ERIK D. GOODMAN

Professor, Electrical and Computer Engineering; Professor, Mechanical Engineering
Co-Director, Genetic Algorithms Research & Applications Group (GARAGe)

Dept. of Electrical and Computer Engineering, 2120 Engineering Building
Michigan State University, East Lansing, Michigan 48824 USA
goodman@egr.msu.edu www.egr.msu.edu/~goodman (517) 355-6453 FAX (517) 353-1980

Chair, ACM SIGEVO, Special Interest Group on Genetic and Evolutionary Computation

Vice President, Technology, Red Cedar Technology, Inc.
4572 S. Hagadorn Road, Suite 1-E, East Lansing, MI 48823
e.goodman@redcedartech.com www.redcedartech.com (517)664-1137 FAX (517)664-1175

EDUCATION

1972 Ph.D., Computer and Communication Sciences, University of Michigan, Ann Arbor
1968 M.S., Systems Science, Michigan State University
1966 B.S., High Honors, Mathematics, Michigan State University

EMPLOYMENT HISTORY

1972 – 1984 Asst. Prof., Assoc. Prof., Electrical and Computer Engineering, Michigan State University
1983 – 2002 Director, A. H. Case Center for Computer-Aided Engineering and Manufacturing
1984 – Professor, Electrical and Computer Engineering
1992 – Professor, Mechanical Engineering
1993 – 2003 Director, MSU Manufacturing Research Consortium
1993 – Co-Director, Genetic Algorithms Research and Applications Group ("GARAGe")

HONORS AND REPRESENTATIVE PROFESSIONAL ACTIVITIES

Michigan Distinguished Professor of the Year, 2009 (by Presidents Council, State Universities of Michigan); Honorary Maasai Elder, Losirwa Village, Monduli District, Tanzania, December, 2008; Senior Fellow, International Society for Genetic and Evolutionary Computation, 2004; Advisory Professor, East China Normal University (Shanghai, PRC); Advisory Professor, Tongji Univesity (Shanghai, PRC); Honorary Doctorate, Dnieprodzerzhinsk State Technical Univ. (Ukraine); Academician, National Academy of Engineering of Ukraine; Academician, Internat. Academy of Informatization (Moscow); MSU Alumni Distinguished Scholar, NSF Trainee, NASA Trainee, IBM Fellowship; Phi Kappa Phi, Sigma Xi, Omicron Delta Kappa, Pi Mu Epsilon, Phi Eta Sigma; Withrow Exceptional Service Award, 2004 (College of Engineering, MSU).

Exec. Comm., ACM Special Interest Group on Genetic and Evolutionary Computation (SIGEVO), 2005-2015, Founding Chair, 2005-2007; General Co-Chair, International Summit on Genetic and Evolutionary Computation (GEC Summit), Shanghai, June, 2009; Chair, Internat. Society for Genetic and Evolut. Computation, 2001-2004; Gen. Chair, Genetic and Evolut. Computation Conference, 2001; member, Exec. Board, Internat. Soc. for Genetic and Evolut. Computation, 2000 – 2005; Gen.Chair, Seventh Internat. Conf. on Genetic Algorithms (July, 1997); Exec. Ctee., Int'l Soc. for Genetic Algorithms, 1997-2000; Gen. Chair, First Internat. Conf. on Evolutionary Computation and its Applications (Moscow, June, 1996); edit. board member: *Evolutionary Computation, Int. J. of Applied Intelligence, Journal of Applied Soft Computing*; senior member, Soc. of Mfg. Engineers; member, Am. Inst. of Aeronautics and Astronautics -- CAD/CAM Technical Committee (Outstanding Contributions Award, 1990), chaired Research & New Directions Subcttee, 1987-88, chaired Conferences & Workshops Subcommittee, 1988-89; General Chair, 1987 International Computer Graphics Conference, co- sponsored by SAE and Engineering Society of Detroit; member, IEEE Computer Society; Society of Automotive Engineers (SAE); charter member, Society for Env'tal Toxicol. and Chem.; consultant to several companies.

FUNDED RESEARCH

Initiated/directed/co-directed funded research projects with present value (inflation-adjusted) over $7 million, excluding funding of consortia administered, from sources including National Science Foundation, U.S. Environmental Protection Agency, General Dynamics, General Motors, Chrysler, Ford, CIMLINC, Lenovo, and SDRC) in the areas of evolutionary design, evolutionary scheduling, CAD and graphics, computer-aided manufacturing, simulation, and modeling of biological and environmental systems. Directed additional consortial research of over $2 million, with additional spinoffs.

PUBLICATION SUMMARY:

Two books co-authored; 3 conference proceedings co-edited; journal special issue guest-edited; 16 chapters in books; over 140 papers in journals/proceedings, 5 s/w packages commercialized or widely distributed.

SELECTED RECENT PUBLICATIONS

J. Hu, R. Rosenberg and E. Goodman, "Domain Specificity of Genetic Programming Based Automated Synthesis: A Case Study with Synthesis of Mechanical Vibration Absorbers," chapter in T. Yu, R. Riolo, and B. Worzel (eds.), *Genetic Programming Theory and Practice III*, Springer, New York, November, 2005, pp. 275-290.

J. Hu and E. Goodman. "Evolving robust dynamic systems with genetic programming," *Genetic Programming Theory and Practice II*, R. Riolo and W. Worzel (eds.), Kluwer Academic Publishers, Boston, January, 2005, pp. 143-158.

J. Hu, E. Goodman, K. Seo, Z. Fan, and R. Rosenberg, "The Hierarchical Fair Competition (HFC) Framework for Sustainable Evolutionary Algorithms," *Evolutionary Computation*, *13*(2), 2005, pp. 241-277.

J. Wang, Z, Fan, J. Terpenny, E. Goodman, "Knowledge Interaction with Genetic Programming in Mechatronic Systems Design Using Bond Graphs," *IEEE Trans. Systems, Man and Cybernetics, Part C: Applications and Reviews, Special Issue on Knowledge Extraction and Incorporation in Evolutionary Computation*, *35*(2), 2005, pp. 172-182.

J. Hu, X. Zhong, E. Goodman, "Open-Ended Robust Design of Analog Filters Using Genetic Programming," *Proc. Genetic & Evolutionary Computation Conference-2005 (GECCO-2005)*, Volume 2, ACM Press, June, 2005, Washington, DC, pp. 1619-1626 [nominated for Best Paper Award].

Z. Fan, M. Andreasen, J. Wang, E. Goodman and Lars Hein," Towards an evolvable chromosome model for interactive computer design support," *Proc. Int. Conf. Engineering Design (ICED05)*, Melbourne, Australia, Aug. 15-18, 2005.

Z. Fan, J. Wang, and E. Goodman, "An Evolutionary Approach For Robust Layout Synthesis of MEMS," *Proc. IEEE/ASME Int. Conf. on Advanced Intelligent Mechatronics*, Monterey, CA, July 24-28, 2005, pp. 1186-1191.

E. Goodman, "Strategies for Design Optimization: Lessons from Automotive Systems," invited paper in *Proceedings, Evolutionary Computation in Practice Track, Genetic & Evolutionary Computation Conference-2005 (GECCO-2005)*, sponsored by ACM SIGEVO, June, 2005, Washington, DC, 39pp.

Jianjun Hu, Erik Goodman, Kisung Seo, and Ronald Rosenberg, "Toward Efficient Topological Synthesis of Dynamic Systems Using Bond Graphs and Genetic Programming," in Nedjah, Nadia (ed.), *Evolutionary Machine Design: Methodology and Application*, Nova Science Publishers, 2004.

Zhun Fan, Jiachuan Wang, and Erik Goodman, "Exploring Open-Ended Design Space of Mechatronic Systems," *Internat. J. of Advanced Robotic Systems*, 1(4), pp. 295-302, Dec., 2004.

Zhun Fan, Kisung Seo, Jianjun Hu, Erik Goodman, Ronald Rosenberg, "A Novel Evolutionary Engineering Design Approach for Mixed-Domain Systems," in *J. Engineering Optimization*, Volume 36, Number 2, 2004.

Jianjun Hu, Erik Goodman, and Ronald Rosenberg, "Robust and Efficient Genetic Algorithms with Hierarchical Niching and a Sustainable Evolutionary Computation Model," *Proc. 2004 Genetic and Evolutionary Computation Conference, Lecture Notes in Computer Science*, Springer, June, 2004, Seattle WA, Part I, pp. 1220-1232.