KATHLEEN A. ROMANIK
CURRICULUM VITAE

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Citizenship: U.S.A.

EDUCATION:

University of Maryland, College Park, MD (May 90 - Aug. 92)
PhD Computer Science, August 1992. Advisor: Carl Smith.
Dissertation: "Approximate Testing Theory"

University of Maryland, College Park, MD (Aug. 87 - May 90)
M.S. Computer Science. GPA 4.0/4.0.

Carnegie-Mellon University, Pittsburgh, PA (Aug. 81 - May 85)
Applied Mathematics, Computer Science and Spanish.
B.S. (with University Honors). GPA 3.5/4.0.

PROFESSIONAL EXPERIENCE:

National Institute of Standards and Technology (Intelligent Systems Div.) (7/96-present)
National Research Council Research Associate - Design hierarchical terrain models for unmanned vehicle navigation.

University of Maryland Center for Automation Research - College Park, MD (3/96-present)
Visiting Researcher - Developed optimization strategies for beacon placement in robot localization. Designed a practical approximation algorithm for a robust line estimator.

DIMACS Center for Discrete Mathematics & Theoretical Computer Science (9/94-2/96)
University-Industry Research Fellow - Led a research group that developed probing strategies for identifying objects in a computer image. Designed new algorithms for graph visualization. Improved optimization results for robot localization.

Hoechst-Celanese Corporation - Summit, NJ (9/94-8/95)
University-Industry Research Fellow - Consulted with chemical engineers and developed database applications in Microsoft Access for research in developing new plastics technologies.

McGill University School of Computer Science - Montreal, Quebec (9/92-8/94)
Postdoctoral Fellow - Solved an optimization problem for robot localization. Developed graph visualization algorithms. Consulted with the Center for Night Vision and Electro-Optics on applications of geometric probing to computer vision. Taught Programming Languages, Analysis of Algorithms, Introduction to Computer Science.

University of Maryland Computer Science Department - College Park, MD (8/87-8/92)
Graduate Assistant - Developed geometric probing strategies for maximizing the effectiveness of automatic target recognition and automated manufacturing applications. Designed software complexity measures to assess the difficulty of testing. Assisted with teaching Mathematical Logic, Discrete Mathematics, Analysis of Algorithms and Theory of Computation.

Texas Instruments, Inc. (Design Automation Division) - Dallas, TX (7/85-7/87)
Software Design Engineer - Designed and developed VLSI CAD tools for chip designers. Implemented algorithms for synthesis and compaction of chip layouts that improved the quality of the layouts and decreased design cycle time. Solved standard cell routing problems.

JOURNAL PUBLICATIONS:

"Localizing a Robot with Minimum Travel" (with Gregory Dudek and Sue Whitesides) - SIAM Journal on Computing - accepted.

"Testing Simple Polygons" (with E. Arkin, P. Belleville, J.S.B. Mitchell, D. Mount, S. Salzberg, D. Souvaine) - Computational Geometry: Theory and Applications - accepted.

"Using Vapnik-Chervonenkis Dimension to Analyze the Testing Complexity of Program Segments" (with Jeffrey S. Vitter) - Information and Computation - accepted.

"Testing Orthogonal Shapes" (with Steven Salzberg) - Computational Geometry: Theory and Applications, 5 (1995) pp. 33-49.

"Testing Geometric Objects" (with Carl Smith) - Computational Geometry: Theory and Applications, 4 (1994) pp. 157-176.

JOURNAL SUBMISSIONS:

"Directed VR-Representable Graphs Have Unbounded Dimension" - Journal on Graph Algorithms and Applications.

"On a Visibility Representation for Graphs in Three Dimensions" (with P. Bose, H. Everett, S. Fekete, A. Lubiw, H. Meijer, T. Shermer, S. Whitesides) - Journal on Graph Algorithms and Applications.

"Directed Rectangle-Visibility Graphs have Unbounded Dimension" - Discrete Applied Mathematics.

"Geometric Probing and Testing" - ACM Computing Surveys.

"Approximate Testing and Its Relationship to Learning" - Theoretical Computer Science.

CONFERENCE PUBLICATIONS:

"Optimal Robot Localization in Trees" (with Sven Schuierer) - 1996 Twelfth ACM Symposium on Computational Geometry; May 24-26, 1996.

"Directed Rectangle-Visibility Graphs have Unbounded Dimension" - Seventh Canadian Conference on Computational Geometry; Quebec City, Canada; Aug 10-13, 1995.

"Geometric Probing and Testing - A Survey" - (invited speaker) VI Congreso Español de Geometria Computacional; Barcelona, Spain; July 5-7, 1995.

"Localizing a Robot with Minimum Travel" (with Gregory Dudek and Sue Whitesides) - Sixth ACM-SIAM Symposium on Discrete Algorithms; January 22-24, 1995.

"Localizing an Object with Finger Probes" (with R. Freimer, S. Khuller, J.S.B. Mitchell, C. Piatko, D. Souvaine) - Vision Geometry III, part of SPIE's Intl. Symp. on Photonics for Industrial Applications; Boston, MA, Oct. 31 - Nov. 4, 1994.

"Directed VR-Representable Graphs Have Unbounded Dimension" - Graph Drawing '94; Princeton, NJ; October 10-12 1994.

"Using Computational Learning Theory to Analyze the Testing Complexity of Program Segments" (with Jeffrey S. Vitter) - The IEEE Computer Society's Seventeenth Annual International Computer Software and Applications Conference; Phoenix, AZ; November 3-5, 1993.

"Testing Simple Polygons" (with E. Arkin, P. Belleville, J.S.B. Mitchell, D. Mount, S. Salzberg, D. Souvaine) - Fifth Canadian Conference on Computational Geometry; University of Waterloo, Canada; August 5-9, 1993.

"Testing Orthogonal Shapes" (with Steven Salzberg) - Fourth Canadian Conference on Computational Geometry; St. John's, Newfoundland, Canada; August 10-14, 1992.

"Approximate Testing and Learnability" - Fifth ACM Workshop on Computational Learning Theory; University of Pittsburgh, PA; July 27-29, 1992.

"Testing Geometric Objects" (with Carl Smith) - Second Canadian Conference in Computational Geometry; University of Ottawa, Canada; August 6-10, 1990.

CONFERENCE/WORKSHOP PRESENTATIONS (WITHOUT PAPER):

"Rectangle Visibility Representation for Graphs" - 903^{rd} Meeting of the American Mathematical Society; Northeastern University; October 7-8, 1995.

"A Three Dimensional Visibility Representation for Graphs" - Combinatorists of New England (CONE) one day conference on Combinatorics and Graph Theory; Smith College; February 18, 1995.

"Localizing a Robot with Minimum Travel" - Fourth MSI Workshop on Computational Geometry; Cornell University; October 14-15, 1994.

"A Three Dimensional Visibility Representation for Graphs" - Discrete and Computational Geometry Day; University of Ottawa; April 2, 1994. Sponsored by Ottawa-Carleton Institute for Computer Science.

INVITED WORKSHOPS:

Workshop on Visibility Representations of Graphs 1 and 2 - Bellairs Research Institute of McGill University, Holetown, Barbados, February 12-19, 1993, February 11-18, 1994.

Workshop on Geometric and Computational Aspects of Injection Molding - Bellairs Research Institute of McGill University, Holetown, Barbados, February 5-12, 1993.

Workshop on Geometric Probing Problems - Bellairs Research Institute of McGill University, Holetown, Barbados, February 7-14, 1992.

Geometric Probing in Computer Vision Workshops 2 - 7 - University of Maryland, College Park, MD; May 10-12, 1991, December 6-8, 1991, June 1-2, 1992, August 24-25, 1992, January 14-15, 1993, August 24-25, 1993. Sponsored by the Center for Night Vision and Electro-Optics.

Learning and Geometry Workshop - Airlie House Conference Center, VA, January 8-11, 1991. Sponsored by the Systems Research Center at University of Maryland and the Center for Night Vision.

First Geometric Probing in Computer Vision Workshop - Cornell University, Ithaca, NY, November 16-18, 1990. Sponsored by the Center for Night Vision and Electro-Optics.

LECTURES:

"Localizing a Robot with Minimum Travel" - Högskolan i Luleå, Institutionen för Systemteknik, Luleå, Sweden, September 7, 1995.

"Computational Geometry Applied to Robot Navigation and Automatic Target Recognition" - Oak Ridge National Laboratory, Oak Ridge, TN, August 23, 1995.

"A Three Dimensional Visibility Representation for Graphs" - Pace University Mathematics Seminar, April 19, 1995.

"A Three Dimensional Visibility Representation for Graphs" - Rutgers Seminar on Theoretical Computer Science, April 12, 1995.

"Localizing a Robot with Minimum Travel" - UMIACS Seminar on Algorithms, University of Maryland, February 20, 1995.

"Localizing a Robot with Minimum Travel" - McGill University Computational Geometry Seminar, November 24, 1994.

"Localizing a Robot with Minimum Travel" - DIMACS Theoretical Computer Science Seminar, Rutgers University, November 11, 1994.

"Using Vapnik-Chervonenkis Dimension to Analyze the Testing Complexity of Program Segments" - AT&T Bell Laboratories, Murray Hill, NJ, September 21, 1994.

"Using Vapnik-Chervonenkis Dimension to Analyze the Testing Complexity of Program Segments" - Siemens Corporate Research, Princeton, NJ, May 3, 1994.

"Using Vapnik-Chervonenkis Dimension to Analyze the Testing Complexity of Program Segments" - McGill University Computational Geometry Seminar, October 27, 1993.

"Testing Theory Applied to Software Complexity" - Seminaire D'Informatique Theorique, University of Quebec at Montreal, November 19, 1992.

"Approximate Testing Theory" - McGill University Computational Geometry Seminar, September 16, 1992.

"Approximate Testing Theory" - Capital Area Theory Seminar, University of Maryland, March 25, 1992.

JOURNALS REFEREED:

Computational Geometry: Theory and Applications
International Journal on Computational Geometry and Applications
Journal of the Association for Computing Machinery
Journal of Computer and System Sciences
Journal of Software Testing, Verification and Reliability
Machine Learning
SIAM Journal on Computing

PROGRAM COMMITTEES AND CONFERENCES REFEREED:

Sixth Canadian Conference on Computational Geometry, August 1994 - program committee
Fifth and Sixth ACM Conferences on Computational Learning Theory - referee
Workshop on Algorithms and Data Structures 1993 - referee

HONORS:

National Research Council Research Associateship award - 1996-98
General Electric Information Systems scholarship, University of Maryland - 1989-90
Phi Kappa Phi Honor Society - inducted December 1989
Second Place, Junior Division - Student Technical Symposium, Harry Diamond Laboratories - 1983
"Computer Implementation of the Algebraic Operations on Elements in a Galois Field"
Lambda Sigma Honor Society - inducted 1982

PROFESSIONAL SOCIETY MEMBERSHIPS:

Association for Computing Machinery, SIGACT - 1990-present
Society of Women Engineers - 1981-85, chapter secretary 1982-83, chapter vice-president 1983-84

PROFESSIONAL ACTIVITIES:

Geometry Seminar, School of Computer Science, McGill University, 1993-94 - coordinator.
Admissions Committee, Department of Computer Science, University of Maryland, Spring 1991 - member
Search Committee for Dean of the College of Computer, Mathematical, and Physical Sciences, University of Maryland, 1990 - member
ACM Eighteenth Annual Computer Science Conference, 21^{st} SIGCSE Technical Symposium - Washington, D.C., February 20-23, 1990 - ACM recruitment assistant
Computer Science Graduate Student Executive Council, University of Maryland - 1987-89, president 1988-89

REFERENCES:

Prof. Gregory L. Dudek - Center for Intelligent Machines and School of Computer Science, McGill University, Montreal, PQ, Canada H3A 2A7, (514) 398-4325, FAX: (514) 398-7348, dudek@cim.mcgill.ca

Prof. Joseph S.B. Mitchell - Dept. of Applied Mathematics & Statistics, State University of New York at Stony Brook, Stony Brook, NY 11794-3600, (516) 632-8366, FAX: (516) 632-8490, jsbm@ams.sunysb.edu

Prof. David Mount - Dept. of Computer Science, University of Maryland, College Park, MD 20742, (301) 405-2704, FAX: (301) 405-6707, mount@cs.umd.edu

Prof. Carl Smith (dissertation advisor) - Dept. of Computer Science, University of Maryland, College Park, MD 20742, (301) 405-7930, FAX: (301) 405-6707, smith@cs.umd.edu

Prof. Diane Souvaine - Dept. of Computer Science, Rutgers University, Piscataway, NJ 08855, (908) 445-5928, FAX: (908) 445-5932, dls@cs.rutgers.edu

Prof. Jeff Vitter - Chair, Dept. of Computer Science, Duke University, Durham, NC 27708-0129, (919) 660-6548, FAX: (919) 660-6502, jsv@cs.duke.edu

Prof. Sue Whitesides (supervisor for McGill postdoc) - Center for Intelligent Machines and School of Computer Science, McGill University, Montreal, PQ, Canada H3A 2A7, (514) 398-7080, FAX: (514) 398-3883, sue@cs.mcgill.ca