

Victor J. Milenkovic

Department of Computer Science

College of Arts and Sciences

University of Miami

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Education

Ph.D. **Carnegie Mellon University**, Computer Science, 1988. “Verifiable Implementations of Geometric Algorithms Using Finite Precision Arithmetic.”

A.B. **Harvard University**, Mathematics *summa cum laude*, 1981. “On the Shape of Unloaded Flexible Rods in Three Dimensions under General Endpoint Constraints.”

Employment

University of Miami (founding) Chairman, Department of Computer Science, 2000-2003.

University of Miami Associate Professor of Computer Science, 1994-present.

Harvard University Assistant Professor of Computer Science, 1988-1994.

IBM Thomas J. Watson Research Center Visiting Scientist, Manufacturing Research, summers 1989-1992.

AT&T Bell Laboratories Intern, Computing Science Research, Murray Hill, N.J, summer 1984.

IBM Thomas J. Watson Research Center Intern, Automation Research, summer 1981-1982.

General Motors Programmer, Computer Systems, Fisher Body, Warren, Michigan, summers 1978-1979.

Honors and Awards

Outstanding Fashion Show Presentation Award, National Textile Center Annual Forum, 1997.

Semifinalist **Franz Edelman Award for Achievement in Operations Research**, Applications of Operations Research Algorithms For Layout in the Apparel Industry, 1997.

Director’s Partnership Award, “Outstanding Poster Exhibit”–Visual Presentation, National Textile Center Annual Forum, 1996.

Best paper of the year, Computer-Aided Design, 1993.

Presidential Young Investigators Award, National Science Foundation, 1991.

IBM Manufacturing Research Graduate Fellowship, 1985-1987.

Sigma Xi, 1987.

Phi Beta Kappa, Harvard class of 1981.

U.S.A. International Mathematical Olympiad Team. First place, 1977 (first time a free world nation had won–**President Carter** sent the coach a letter of congratulations). Second place, 1978.

Grants, Awards, and other Funding

\$12,000 **National Science Foundation**, REU (Research Experiences for Undergraduates), to support undergraduate Richard Cayemitte and Benjamin Li to create visualization tool for current NSF project, 2005.

\$240,000, **National Science Foundation** Graphics & Symbolic & Geometric Computation, “Collaborative Research: A formal theory of robust numerical computational geometry and its validation on configuration space construction,” 2003-2007. Collaborates with proposal submitted by Elisha Sacks of Purdue University.

\$104,700, **Harvard University**, transfer of software royalty research account, 2001-2003.

\$147,320, **National Science Foundation**, “The ‘CG to MP’ Strategy for Animation, Packing, and Related Optimization Problems,” NSF-97-12401, 1997-2000.

\$312,000, **Presidential Young Investigator Award**, “Robust Algorithms in Computational Geometry,” NSF-CCR-91-157993 and 94-96247, 1991-1998.

\$371,878, **Sloan Foundation**, **Textile/Clothing Technology Corporation**, and **Harvard Center for Textile and Apparel Research**, “Automated Pattern Layout and Specialized Robotics,” 1990-1994 (Frederick Abernathy, PI) and 1997-1999 (subcontract to University of Miami).

\$170,442, **National Textile Center**, “Part Layout and Optimization of Part Shape for Layout in Clothing Manufacture,” subcontract to University of Miami (Lisa Shanley and Lenda Jo Anderson, PIs at Auburn University), 1994-1997.

\$87,800 (shared equipment), **University of Miami Edward Arnold Confluent Media Laboratory** (James Shelley, director), “Position-Based Physics: Simulating the Motion of Many Highly Interacting Spheres and Polyhedra”, 1994. Also helped design laboratory built using \$1,000,000 bequest from Edward Arnold.

\$31,826, **National Science Foundation Research Initiative Award**, “Designing Geometric Algorithms with Correct Rounded Arithmetic Implementations,” NSF-CCR-90-09272, 1990-1992.

Software

Layout software license to Nester Software Technologies, 2006. Nester projects revenue of \$500,000 for 2007.

Harvard University licenses automatic layout software to **Microdynamics, Inc.**, 1993. Harvard University licenses automatic layout software, Version 2, to **Gerber Garment Technologies**, 1995. Royalty income to Harvard University exceeds \$300,000.

Sheldahl Micro Products reports they will save \$500,000/year thanks to circle placement algorithm (provided under consulting arrangement), 1999.

Peer Reviewed Articles and Exhibitions

Submitted

V. Milenkovic and E. Sacks. “A monotonic convolution for Minkowski sums.” *International Journal of Computational Geometry and Applications*. Submitted.

V. Milenkovic and E. Sacks. “Two robust Minkowski sum algorithms.” *International Journal of Computational Geometry and Applications*. Submitted.

Published¹

- *V. Milenkovic and E. Sacks. "An approximate arrangement algorithm for semi-algebraic curves." *International Journal of Computational Geometry and Applications*. In press.
- H. Schmidl and V. J. Milenkovic. "A Fast Impulsive Contact Suite for Rigid Body Simulation." *IEEE Transactions on Visualization and Computer Graphics*, 10(2):189-197, March-April 2004.
- *V. J. Milenkovic. "Densest translational lattice packing of non-convex polygons." *Computational Geometry: Theory and Applications*, 22:205-222, 2002.
- V. J. Milenkovic and H. Schmidl. Optimization Based Animation. *SIGGRAPH* 2001, pp. 37-46.
- V. J. Milenkovic. "Shortest Path Geometric Rounding." *Algorithmica* 27(1):57-86, 2000.
- V. J. Milenkovic and K. Daniels. "Translational Polygon Containment and Minimal Enclosure using Mathematical Programming." *International Transactions in Operational Research*, 6:525-554, 1999.
- *V. J. Milenkovic. "Rotational Polygon Containment and Minimum Enclosure using only Robust 2D Constructions." *Journal of Computational Geometry: Theory and Applications*, 13:3-19, 1999.
- *V. J. Milenkovic. "Rotational Polygon Overlap Minimization." *Computational Geometry*, 10:305-318, 1998.
- K. Daniels and V. J. Milenkovic. "Multiple Translational Containment, Part I: An Approximate Algorithm." *Algorithmica*, 19:148-182, 1997.
- V. J. Milenkovic. "Multiple Translational Containment, Part II: Exact Algorithms." *Algorithmica* 19:183-218, 1997.
- K. Daniels, V. J. Milenkovic, and D. Roth. "Finding the Maximum Area Axis-Parallel Rectangle in a Polygon." *Computational Geometry: Theory and Applications* 7:125-148, 1997.
- V. J. Milenkovic and V. Milenkovic. "Rational Orthogonal Approximations to Orthogonal Matrices." *Computational Geometry: Theory and Applications* 7:25-35, 1997.
- V. J. Milenkovic. "Position-Based Physics: Simulating the Motion of Many Highly Interacting Spheres and Polyhedra." *SIGGRAPH* 1996, pp. 129-136.
- *V. J. Milenkovic and Z. Li. "Compaction and Separation Algorithms for Nonconvex Polygons and Their Applications." *European Journal of Operations Research*, 84:539-561, 1995.
- V. J. Milenkovic. "Robust Polygon Modeling." Special Issue of *Computer-Aided Design on Uncertainties in Geometric Computations*, 25(9):546-566. Voted best paper of 1993 by editors.
- *V. J. Milenkovic and L. R. Nackman. "Finding Compact Coordinate Representations for Polygons and Polyhedra." *IBM Journal of Research and Development*, 34(35):753-769, 1990.
- *Z. Li and V. J. Milenkovic. "Constructing Strongly Convex Hulls Using Exact or Rounded Arithmetic." *Algorithmica*, 8:345-364, 1992.
- V. J. Milenkovic. "Verifiable Implementations of Geometric Algorithms Using Finite Precision Arithmetic." *Artificial Intelligence*, 37:377-401, 1988.

¹A * indicates that an earlier version appeared in a refereed conference proceedings.

Refereed Conference Proceedings²

- V. Milenkovic and E. Sacks. “An approximate arrangement algorithm for semi-algebraic curves.” *SCG* 2006, pp. 237-245.
- V. J. Milenkovic. “Densest translational lattice packing of non-convex polygons.” *SCG* 2000, pp. 280-289.
- V. J. Milenkovic. “Rotational Polygon Containment and Minimum Enclosure using only Robust 2D Constructions.” *SCG* 1998, pp. 1-8.
- V. J. Milenkovic. “Rotational Polygon Overlap Minimization.” *SCG* 1997, pp. 334-343.
- K. Daniels and V. J. Milenkovic. “Column-Based Strip Packing using Ordered and Compliant Containment.” *Proceedings of the First ACM Workshop on Applied Computational Geometry (WACG)*, edited by Ming C. Lin and Dinesh Manocha, May 27-28, 1996, pp. 33-38. (One of 12 selected papers out of 31 submitted.)
- V. J. Milenkovic. “Translational Polygon Containment and Minimal Enclosure using Linear Programming Based Restriction.” *STOC* 1996, pp. 109-118.
- K. Daniels and V. J. Milenkovic. “Multiple Translational Containment: Approximate and Exact Algorithms.” *SODA* 1995, pp. 205-214.
- Z. Li and V. J. Milenkovic. A Compaction Algorithm for Non-Convex Polygons and Its Application. *SCG* 1993, pp. 153-162.
- S. Fortune and V. J. Milenkovic. “Numerical Stability of Algorithms for Line Arrangements”, *SCG* 1991, pp. 334-341.
- C. Kaklamani, A. R. Karlin, F. T. Leighton, V. J. Milenkovic, P. Raghavan, S. Rao, C. Thomborson, and A. Tsantilas. “Asymptotically Tight Bounds for Computing with Faulty Arrays of Processors.” *FOCS* 1990, pp. 285-296.
- V. Milenkovic, V. J. Milenkovic, and P. H. Milenkovic. “Inverse Kinematics of Not Fully Serial Robot Linkages with Non-Singular Wrists.” *Proceedings of the Robot Kinematics Workshop*, S. Stifter and J. Lenarcic, editors. Research Institute for Symbolic Computation, Johannes Kepler University, Linz, Austria, September 1990, pp. 335-342.
- V. J. Milenkovic. “Double Precision Geometry: A General Technique for Calculating Line and Segment Intersections Using Rounded Arithmetic.” *FOCS* 1989, pp. 500-506.
- Z. Li and V. J. Milenkovic. Constructing Strongly Convex Hulls Using Exact or Rounded Arithmetic. *SCG* 1989, pp. 235-243.
- V. J. Milenkovic and L. R. Nackman. “Finding Compact Coordinate Representations for Polygons and Polyhedra.” *SGG* 1989, pp. 244-252.
- V. J. Milenkovic. “Calculating Approximate Curve Arrangements Using Rounded Arithmetic.” *SCG* 1989, pp. 197-207.
- V. J. Milenkovic. “Robust Geometric Computations for Vision and Robotics.” *Proceedings of the DARPA Image Understanding Workshop*, May, 1989, pp. 764-773.
- V. J. Milenkovic and T. Kanade. “Trinocular Vision Using Photometric and Edge Orientation Constraints.” *Proceedings of the DARPA Image Understanding Workshop*, Dec. 1985, pp. 163-175.

²FOCS (IEEE Symposium on the Foundations of Computer Science), SCG (ACM Symposium on Computational Geometry), SODA (ACM-SIAM Symposium on Discrete Algorithms), and STOC (ACM Symposium on the Theory of Computing) publish 10 page “abstracts” with a 25%-33% acceptance rate.

Professional Activities

Program Committee Member, SIGGRAPH 2004.

Program Committee Member, ACM Symposium on Computational Geometry (SCG), 2002.

Review Panel Member, National Science Foundation, at least once a year.

President, University of Miami Chapter of Sigma Xi, the Scientific Honor Society, 1999-2001.

Local Arrangements Chair, National Science Foundation Workshop on Computational Topology (proposed new funding area), June 10-11, 1999.

Local Arrangements Chair, 15th Annual ACM Symposium on Computational Geometry (SCG 1999), Radisson Deauville, Miami Beach, FL, June 1999.

Program Chair, Special Sessions on Cutting and Packing, at EURO XVI, July 1998, Brussels, Belgium. Six sessions with 24 talks from researchers around the world accepted by Jacques Teghem, EURO XVI Secretary.

Local Arrangements Chair, 38th Annual IEEE Symposium on Foundations of Computer Science (FOCS), Radisson Deauville, Miami Beach, FL, October 1997.

Site Review Committee Member, National Science Foundation Infrastructure Grant, Department of Computer Science, Johns Hopkins University, March 1997. "A Networked Computing Environment for the Manipulation and Visualization of Geometric Data".

Program Committee Member and host of program committee meeting, 12th Annual ACM Symposium on Computational Geometry (SCG), January 1996.

Program Committee Member, ACM-SIAM Symposium on Discrete Algorithms (SODA), 1994.

Invited Talks

"Multiple Clothing Part Placement: Direct Representation of Curves vs. Polygonal Approximation." DIMACS Workshop on Computer-Aided Design and Manufacturing, October 7, 2003.

"Geometric Conditioning." DIMACS CG Implementation Workshop, Rutgers University, December 4, 2002.

"Optimization-Based Animation." Florida International University, School of Computer Science, October 25, 2002.

"Automatic Layout for the Apparel Industry." Sloan Industry Studies Annual Meeting, Harvard University School of Business, April 3-4, 1997 (with K. Daniels).

"Packing and Layout using Computational Geometry and Linear Programming." Ed Arnold Confluent Media Laboratory, College of Engineering, University of Miami, February 28, 1997.

"Position-Based Physics: Simulating the Motion of Many Highly Interacting Spheres and Polyhedra." University of Miami, at the opening of the Edward Arnold Confluent Media Lab, October 13, 1996 and December 9, 1996 (for President Foote).

"Computer Science: The Universal Translator." University of Miami, Science Expo '95, September 30, 1995.

"Multiple Containment Methods for Apparel Manufacture." Old Dominion University and NASA ICASE, Norfolk, Virginia, February 24-25, 1994.

Other Conferences and Workshops

- V. J. Milenkovic. "The Dense Border Filling Heuristic for Translational Strip Packing." Special sessions on Cutting and Packing, International Federation of Operational Research Societies (IFORS 2002), July 2002.
- V. J. Milenkovic. "Rotational Compaction, Containment, and Minimum Enclosure of Circular Polygons", Special Sessions on Cutting and Packing, at EURO XVI, July 1998, Brussels, Belgium.
- L. Anderson and V. J. Milenkovic. "Part Layout and Optimization of Part Shape for Layout in Clothing Manufacture." Presentation at 1997 National Textile Center Forum, Myrtle Beach, South Carolina, January 28-30, 1997.
- V. J. Milenkovic. "Translational Containment using Linear Programming and other Mathematical Programming Techniques." SICUP (Special Interest Group on Cutting and Packing) sessions at IFORS (International Federation of Operations Research Societies) 14th Triennial Conference, Vancouver, B.C., Canada, July 8-12, 1996.
- V. J. Milenkovic. "Position-Based Physics: Visualizing the Motion of Many Highly Interacting Spheres and Polyhedra." Presentation at ONR Volume Visualization Workshop, Arizona State University, Tempe, Arizona, February 14-16, 1996.
- I. Kaliman, D. Koza, V. J. Milenkovic, L. Shanley. "Part Layout and Optimization of Part Shape for Layout in Clothing Manufacture." Presentation at 1996 National Textile Center Forum, Raleigh, North Carolina, January 24-26, 1996. Won Director's Partnership Award for "Outstanding Poster Exhibit" - Visual Presentation.
- V. J. Milenkovic. "Packing of Nonconvex Polygons in a Nonconvex Enclosure or Minimal Area Rectangular Enclosure." 4th SIAM Conference on Geometric Design, Nashville, Tennessee, November 6-9, 1995.
- V. J. Milenkovic. "Algorithms for minimizing overlap of translating polygons." 5th MSI Workshop on Computational Geometry, Stony Brook, New York, October 20-21, 1995.
- D. Koza, V. J. Milenkovic. "Part Layout and Optimization of Part Shape for Layout in Clothing Manufacture." Presentation at 1995 National Textile Center Forum, Atlanta, Georgia, January 1995.
- V. J. Milenkovic. "Multiple Containment Methods for Apparel Manufacture." NSF Workshop on Manufacturing and Computational Geometry. Courant Institute of Mathematical Sciences, New York University, April 1-2, 1994.
- V. J. Milenkovic. "Applications of Geometric Rounding to Polygon and Polyhedron Modeling." Army Research Office and MSI Stony Brook WORKSHOP ON COMPUTATIONAL GEOMETRY. Hosted by Department of Computer Science North Carolina State University. Brownstone Hotel, Raleigh, North Carolina, October 14-16, 1993.
- V. J. Milenkovic, K. Daniels, Z. Li, "Rotation Compaction and Trim Placement Strategies for Nonconvex Polygons in Clothing Manufacture." Workshop on "Cutting and Packing" at the IFORS '93 Conference in Lisbon, July, 12-16, 1993.
- Z. Li and V. J. Milenkovic, "Efficient Compaction and Layout Algorithm for Non-Convex Shapes," ORSA/TIMS Joint National Meeting, Chicago, May 1993.
- V. J. Milenkovic. "Placement and Compaction of Nonconvex Polygons for Clothing Manufacture." Workshop on Cutting and Planning. SICUP Sessions at ORSA/TIMS Joint National Meeting, San Francisco, November 1-4, 1992.

Other work, publication and abstracts

- K. Daniels and V. J. Milenkovic. "Distance-Based Subdivision for Translational LP Containment." *Proceedings of the Eighth CCCG*³, edited by Frank Fiala, Evangelos Kranakis, and Jorg- Rudiger Sack, Carleton University, Ottawa, Ontario, Canada, August 12-15, 1996, p. 196-201.
- V. J. Milenkovic. "Practical Methods for Set Operations on Polygons using Exact Arithmetic." *Proceedings of the Seventh CCCG*, Laval University, Quebec, August, 1995, pp. 55-60.
- V. J. Milenkovic. "Position-Based Physics: Animating and Packing Spheres inside Polyhedra." *Proceedings of the Seventh CCCG*, Laval University, Quebec, August, 1995, pp. 79-84.
- K. Daniels, V. J. Milenkovic. "Limited Gaps." *Proceedings of the Sixth CCCG*, Mark Keil, Ed., University of Saskatchewan, Saskatoon, Saskatchewan, Canada, August 2-6, 1994, pp. 225-230.
- K. Daniels, V. J. Milenkovic, and D. Roth. "Finding the Maximum Area Axis-Parallel Rectangle in a Polygon." *Proceedings of the Fifth CCCG*, A. Lubiw and J. Urrutia Eds., University of Waterloo, Ontario, Canada, August 5-9, 1993, pp. 322-327.
- V. J. Milenkovic. "Robust Construction of the Voronoi Diagram of a Polyhedron." *Proceedings of the Fifth CCCG*, A. Lubiw and J. Urrutia Eds., University of Waterloo, Ontario, Canada, August 5-9, 1993, pp. 473-478.
- J. Chang and V. J. Milenkovic. "An Experiment Using LN for Exact Geometric Computations." *Proceedings of the Fifth CCCG*, A. Lubiw and J. Urrutia Eds., University of Waterloo, Ontario, Canada, August 5-9, 1993, pp. 67-72.
- V. J. Milenkovic and V. Milenkovic. "Rational Orthogonal Approximations to Orthogonal Matrices." *Proceedings of the Fifth CCCG*, A. Lubiw and J. Urrutia Eds., University of Waterloo, Ontario, Canada, August 5-9, 1993, pp. 485-491.
- Z. Li and V. J. Milenkovic. "The Complexity of the Compaction Problem." *Proceedings of the Fifth CCCG*, A. Lubiw and J. Urrutia Eds., University of Waterloo, Ontario, Canada, August 5-9, 1993, pp. 7-11.
- V. J. Milenkovic, K. Daniels, Z. Li. "Placement and Compaction of Nonconvex Polygons for Clothing Manufacture." *Proceedings of the Fourth CCCG*, C. A. Wang, Ed., Memorial University of Newfoundland, St. John's, Newfoundland, Canada, August 10-14, 1992, pp. 236-243.
- V. J. Milenkovic, K. Daniels, Z. Li. "Automatic Marker Making." *Proceedings of the Third CCCG*, T. Shermer, Ed., Simon Fraser University, Vancouver, B.C., August 6-10, 1991, pp. 243-246.
- V. J. Milenkovic. "Rounding Face Lattices in d Dimensions." *Proceedings of the Second CCCG*, Jorge Urrutia, Ed., University of Ottawa, Ontario, August 6-10, 1990, pp. 40-45.
- V. J. Milenkovic. "Rounding Face Lattices in the Plane." *Proceedings of the First CCCG*, Montreal, Quebec, Canada, August 21-25, 1989 (abstract).
- V. J. Milenkovic. Extending the Hough Transform to Higher Dimensional Objects. In *Techniques for 3-D Machine Perception*, edited by Azriel Rosenfeld and Laveen Kanal, published by North-Holland, 1986. pp. 231-254.

³Canadian Conference on Computational Geometry

Students

Bachelors of Science

Adam McMahon, B.S., Computer Science, UM, May 2001. Adam coauthored the video portion of the SIGGRAPH presentation, “Optimization Based Animation.” Adam was offered a job at **Disney Interactive**, but has chosen to persue religious studies.

Melanie Reiback, B.S., Computer Science/Chemistry, UM, May 2000. Melanie on a molecular modeling project at UM. Melanie worked on the Human Genome Project for a year at the **MIT Whitehead Institute** before moving on to graduate school.

Masters of Science

Yury Puzis, M.S., Computer Science, UM, December 2006. **Committee chair**. “Consistent Computational Geometry on Univariate Polynomials.”

Steven Trac, M.S., Computer Science, UM, May 2006. **Committee chair**. “Robust Topologically Invariant Set Operations on Semi-Algebraic Sets.”

Madhuranath Ganugapati, Computer Science, UM, July 2005. **Committee chair**. “Swapping Heuristics for Compaction of Polygons.”

Zhongwei Li, M.S., Computer Science, UM, May 2001. **Committee chair**. “DNA Computation of the Traveling Salesman Problem.”

Iraklis Kourtidis, M.S., Computer Science, UM, May 2000. **Committee chair**. “Distributed Rotational Polygon Compaction.”

George Stergiou, M.S., Computer Science, UM, May 1998. **Committee chair** (joint with Professor Negahdaripour in Electrical and Computer Engineering). Computer Vision.

Michael Lindner, M.S., Computer Science, UM, May 1997. **Committee chair**. “Dynamical Compaction of Polygons.”

Doctor of Philosphy (ordered by graduation date)

Note: UM does not yet have a Ph.D. program in Computer Science, and hence Trac, Johnson, and Schmidl enrolled in the interdepartmental Ph.D. program.

Steven Trac, candidate Ph.D., interdeparmental program, UM. **Committee chair**. “Robust construction of the configuration space of 2D shapes.”

Morgan Johnson, Ph.D., interdeparmental program, UM, 2005. **Committee member** (Professor Huseying Kocak has taken over as committee chair). “Automated Detection of Epileptic Seizures.” McKnight Fellowship recipient.

Harald Schmidl, Ph.D., interdeparmental program, UM, May 2002. **Committee chair**. “Optimization Based Animation.”

Karen Daniels, Ph.D., Computer Science,, Harvard University, June 1995. **Committee Chair**. “Containment Algorithms for Nonconvex Layout with Applications to Layout.”

Zhenyu Li, Ph.D., Computer Science, Harvard University, June 1994. **Committee Chair**. “Compaction Algorithms for Non-Convex Polygons and Their Applications.”

Postdoctoral Associates

Karen Daniels, University of Miami and Harvard University, July 1995-June 1996. Currently Associate Professor, Department of Computer Science University of Massachusetts, Lowell.

Brad Barber, Harvard University, January 1994-June 1994. Dr. Barber received his Ph.D. at Princeton University in Computer Science in 1993. He worked as a part-time postdoc at Harvard University. He continued his thesis work on a robust implementation of the Quick-Hull (QHull) convex hull algorithm.

Courses Taught at University of Miami

CSC 120 Programming I
CSC 220 Programming II
CSC 517 Data Structures and Algorithms
CSC 523 Principles of Filing and Database Systems
CSC 527 Theory of Computing
CSC 529 Computer Graphics
CSC 688 Applied Optimization
CSC 689 Computational Geometry

Professional and Honorary Organizations

Sigma Xi.

Mathematical Association of America.

Society for Industrial and Applied Mathematics.

IEEE Computer Society.

Association for Computing Machinery.

Operations Research Society of America

Community Activities

Den Leader, Den 6/8, Cub Scout Pack 341, Weston FL, 2005-present

Principal Viola in the Broward Symphony Orchestra 1998-2000, 2002-3.

Judge at Broward County Science Fair, Junior Physical Science Finals, February 1997-2006.

Judge at 41st and 42nd Annual South Florida Science and Engineering Fair, Dade County Public Schools, February 1995 and 1996.

Member, St. Bonaventure Adult Choir, Davie, Florida, 1994-present.