’Rourke, **S. Ramaswami**, V. Sacristan, and S. Wuhler, “Linear Reconfiguration of Cube-Style Modular Robots”, *Computational Geometry: Theory and Applications*, 42(6-7), Aug. 2009, pp. 652-663.
8. J. Colannino, M. Damian, F. Hurtado, S. Langerman, H. Meijer, **S. Ramaswami**, D. Souvaine, and G. Toussaint, “Efficient many-to-many point matching in one dimension”, *Graphs and Combinatorics, Akiyama-Chvatal Festschrift*, 23, June 2007, pp. 169-178.
9. J. Colannino, M. Damian, F. Hurtado, J. Iacono, H. Meijer, **S. Ramaswami**, and G. Toussaint, “An $O(n \log n)$ -Time Algorithm for the Restriction Scaffold Assignment Problem”, *Journal of Computational Biology*, 13(4), May 2006, pp. 979-989.
10. O. Aichholzer, D. Bremner, E. D. Demaine, F. Hurtado, E. Kranakis, H. Krasser, **S. Ramaswami**, S. Sethia, and J. Urrutia, “Games on Triangulations”, *Theoretical Computer Science* (special issue on “Game Theory Meets Theoretical Computer Science”), 343(1-2), Oct. 2005, pp. 42-71.

11. **S. Ramaswami**, M. Siqueira, T. Sundaram, J. Gallier, and J. Gee, “Constrained Quadrilateral Meshes of Bounded Size”, *International Journal of Computational Geometry and Applications* (invited to special issue devoted to selected papers from IMR’03) , 15(1), Feb. 2005, pp. 55-98.
12. D. Bremner, F. Hurtado, **S. Ramaswami**, and V. Sacristán, “Small Strictly Convex Quadrilateral Meshes of Point Sets”, *Algorithmica* (invited paper in special issue devoted to selected papers from ISAAC’01), 38(2), Feb. 2004, pp. 317-339.
13. K. Miller, **S. Ramaswami**, P. Rousseeuw, T. Sellarès, D. Souvaine, I. Streinu, and A. Struyf, “Efficient Computation of Depth Contours by Methods of Computational Geometry”, *Statistics and Computing*, 13(2), Apr. 2003, pp. 153-162.
14. F. Gomez, **S. Ramaswami**, and G. Toussaint, “Computing General Position Views of Data in Three Dimensions”, *Journal of Visual Communication and Image Representation*, 13(4), Dec. 2002, pp. 401-424.
15. P. Bose, **S. Ramaswami**, G. Toussaint, and A. Turki, “Experimental Results on Quadrangulations of sets of fixed points”, *Computer-Aided Geometric Design*, 19(7), July 2002, pp. 533-552.
16. O. Aichholzer, C. Cortés, V. Dujmovic, E. Demaine, J. Erickson, H. Meijer, M. Overmars, B. Palop, **S. Ramaswami**, and G. Toussaint, “Flipping Polygons”, *Discrete and Computational Geometry*, 28(2), Aug. 2002, pp. 231-253.
17. S. Rajasekaran and **S. Ramaswami**, “Optimal Parallel Randomized Algorithms for the Voronoi Diagram of Line Segments in the Plane”, *Algorithmica*, 33(4), Aug. 2002, pp. 436-460.
18. F. Gomez, F. Hurtado, **S. Ramaswami**, V. Sacristán, and G. Toussaint, “Implicit Convex Polygons”, *Journal of Mathematical Modelling and Algorithms*, 1(1), Mar. 2002, pp. 57-85.
19. P. Bose, F. Hurtado, H. Meijer, **S. Ramaswami**, D. Rappaport, V. Sacristán, T. Shermer and G. Toussaint, “Finding Specified Sections of Arrangements: 2D results”, *Journal of Mathematical Modelling and Algorithms*, 1(1), Mar. 2002, pp. 3-16.
20. P. Berman, B. DasGupta, S. Muthukrishnan, and **S. Ramaswami**, “Improved Approximation Algorithms for Rectangle Tiling and Packing”, *Journal of Algorithms*, 41(2), Nov. 2001, pp. 443-470.
21. M. de Berg, P. Bose, D. Bremner, **S. Ramaswami** and G. Wilfong, “Computing Constrained Minimum-Width Annuli of Point Sets”, *Computer-Aided Design special issue on Computational Geometry and Computer-Aided Design & Manufacturing*, 30(4), Apr. 1998, pp. 267-275.
22. **S. Ramaswami**, P. Ramos and G. Toussaint, “Converting Triangulations to Quadrangulations”, *Computational Geometry: Theory and Applications*, 9(4), Mar. 1998, pp. 257-276.

23. S. Rajasekaran and **S. Ramaswami**, “Optimal Mesh Algorithms for the Voronoi Diagram of Line Segments and Motion Planning in the Plane”, *Journal of Parallel and Distributed Computing*, 26(1), Apr. 1995, pp. 99-115.

Book Chapter:

1. **S. Ramaswami**, “Parallel Randomized Techniques for Some Fundamental Geometric Problems”, In P. Pardalos and R. Rajasekaran, editors, *Advances in Randomized Parallel Computation*, pp. 133-158, Kluwer Academic Publishers, 1999.

Refereed Conferences:

1. [Undergraduate student paper] Chris Gillespie, Mark Moore, and Colin Brown. (Supervised by S. Ramaswami) “Quadrilateral Mesh Generation with a Provably Good Aspect Ratio Bound”, (**Undergraduate Student Research Competition**). In Proceedings of SIGCSE’17, Seattle, WA, March 08-11, 2017.
2. T. Lemos, **S. Ramaswami**, and M. Siqueira. “An Experimental Comparison of Algorithms for Converting Triangulations of Closed Surfaces into Quadrangulations”, in *Proceedings of the 24th International Meshing Roundtable* (Research Notes) published electronically at <http://www.imr.sandia.gov/papers/imr24.html>, Austin, Texas, Oct. 2015.
3. T. Lemos, **S. Ramaswami**, and M. Siqueira. “A Fast Algorithm for Computing Irreducible Triangulations of Closed Surfaces in E^d and Its Application to the TriQuad Problem”, in *Abstracts of the 24th Fall Workshop on Computational Geometry*, Storrs, Connecticut, Oct. 2014, pp. 54-57.
4. F. Hurtado, E. Molina, **S. Ramaswami**, and V. Sacristán, “Distributed universal reconfiguration of 2D lattice-based modular robots”, in *Abstracts of the 29th European Workshop on Computational Geometry*, Braunschweig, Germany, Mar. 2013, pp. 139-142.
5. Greg Aloupis, Muriel Dulieu, John Iacono, Stefan Langerman, Ozgur Ozkan, **Suneeta Ramaswami**, and Stefanie Wuhler. “Order type invariant labeling and comparison of point sets”, in *Abstracts of the 28th European Workshop on Computational Geometry*, Assisi, Italy, Mar. 2012, pp. 213-216.
6. S. Hine, F. B. Atalay, D. Xu, and **S. Ramaswami**, “Quadrilateral Meshes with Bounded Minimum Angle”, (Video and short paper), in *Proceedings of the 25th Annual ACM Symposium on Computational Geometry (SoCG’09)*, Aarhus, Denmark, June 2009, pp. 90-91.
7. G. Aloupis, S. Collette, M. Damian, E. Demaine, D. El-Khechen, R. Flatland, S. Langerman, J. O’Rourke, V. Pinciu, **S. Ramaswami**, V. Sacristan, and S. Wuhler, “Realistic Reconfiguration of Crystalline (and Telecube) Robots”, in *Proceedings of the 8th International Workshop on the Algorithmic Foundations of Robotics (WAFR)*, Guanajuato, Mexico, Dec. 2008, pp. 433-447.

8. B. Atalay, **S. Ramaswami**, and D. Xu, “Quadrilateral Meshes with Bounded Minimum Angle”, in *Proceedings of the 17th International Meshing Roundtable (IMR)*, Pittsburgh, Pennsylvania, Oct. 2008, pp. 73-91.
9. M. Damian, R. Flatland, J. O’Rourke, and **S. Ramaswami**, “Connecting Polygonizations via Stretches and Twangs”, in *Proceedings of the 25th International Symposium on the Theoretical Aspects of Computer Science (STACS)*, Bordeaux, France, Feb. 2008, pp. 217-228. (*Extended abstract of journal paper 6.*)

(A two-page version also appears in the *Abstracts of the 17th Fall Workshop on Computational and Combinatorial Geometry*, Nov. 2007.)
10. G. Aloupis, S. Collette, M. Damian, E. Demaine, R. Flatland, S. Langerman, J. O’Rourke, **S. Ramaswami**, V. Sacristan, S. Wuhler, “Linear Reconfiguration of Cube-Style Modular Robots”, in *Proceedings of the 18th International Symposium on Algorithms and Computation (ISAAC)* (Lecture Notes in Computer Science (LNCS) 4835, Springer-Verlag), Sendai, Japan, Dec. 2007, pp. 208-219. (*Extended abstract of journal paper 7.*)
11. M. Damian, R. Flatland, J. O’Rourke, and **S. Ramaswami**, “A New Lower Bound on Guard Placement for Wireless Localization”, in *Abstracts of the 17th Fall Workshop on Computational and Combinatorial Geometry*, Hawthorne, New York, Nov. 2007, pp. 21-24.
12. M. Damian, E. D. Demaine, M. Demaine, V. Dujmovic, D. El-Khechen, R. Flatland, J. Iacono, S. Langerman, H. Meijer, **S. Ramaswami**, D. L. Souvaine, P. Taslakian, and G. T. Toussaint, “Curves in the Sand: Algorithmic Drawing”, in *Proceedings of the 18th Canadian Conference on Computational Geometry*, Kingston, Canada, Aug. 2006, pp. 11-15.
13. **S. Ramaswami**, M. Siqueira, T. Sundaram, J. Gallier, and J. Gee, “A New Algorithm for Generating Quadrilateral Meshes and Its Application to FE-Based Image Registration”, in *Proceedings of the 12th International Meshing Roundtable*, Santa Fe, New Mexico, Sept. 2003, pp. 159-170. (*Extended abstract of journal paper 11.*)
14. M. Siqueira, T. Sundaram, **S. Ramaswami**, J. Gallier, and J. Gee, “Quadrilateral Meshes for the Registration of Human Brain Images”, in *Abstracts of the DIMACS Workshop on Medical Applications in Computational Geometry*, New Brunswick, New Jersey, Apr. 2003. Electronic proceedings at <http://dimacs.rutgers.edu/Workshops/Medicalapps/program.html>.
15. O. Aichholzer, D. Bremner, E. D. Demaine, F. Hurtado, E. Kranakis, H. Krasser, **S. Ramaswami**, S. Sethia, and J. Urrutia, “Geometric Games on Triangulations”, in *Abstracts of the 19th European Workshop on Computational Geometry*, Bonn, Germany, Mar. 2003, pp. 89-92.
16. O. Aichholzer, D. Bremner, E. D. Demaine, F. Hurtado, E. Kranakis, H. Krasser, **S. Ramaswami**, S. Sethia, and J. Urrutia, “Playing with Triangulations”, in *Proceedings of the Japan Conference on Discrete and Computational Geometry*, Tokyo, Japan, Dec. 2002, pp. 46-54. Also appears in Lecture Notes in Computer Science 2866, Springer-Verlag, 2003, pp. 22-38. (*Extended abstract of journal paper 10.*)

17. D. Bremner, F. Hurtado, **S. Ramaswami**, and V. Sacristán, “Small Convex Quadrangulations of Point Sets”, in *Proceedings of the 13th International Symposium on Algorithms and Computation (ISAAC)* (Lecture Notes in Computer Science 2223, Springer-Verlag), Christchurch, New Zealand, Dec. 2001, pp. 623-635. (*Extended abstract of journal paper 12.*)
18. V. Brumberg, **S. Ramaswami**, and D. Souvaine, “Experimental Results on Upper Bounds for Vertex Pi-Lights”, in *Abstracts of the 11th Fall Workshop on Computational Geometry*, Brooklyn, NY, Nov. 2001, pp. 56-57.
19. K. Miller, **S. Ramaswami**, P. J. Rousseeuw, T. Sellarès, D. Souvaine, I. Streinu, and A. Struyf, “Fast implementation of depth contours using topological sweep”, in *Proceedings of the 12th Annual SIAM Symp. Discrete Algorithms (SODA)*, Washington DC, Jan. 2001, pp. 690-699. (*Extended abstract of journal paper 13.*)
20. P. Berman, B. DasGupta, S. Muthukrishnan, and **S. Ramaswami**, “Improved approximation algorithms for rectangle tiling and packing”, in *Proceedings of the 12th Annual SIAM Symp. Discrete Algorithms (SODA)*, Washington DC, Jan. 2001, pp. 427-436. (*Extended abstract of journal paper 20.*)
21. O. Aichholzer, C. Cortés, V. Dujmovic, E. Demaine, J. Erickson, H. Meijer, M. Overmars, B. Palop, **S. Ramaswami**, and G. Toussaint, “Flipturning Polygons”, in *Proceedings of the Japan Conference on Discrete and Computational Geometry*, Tokyo, Japan, Nov. 2000, pp. 125-126. (*Abstract of journal paper 16.*)
22. P. Bose, F. Hurtado, H. Meijer, **S. Ramaswami**, D. Rappaport, V. Sacristán, T. Shermer and G. Toussaint, “Computing Sections of Arrangements: 2D results”, in *Proceedings of the Tenth Canadian Conference on Computational Geometry*, Montréal, Canada, Aug. 1998, pp. 20-21. Longer version at URL: <http://cgm.cs.mcgill.ca/cccg98/proceedings/>. (*Abstract of journal paper 19.*)
23. **S. Ramaswami**, “Parallel Randomized Techniques for Some Fundamental Geometric Problems: A Survey”, in *Proceedings of the Workshop on Randomized Parallel Computing* (Lecture Notes in Computer Science 1388, Springer-Verlag), IPPS and SPDP’98 Joint Conference, Orlando, Florida, Mar. 1998, pp. 400-407. (*Invited paper*)
24. F. Gomez, F. Hurtado, **S. Ramaswami**, V. Sacristán and G. Toussaint, “Implicit Convex Polygons”, in *Abstracts of the Fourteenth European Workshop on Computational Geometry*, Barcelona, Spain, Mar. 1998, pp. 83-85. (*Abstract of journal paper 18.*)
25. M. de Berg, P. Bose, D. Bremner, **S. Ramaswami** and G. Wilfong, “Computing Constrained Minimum-Width Annuli of Point Sets”, in *Proceedings of the Fifth Annual Workshop on Algorithms and Data Structures (WADS)* (Lecture Notes in Computer Science 1272, Springer-Verlag), Halifax, Canada, Aug. 1997, pp. 392-401. (*Extended abstract of journal paper 21.*)
26. F. Gomez, **S. Ramaswami** and G. Toussaint, “On Removing Non-degeneracy Assumptions in Computational Geometry”, in *Proceedings of the Third Italian Conference on Algorithms and Complexity* (Lecture Notes in Computer Science 1203, Springer-Verlag), Rome, Italy, Mar. 1997, pp. 86-99. (*Extended abstract of journal paper 14.*)

27. P. Bose, **S. Ramaswami**, G. Toussaint and A. Turki, “Experimental Comparison of Quadrangulation Algorithms for Sets of Points”, in *Abstracts of the Twelfth European Workshop on Computational Geometry*, Münster, Germany, Mar. 1996, pp. 39-40. (*Abstract of journal paper 15.*)
28. **S. Ramaswami**, P. Ramos and G. Toussaint, “Converting Triangulations to Quadrangulations”, in *Proceedings of the Seventh Canadian Conference on Computational Geometry*, Quebec City, Quebec, Aug. 1995, pp. 297-302. (*Extended abstract of journal paper 22.*)
29. S. Rajasekaran and **S. Ramaswami**, “Optimal Parallel Randomized Algorithms for the Voronoi Diagram of Line Segments in the Plane and Related Problems”, in *Proceedings of the Tenth Annual ACM Symposium on Computational Geometry*, Stony Brook, New York, June 1994, pp. 57-66. (*Extended abstract of journal paper 17.*)
30. S. Rajasekaran and **S. Ramaswami**, “Optimal Mesh Algorithms for the Voronoi Diagram of Line Segments, Visibility Graphs and Motion Planning in the Plane”, in *Proceedings of the 30th Annual Allerton Conference on Communication, Control and Computing*, Monticello, Illinois, Sept. 1992, pp. 382-391. (*Extended abstract of journal paper 23.*)

Other abstracts:

31. F. Gomez, **S. Ramaswami**, and G. Toussaint, “On Removing Degeneracies in Computational Geometry”, in *Abstracts of the 914th meeting of the American Mathematical Society*, Lawrenceville, New Jersey, 1996.

Grants:

External:

- (*Funded 2014-2019*) National Science Foundation, Division of Computing and Communication Foundations (CCF-1422004). Amount: \$198,936 (2014-2017). Title: “Collaborative RUI: Quadrilateral Surface Meshes with Provable Quality Guarantees”. Principal Investigator. Collaborative grant with CCF-1422012 (Bryn Mawr College) and CCF-1422019 (St. Joseph’s University). Total budget: \$451,243.
- (*Funded 2008-2013*) National Science Foundation, Division of Computing and Communication Foundations (CCF-0830589). Amount: \$228,026. Title: “Surface and Volume Meshes for Volumetric Imaging Data”. Principal Investigator (co-PI: Dr. James Gee, Department of Radiology, University of Pennsylvania School of Medicine). Period covered: 2008-2013.
- (*Funded 2002-2007*) National Science Foundation, Graphics, Symbolic, and Geometric Computation (CCR-0204293). Amount: \$134,789. Title: “RUI: Geometric Techniques for Quadrilateral and Hexahedral Mesh Generation with Applications in Medical Imaging”. Sole Investigator. Period covered: 2002-2007.
- (*Funded 2003-2004*) Lindback Foundation, Minority Junior Faculty Grant Award. Amount: \$15,000. Title: “Computational Geometric Techniques for Biomedical Applications”. Sole Investigator. Period covered: 2003-2004.

Internal:

- (*Funded 2001-2002*) Information Science and Technology Council (ISATC) Pilot Project Grant. Amount: \$24,700. Project title: “Efficient Geometric Algorithms for Applications in Medical Imaging and Bioinformatics”. Sole Investigator. Period covered: 2001-2002.
- (*Funded 2000-2001*) Research Council Grant. Amount: \$3,280. Project title: “Efficient Algorithms for Geometric Subdivision, Packing and Covering Problems”. Principal Investigator (co-PI: Bhaskar DasGupta). Period covered: 2000-2001.
- (*Funded 2000-2001*) Undergraduate Research Fellows Program. Undergraduate funded: Michael Orr. Amount: \$1,500. Project title: “QMesh: An Interactive Visualization Tool for Quadrilateral Mesh-Generation”. Period covered: 2000-2001
- (*Funded 1998-1999*) Research Council Grant. Amount: \$700. Project title: “Geometric Computing in Data Modeling and Visualization”. Sole Investigator. Period covered: 1998-99.

Invited Participation in Research Workshops and Panels:

- Panelist, LATTICE (Launching Academics on the Tenure-Track: an Intentional Community in Engineering, an NSF ADVANCE-funded program to broaden diversity among engineering faculties): Symposium for Early Career Women in Engineering, IslandWood Conference Center, Bainbridge Island, WA, May 18-21, 2017.
- Panelist, University of Pennsylvania. “Understanding Tenure when Applying and Negotiating for Jobs”. Panel discussion organized by Penn’s Career Services for graduate students and postdocs. February 2015.
- Panelist, Carver High School of Engineering and Science (Philadelphia). Panel discussion during CS Education Week for high school girls on the challenges and opportunities for women in CS and strategies to support girls in engineering and CS at Carver HSES. December 2013.
- Bellairs Winter Research Workshop on Computational Geometry. *In honor of Godfred Toussaint* (March 2020), *Folding and Self-Assembly* (March 2014), *Folding* (March 2013), *Self-Assembly* (February 2012), *Reconfiguration* (February 2008 & February 2007), *Music Information Retrieval* (February 2006 & February 2005), *Molecular Biology* (February 2002 & February 2001), *Polygonal Entanglement Theory* (February 2000), *Computational Statistics* (February 1999), and *Architecture* (February 1998) (organized by Prof. Godfried Toussaint of McGill University).
- *Mid Winter Workshop on Discrete and Computational Geometry* (January 2011) held in Ceará, Brazil (organized by Dr. John Iacono of NYU-Polytechnic and Dr. Stefan Langerman of the Free University of Brussels).

- Invited to participate in and chair a session at the *DIMACS Workshop on Data Depth: Robust Multivariate Analysis, Computational Geometry, and Applications* held at the DIMACS Center, Rutgers University, Piscataway, NJ in May 2003 (organized by Profs. Regina Liu of Rutgers, Robert Serfling of UT-Dallas, Diane Souvaine of Tufts U., and Yehuda Vardi of Rutgers).
- *Workshop on Games on Triangulations* in Barcelona, Spain, June 2002 (organized by Prof. Ferran Hurtado of Universidad Politecnica de Catalunya).
- *Hong Kong Research Workshop on Computational Geometry*, December '97 (organized by Prof. Otfried Schwarzkopf of the Hong Kong University of Science and Technology).

SERVICE

Contributions to the advancement of the academic profession:

- Program Committee Member, 33rd CCCG (Canadian Conference on Computational Geometry), 2021, Halifax, Nova Scotia, Canada.
- Program Committee Member, 14th COCOA (International Conference on Combinatorial Optimization and Applications) 2020, Dallas, Texas.
- NSF panel member, served to evaluate proposals in the Algorithmic Foundations (AF) cluster in the CISE/CCF division. March 2019, March 2012, July 2006, and March 2005.
- Program Committee Member, 3rd International Workshop on Interactive and Spatial Computing (IWISC), 2018, Dallas, TX.
- Program Committee Member, 26th FWCG (Fall Workshop on Computational Geometry), 2016, New York, NY.
- Program Committee Member, 28th CCCG (Canadian Conference on Computational Geometry), 2016, Vancouver, BC, Canada.
- NSF panel member, evaluation of proposals for REU (Research Experience for Undergraduates) sites. October 2015.
- Program Committee Member, 9th COCOA (International Conference on Combinatorial Optimization and Applications) 2015, Houston, Texas.
- Program Committee Member, 8th COCOA (International Conference on Combinatorial Optimization and Applications) 2014, Maui, Hawaii.
- Program Committee Member, 5th COCOA (International Conference on Combinatorial Optimization and Applications) 2011, Zhangjiajie, China.
- Program Committee Member, ISAAC (International Symposium on Algorithms and Computation) 2009, Hawaii, USA.

- NSF Committee of Visitors (CoV) member, Division of Computing and Communication Foundations (CCF), 2009.
- External reviewer for NSF CAREER proposals (2008) in the area of computational geometry in the TF (Theoretical Foundations) cluster.
- Have reviewed papers for Graphs and Combinatorics, International Conference on Robotics and Automation (ICRA), Workshop on Algorithms and Data Structures (WADS), Algorithmica, IEEE Transactions on Robotics, Discrete Applied Mathematics, ACM Symposium on Computational Geometry (SoCG), ACM Transactions on Mathematical Software, Journal of Scheduling, Journal of Computing and System Sciences, Information Processing Letters, Computer-Aided Geometric Design, Computer Vision, Graphics, and Image Processing: Graphical Models and Image Processing, the International Journal of Computational Geometry and Applications, the Journal of Parallel and Distributed Computing, International Symposium on Algorithms and Computation (ISAAC), International Parallel Processing Symposium and EuroPar.

Contributions to the College/University:

- Chair, Department of Computer Science, January 2016-June 2022.
- Faculty Senator, Computer Science, January 2020 - 2021.
- Appointments and Promotion Committee (Natural Sciences), September 2018 - 2021.
- Faculty advisor, ACM Student Chapter at Rutgers-Camden, January 2016 - present.
- Member of Research and Funding Committee, September 2016-2019.
- Organizer, Rutgers-Bryn Mawr Undergraduate Research Workshop on Computational Geometry, July 25-27, 2016.
- Graduate program director, Department of Computer Science, July 2010-December 2015.
- CCIB Undergraduate Curriculum Committee, 2015.
- Faculty Teaching Awards Committee, 2012, 2013, 2015.
- RU-FAIR Professor (funded by an NSF-ADVANCE grant), 2011-2013.
- Member of Committee on Institutional Equity and Diversity, September 2010-2014.
- Member of search committee for Dean of Camden Faculty of Arts and Sciences, Fall 2010-Spring 2011.
- Member of screening committee for tenure-track appointments in Center for Computational and Integrative Biology (CCIB), Fall 2010.
- Member of search committee for Graduate School/UCC Recruitment Officer, Fall 2010.
- Member of the Academic Policy Committee, September 2006-August 2009.

- Computer Science department representative on the FAS Faculty Senate for AYs 1998-2000.
- Member of the Admission and Enrollments Committee for AYs 1998-2000.

Honors and Awards:

- Lindback Foundation, Minority Junior Faculty Award, 2003.
- Research Fellow, Department of Computer and Information Science, University of Pennsylvania, Fall 1990 - Fall 1994.
- Dean's Fellow, School of Engineering and Applied Science, University of Pennsylvania, Fall 1988 - Summer 1990.
- Phi Beta Kappa, Wellesley College, 1988

Outreach and Synergistic Activities:

- **National Center for Women & Information Technology (NCWIT)**, *Aspirations in Computing* program, Co-coordinator for Philadelphia region, September 2018 - present.
- **Eminent Women in Science Series:** One of two RU-FAIR (Rutgers University-Faculty Advancement and Institutional Reimagination) professors at Rutgers-Camden responsible for organizing workshops, seminars, and other professional development events designed to increase the participation and advancement of women and minority faculty in science, engineering, and mathematics. Organized an "Eminent Women in Science" seminar series as part of this program. Supported by NSF-ADVANCE. (2011-2013)
- **Future Scholars Summer Program:** Participated in the *Future Scholars* program at Rutgers-Camden, an on-campus summer program that targets low-income and academically talented middle school students in the Camden area, most of whom belong to groups historically under-represented in the sciences. (Summer 2010)
- **Free Research Software:** Constrained convex quadrilateral meshing software CQMESH (<http://clam.rutgers.edu/~rsuneeta/hpc/research/code.html>), developed by Marcelo Siqueira and based on journal paper #11, has been used by researchers for finite element analysis in science and engineering fields such as medical imaging, structural mechanics, and physics (as part of a multi-physics finite element library).