Martin Pelikan, Ph.D.

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Updated: August 2012

Current Position

Software Engineer at Google, Mountain View, CA

Research Interests

Evolutionary computation, stochastic optimization, machine learning, Bayesian networks, artificial intelligence, bioinformatics, metaheuristics, operations research.

Education

Sep 1999 - Oct 2002 Ph.D., Computer Science
Department of Computer Science, University of Illinois at Urbana-Champaign, IL.
Thesis title: *Bayesian Optimization Algorithm: From Single Level to Hierarchy.*
Thesis advisor: David E. Goldberg (Department of General Engineering, Univ. of Illinois).
Doctoral committee: David E. Goldberg (chair), Mehdi T. Harandi, Syvian Ray, Dan Roth.
Grade Point Average: 3.947/4.0

Sep 1993 - Jun 1998 Magister (M.S. equiv.), Computer Science
Institute of Informatics, Fac. of Mathematics and Physics, Comenius University, Bratislava, Slovakia.
Thesis title: *Marginal Distributions in Evolutionary Algorithms.*
Thesis advisor: Vladimír Kvasnička (Dept. of Mathematics, Slovak University of Technology, Bratislava).
Grade Point Average: 3.81/4.0

Experience

Aug 2012 - present: Software engineer
Google, Inc., Mountain View, CA.

Aug 2008 - Aug 2012: Associate professor (tenured)
Department of Mathematics and Computer Science, University of Missouri–St. Louis, MO.

Aug 2006 - Aug 2012: Founding director
Missouri Estimation of Distribution Algorithms Laboratory (MEDAL).

Aug 2003 - Jul 2008: Assistant professor (tenure track)
Department of Mathematics and Computer Science, University of Missouri–St. Louis, MO.

May 2005 - Jun 2005: Visiting researcher
Department of Cognitive Psychology, University of Würzburg, Germany.

Feb 2003 - July 2003: Postdoctoral fellow
Computational Laboratory (Colab), Swiss Federal Institute of Technology (ETH) Zürich, Switzerland.

Sep 2002 - Jan 2003: Civil service for Slovak Republic
Computing Center at the Slovak University of Technology, Bratislava, Slovakia.

Sep 1999 - Aug 2002: Graduate student laboratory director
Illinois Genetic Algorithms Laboratory, University of Illinois at Urbana-Champaign, IL.

Sep 1999 - Jul 2002: Research assistant
Illinois Genetic Algorithms Laboratory, University of Illinois at Urbana-Champaign, IL.

Sep 1999 - Dec 1999: Teaching assistant
Department of General Engineering, University of Illinois at Urbana-Champaign, IL.

Sep 1998 - May 1999: Research assistant
Illinois Genetic Algorithms Laboratory, University of Illinois at Urbana-Champaign, IL.

Dec 1997 - Aug 1998: Visiting researcher
Department of Mathematics, Slovak University of Technology, Bratislava, Slovakia.

Feb 1997 - Aug 1997: Visiting researcher
Adaptive Systems, German National Center for Information Technology, Sankt Augustin, Germany.

Grants, Awards, and Scholarships

Grants

- PI; National Science Foundation; NSF Grant No. IIS-1115352; $446,022; 2011-2014 (resigned from PI position in 2012 due to leaving academia).
- PI; National Science Foundation; NSF CAREER Grant No. ECS-0547013; $400,000; 2006–2012.
- PI; Research Award; University of Missouri–St. Louis; $12,490; 2009.
- Subcontractor; Air Force Office of Scientific Research, Air Force Materiel Command, USAF; Grant No. FA9550-06-1-0096; PIs: David E. Goldberg and Kumara Sastry; $54,000 (for Pelikan); 2006–2009.
- Visiting Researcher; Grant-in-Aid for Scientific Research on Priority Areas, Japanese Ministry of Education; Grant No. 16500143; Support for 2-week research visit; PI: Shigeyoshi Tsutsui; 2004–2007.
- PI; Research Award, University of Missouri–St. Louis; $7,636; 2004–2005.
- PI; Research Award, University of Missouri–St. Louis; $9,959 (approved but not funded); 2003–2004.
- PI; Research Board, University of Missouri; $30,565; 2003–2004.
- Co-PI; Slovak Grant Agency, Slovakia; VEGA Grant No. 1/7654/20; with others; $22,000; 1999–2001.
- Graduate Research Assistant and Core Researcher; Air Force Office of Scientific Research, Air Force Materiel Command, USAF; Grant No. F49620-00-1-0163; PI: David E. Goldberg; Support for 3 years (salary and tuition); 2000-2002.

Awards, Recognition

- Elected member; Executive Committee of ACM SIGEVO, the ACM Special Interest Group on Genetic and Evolutionary Computation; 2011-present.
- Membership in the National Academy of Inventors (NAI); NAI; 2012-present.
- ACM Recognition of Service Award; ACM; 2010.
- Best Paper Award; NK Landscapes, Problem Difficulty, and Hybrid Evolutionary Algorithms; Genetic algorithms track; ACM SIGEVO Genetic and Evolutionary Computation Conference; 2010.
- ACM SIGEVO GECCO Impact Award; BOA: The Bayesian Optimization Algorithm (with D. E. Goldberg and E. Cantú-Paz); ACM SIGEVO; 2009.
- Best Paper Award; From Mating Pool Distributions to Model Overfitting (with C. F. Lima and F. G. Lobo); Estimation of distribution algorithms track, ACM SIGEVO Genetic and Evolutionary Computation Conference; 2008.

Scholarships

- Scholarship; Katholischer Akademischer Ausländer Dienst (KAAD), Bonn, Germany; Living expenses for 6 months and travel; 1997.

Publications

Summary

- **5,036 citations** (8/2012, Google Scholar).
  Citation h-index = 33 (8/2012, Google Scholar).
  Citation i10-index = 75 (8/2012, Google Scholar).
- 3 books (1 monograph, 1 edited volume, 1 conference proceedings).
- 20 papers in refereed journals.
- 12 book chapters.
- 62 full papers in refereed international conferences, 7 refereed conference posters.
- Most publications can be downloaded at `http://martinpelikan.net/` or `http://medal-lab.org/`.

Books

BK-1 Beyer, H.-G., O'Reilly, U. M., Arnold, D. V., Banzhaf, W., Blum, C., Bonabeau, E. W., Cantu-Paz, E., Dasgupta, D., Deb, K., Foster, J. A., de Jong, E. D., Lipson, H., Llora, X., Mancoridis, S., Pelikan, M., Raidl, G. R., Soule, T., Tyrrell, A. M., Watson, J.-P., Zitzler, E., eds. (2005). *Proceedings of the ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2005)*, ACM Press.

BK-2 Pelikan, M. (2005). *Hierarchical Bayesian optimization algorithm: Toward a new generation of evolutionary algorithms*. Springer-Verlag.

BK-3 Pelikan, M., Sastry, K. & Cantú-Paz, E., eds. (2006). *Scalable optimization via probabilistic modeling: From algorithms to applications*. Springer-Verlag.

BK-4 Thierens, D., Beyer, H.-G., Birattari, M., Bongard, J., Branke, J., Clark, J. A., Cliff, D., Congdon, C. B., Deb, K., Doerr, B., Kovacs, T., Kumar, S., Miller, J. F., Moore, J., Neumann, F., Pelikan, M., Poli, R., Sastry, K., Stanley, K. O., Stuetzle, T., Watson, R. A., Wegener, I., eds. (2007). *Proceedings of the ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2007)*, ACM Press.

BK-5 Keijzer, M., Antoniol, G., Bates Congdon, C., Deb, K., Doerr, B., Hansen, N., Holmes, J.H., Hornby, G.S., Howard, D., Kennedy, J., Kumar, S., Lobo, F.G., Miller, J.F., Moore, J., Neumann, F., Pelikan, M., Pollack, J., Sastry, K., Stanley, K., Stoica, A., Talbi, E.-G., Wegender, I. (2008). *Proceedings of the ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2008)*, ACM Press.

Refereed Journal Papers

JP-1 Kvasnicka, V., Pelikan, M., & Pospichal, J. (1996). Hill climbing with learning (An abstraction of genetic algorithm). *Neural Network World*, *6*, 773–796.

JP-2 Pelikan, M., Goldberg, D. E., & Cantú-Paz, E. (2000b). Linkage problem, distribution estimation, and Bayesian networks. *Evolutionary Computation*, *8*(3), 311–341.

JP-3 Pelikan, M., Goldberg, D. E., & Lobo, F. (2002). A survey of optimization by building and using probabilistic models. *Computational Optimization and Applications*, *21*(1), 5–20.

JP-4 Pelikan, M., Sastry, K., & Goldberg, D. E. (2002). Scalability of the Bayesian optimization algorithm. *International Journal of Approximate Reasoning*, *31*(3), 221–258.

JP-5 Tsutsui, S., Pelikan, M., & Goldberg, D. E. (2002). Probabilistic model-building genetic algorithms using histogram models in continuous domain. *Journal of the Information Processing Society of Japan*, 43.

JP-6 Pelikan, M., & Goldberg, D. E. (2003). A hierarchy machine: Learning to optimize from nature and humans. *Complexity*, 8(5), 36–45.

JP-7 Pelikan, M., Goldberg, D. E., & Tsutsui, S. (2003). Getting the best of both worlds: Discrete and continuous genetic and evolutionary algorithms in concert. *Information Sciences*, 156(3–4), 147–171.

JP-8 Potthast, F., Ocenasek, J., Rutishauser, D., Pelikan, M., & Schlapbach, R. (2005). Database independent detection of isotopically labeled MS/MS spectrum peptide pairs. *Journal of Chromatography B*, 817(2), 225–230.

JP-9 Tsutsui, S., Pelikan, M., & Ghosh, A. (2006). Edge Histogram Based Sampling with Local Search for Solving Permutation Problems. *International Journal of Hybrid Intelligent Systems*, 3 (1), 11-22.

JP-10 Butz, M. V., Pelikan, M., Llorà, X., & Goldberg, D. E. (2006). Automated global structure extraction for effective local building block processing in XCS. *Evolutionary Computation*, *14* (3), 345–380.

JP-11 Pelikan, M., Sastry, K., Goldberg, D.E. (2008). Sporadic Model Building for Efficiency Enhancement of Hierarchical BOA. *Genetic Programming and Evolvable Machines*, *9* (1), 53–84.

JP-12 Hauschild, M., Pelikan, M., Lima, C.F., Sastry, K. (2009). Analyzing Probabilistic Models in Hierarchical BOA on Traps and Spin Glasses. *IEEE Transactions on Evolutionary Computation*, *13* (6), 1199–1217.

JP-13 Pelikan, M., Hura, G.L., Hammel, M. (2009). Structure and Flexibility within Proteins as Identified through Small Angle X-ray Scattering. *General Physiology and Biophysics*, *28* (2), 174–189.

JP-14 Yu, T.-L., Goldberg, D.E., Sastry, K., Lima, C.F., Pelikan, M. (2009). Dependency Structure Matrix, Genetic Algorithms, and Effective Recombination. *Evolutionary Computation*, *17* (4), 595–626.

JP-15 Bernstein, N.K., Hammel, M., Mani, R.S., Weinfeld, M., Pelikan, M., Tainer, J.A., and Glover, J.N.M. (2009). Mechanism of DNA substrate recognition by the mammalian DNA repair enzyme, Polynucleotide Kinase. *Nucleic Acids Research*, *37* (18), 6161-6173.

JP-16 Hammel, M., Yu, Y., Mahaney, B. L., Cai, B., Ye, R., Phipps, B. M., Rambo, R. P., Hura, G. L., Pelikan, M., So, S., Abolfath, R. M., Chen, D. J., Lees-Miller, S. P., and Tainer, J. A. (2010). Ku and DNA-dependent protein kinase (DNA-PK) dynamic conformations and assembly regulate DNA binding and the initial nonhomologous end joining complex. *The Journal of Biological Chemistry*, *285*, 1414–1423.

JP-17 Cséfalvayová, L, Pelikan, M, Kralj Cigić, I, Kolar, J, Strlič, M (2010). Use of genetic algorithms with multivariate regression for determination of gelatine in historic papers based on FT-IR and NIR spectral data. *Talanta*, *82* (5), 1784–1790.

JP-18 Pelikan, M., Hauschild, M. (2011). An introduction and survey of estimation of distribution algorithms. *Swarm and Evolutionary Computation*, *1* (3), 111–128.

JP-19 Lima, C.F., Lobo, F.G., Pelikan, M., Goldberg, D.E. (2011). Model accuracy in the Bayesian optimization algorithm. *Soft Computing*, *15* (7), 1351–1371.

JP-20 Hauschild, M., Pelikan, M., Sastry, K., Goldberg, D.E. (2012). Using previous models to bias structural learning in the hierarchical BOA. *Evolutionary Computation,20* (1), 135–160.

Book Chapters

BC-1 Ocenasek, J., Cantu-Paz, E., Pelikan, M., & Schwarz, J. (2006). Design of Parallel Estimation of Distribution Algorithms. In *Scalable Optimization via Probabilistic Modeling: From Algorithms to Applications*, Pelikan, Sastry, & Cantu-Paz (eds.), Springer.

BC-2 Pelikan, M., Sastry, K., & Cantu-Paz, E. (2006). Introduction. In *Scalable Optimization via Probabilistic Modeling: From Algorithms to Applications*, Pelikan, Sastry, & Cantu-Paz (eds.), Springer.

BC-3 Pelikan, M., & Goldberg, D.E. (2006). Hierarchical Bayesian Optimization Algorithm. In *Scalable Optimization via Probabilistic Modeling: From Algorithms to Applications*, Pelikan, Sastry, & Cantu-Paz (eds.), Springer.

BC-4 Pelikan, M., Sastry, K., & Goldberg, D.E. (2006). Multiobjective Estimation of Distribution Algorithms. In *Scalable Optimization via Probabilistic Modeling: From Algorithms to Applications*, Pelikan, M., Sastry, K., & Cantu-Paz, E. (eds.), Springer.

BC-5 Pelikan, M., & Hartmann, A. (2006). Searching for Ground States of Ising Spin Glasses with Hierarchical BOA and Cluster Exact Approximation. In *Scalable Optimization via Probabilistic Modeling: From Algorithms to Applications*, Pelikan, Sastry, & Cantu-Paz (eds.), Springer.

BC-6 Sastry, K., Pelikan, M., & Goldberg, D. E. (2006). Efficiency Enhancement of Estimation of Distribution Algorithms. In *Scalable Optimization via Probabilistic Modeling: From Algorithms to Applications*, Pelikan, Sastry, & Cantu-Paz (eds.), Springer.

BC-7 Butz, M., Pelikan, M., Llora, X., & Goldberg, D.E. (2006). Effective and Reliable Online Classification Combining XCS with EDA Mechanisms. In Scalable Optimization via Probabilistic Modeling: From Algorithms to Applications, Pelikan, Sastry, & Cantu-Paz (eds.), 249-274, Springer.

BC-8 Pelikan, M., Hartmann, A.K., & Lin, T.-K. (2007). Parameter-less Hierarchical Bayesian Optimization Algorithm. In *Parameter Setting in Evolutionary Algorithms*, Lobo, Lima, & Michalewicz (eds.), Springer.

BC-9 Lima, C.F., Pelikan, M., Goldberg, D.E., Lobo, F.G., Sastry, K., and Hauschild, M. (2008). Linkage Learning Accuracy in the Bayesian Optimization Algorithm. In *Linkage in Evolutionary Computation*, Y.-P. Chen et al. (Eds.), 87-107, Springer.

BC-10 Pelikan, M. (2010). Evolucne algoritmy. In *Umela Inteligencia a Kognitivna Veda I*, V. Kvasnicka et al. (Eds.), 335-353, Slovak Technical University Press. In Slovak.

BC-11 Pelikan, M. (2011). Genetic algorithms. In *Wiley Encyclopedia of Operations Research and Management Science*, James J. Cochran (Ed.), Wiley.

BC-12 Pelikan, M., Hauschild, M.W., Lobo, F.G. (In press). Introduction to estimation of distribution algorithms. In *Handbook of Computational Intelligence*, Springer.

Full Papers in Refereed Conference Proceedings

CP-1 Kvasnicka, V., Pospichal, J., & Pelikan, M. (1996a). Read's linear codes and evolutionary computation over population of rooted trees. In *Intelligent Technologies '96*, Volume II (pp. 141–154). Slovakia.

CP-2 Kvasnicka, V., Pospichal, J., & Pelikan, M. (1996b). Stochastic simulation of multiagent models. In *Intelligent Technologies '96*, Volume II (pp. 165–184). Slovakia.

CP-3 Pelikan, M., & Mühlenbein, H. (1998). Marginal distributions in evolutionary algorithms. *Proceedings of the International Conference on Genetic Algorithms Mendel '98*, 90–95.

CP-4 Pelikan, M. (1999). Preserving the linkage by the BOA. Proceedings of the International Conference on Genetic Algorithms (Mendel 99).

CP-5 Pelikan, M., Goldberg, D. E., & Cantú-Paz, E. (1999). BOA: The Bayesian optimization algorithm. *Genetic and Evolutionary Computation Conference (GECCO-99)*, *I*, 525–532.

CP-6 Pelikan, M., & Mühlenbein, H. (1999). The bivariate marginal distribution algorithm. *Advances in Soft Computing - Engineering Design and Manufacturing*, 521–535.

CP-7 Lobo, F. G., Goldberg, D. E., & Pelikan, M. (2000). Time complexity of genetic algorithms on exponentially scaled problems. *Genetic and Evolutionary Computation Conference (GECCO-2000)*, 151–158.

CP-8 Pelikan, M., & Goldberg, D. E. (2000a). Genetic algorithms, clustering, and the breaking of symmetry. *Parallel Problem Solving from Nature*, 385–394.

CP-9 Pelikan, M., & Goldberg, D. E. (2000b). Hierarchical problem solving and the Bayesian optimization algorithm. *Genetic and Evolutionary Computation Conference (GECCO-2000)*, 275–282.

CP-10 Pelikan, M., Goldberg, D. E., & Cantú-Paz, E. (2000a). Bayesian optimization algorithm, population sizing, and time to convergence. *Genetic and Evolutionary Computation Conference (GECCO-2000)*, 275–282.

CP-11 Pelikan, M., Goldberg, D.E., & Lobo, F. (2000). A survey to optimization by building and using probabilistic models. *Proceedings of the American Control Conference 2000 (ACC-2000)*, 3289–3293.

CP-12 Butz, M. V., & Pelikan, M. (2001). Analyzing the evolutionary pressures in XCS. *Genetic and Evolutionary Computation Conference (GECCO-2001)*, 935–942.

CP-13 Pelikan, M., & Goldberg, D. E. (2001). Escaping hierarchical traps with competent genetic algorithms. *Genetic and Evolutionary Computation Conference (GECCO-2001)*, 511–518.

CP-14 Pelikan, M., Goldberg, D. E., & Sastry, K. (2001). Bayesian optimization algorithm, decision graphs, and Occam's razor. *Genetic and Evolutionary Computation Conference (GECCO-2001)*, 519–526.

CP-15 Sastry, K., Goldberg, D. E., & Pelikan, M. (2001). Don't evaluate, inherit. *Genetic and Evolutionary Computation Conference (GECCO-2001)*, 551–558.

CP-16 Tsutsui, S., Pelikan, M. & Goldberg, D. E. (2001). Evolutionary algorithm using marginal histogram models in continuous domain. *Knowledge-Based Intelligent Information Engineering Systems & Allied Thechnologies (KES-2001)*, 112–121.

CP-17 Pelikan, M., Goldberg, D. E., & Tsutsui, S. (2002). Combining the strengths of the Bayesian optimization algorithm and adaptive evolution strategies. *Genetic and Evolutionary Computation Conference (GECCO-2002)*, 512–519.

CP-18 Ocenasek, J., Schwarz, J., & Pelikan, M. (2003). Design of multithreaded estimation of distribution algorithms. *Genetic and Evolutionary Computation Conference (GECCO-2003)*, 1247–1258.

CP-19 Pelikan, M., & Goldberg, D. E. (2003). Hierarchical BOA solves Ising spin glasses and MAXSAT. *Genetic and Evolutionary Computation Conference (GECCO-2003)*, 1271–1282.

CP-20 Pelikan, M. & Lin, T.-K. (2004). Parameter-less hierarchical BOA. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2004)*, 24–35.

CP-21 Pelikan, M., Ocenasek, J., Trebst, S., Troyer, M., & Alet, F. (2004). Computational complexity and simulation of rare events of Ising spin glasses. *Genetic and Evolutionary Computation Conference (GECCO-2004)*, 36–47.

CP-22 Pelikan, M. & Sastry, K. (2004). Fitness inheritance in the Bayesian optimization algorithm. *Genetic and Evolutionary Computation Conference (GECCO-2004)*, 48–59.

CP-23 Sastry, K., Pelikan, M., & Goldberg, D. E. (2004). Efficiency enhancement of genetic algorithms via building-block-wise fitness estimation. *Proceedings of the IEEE International Conference on Evolutionary Computation (CEC-2004),* 720–727.

CP-24 Butz, M. V., Pelikan, M., Llorà, X., Goldberg, D.E. (2005). Extracted global structure makes local building block processing effective in XCS *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2005)*, ACM Press, 655–662.

CP-25 Ondas, R., Pelikan, M., Sastry, K. (2005). Genetic Programming, Probabilistic Incremental Program Evolution, and Scalability. *WSC10: 10th Online World Conference on Soft Computing in Industrial Applications*, 363–372.

CP-26 Pelikan, M., Sastry, K. & Goldberg, D. E. (2005). Multiobjective hBOA, clustering, and scalability. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2005)*, ACM Press, 663–670.

CP-27 Sastry, K., Pelikan, M., & Goldberg, D. E. (2004). Limits of scalability of multiobjective estimation of distribution algorithms. *Proceedings of the IEEE International Conference on Evolutionary Computation (CEC-2005),* 2217–2224.

CP-28 Tsutsui, S., Pelikan, M., & Ghosh, A. (2005). Performance of aggregation pheromone system on unimodal and multimodal problems. *IEEE Congress on Evolutionary Computation (CEC-2005)*, 880–887.

CP-29 Tsutsui, S., Pelikan, M., & Ghosh, A. (2005). Effect of local search on edge histogram based sampling algorithms for permutation problems. *Proceedings of the Sixth Metaheuristics International Conference (MIC 2005)*, 865–872.

CP-30 Butz, M. V., & Pelikan, M. (2006). Studying XCS/BOA learning in Boolean functions: Structure encoding and random boolean functions. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2006)*, ACM Press, 1449–1456.

CP-31 Lima, C. F., Pelikan, M., Sastry, K., Butz, M. V. & Goldberg, D. E. (2006). Substructural neighborhoods for local search in the Bayesian optimization algorithm. *Parallel Problem Solving from Nature (PPSN IX)*, 232–241.

CP-32 Pelikan, M., Hartmann, A., & Sastry, K. (2006). Hierarchical BOA, cluster exact approximation, and Ising spin glasses. *Parallel Problem Solving from Nature (PPSN IX)*, 122–131.

CP-33 Pelikan, M., Sastry, K., & Butz, M. (2006). Performance of evolutionary algorithms on random decomposable problems. *Parallel Problem Solving from Nature (PPSN IX)*, 788–797.

CP-34 Pelikan, M., Sastry, K. & Goldberg, D. E. (2006). Sporadic model building for efficiency enhancement of hierarchical BOA. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2006)*, ACM Press, 405–412.

CP-35 Hauschild, M., Pelikan, M., Lima, C. F., & Sastry, K. (2007). Analyzing Probabilistic Models in Hierarchical BOA on Traps and Spin Glasses. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2007)*, ACM Press, 523–530.

CP-36 Pelikan, M., Kalapala, R., & Hartmann, A. K. (2007). Hybrid Evolutionary Algorithms on Minimum Vertex Cover for Random Graphs. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2007)*, ACM Press, 547–554.

CP-37 Pelikan, M., & Laury, Jr., J. D. (2007). Order or Not: Does Parallelization of Model Building in hBOA Affect Its Scalability? *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2007)*, ACM Press, 555–561.

CP-38 Sastry, K., Pelikan, M. & Goldberg, D. E. (2007). Empirical Analysis of Ideal Recombination on Random Decomposable Problems. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2007)*, ACM Press, 1388–1395.

CP-39 Yu, T.-L., Sastry, K., Goldberg, D. E., & Pelikan, M. (2007). Population sizing for entropy-based model building in genetic algorithms. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2007)*, ACM Press, 601–608.

CP-40 Lima, C.F., Pelikan, M., Goldberg, D.E., Lobo, F., Sastry, K., & Hauschild, M. (2007). Influence of Selection and Replacement Strategies on Linkage Learning in BOA. *IEEE International Conference on Evolutionary Computation (CEC-2007)*, 1083-1090.

CP-41 Pelikan, M. (2008). Analysis of Estimation of Distribution Algorithms and Genetic Algorithms on NK Landscapes. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2008)*, ACM Press, 1033–1040.

CP-42 Pelikan, M., Sastry, K., Goldberg, D.E. (2008). iBOA: The Incremental Bayesian Optimization Algorithm. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2008)*, ACM Press, 455–462.

CP-43 Hauschild, M., Pelikan, M., Sastry, K., Goldberg, D.E. (2008). Using Previous Models to Bias Structural Learning in the Hierarchical BOA. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2008)*, ACM Press, 415–422.

CP-44 Pelikan, M., Katzgraber, H., Kobe, S. (2008). Finding Ground States of Sherrington-Kirkpatrick Spin Glasses with Hierarchical BOA and Genetic Algorithms. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2008)*, ACM Press, 447–454.

CP-45 Lima, C., Lobo, F., Pelikan, M. (2008). From Mating Pool Distributions to Model Overfitting. *ACM SIGEVO Genetic and Evolutionary Computation Conf. (GECCO-2008)*, ACM Press, 431–438.

CP-46 Hauschild, M., Pelikan, M. (2008). Enhancing Efficiency of Hierarchical BOA via Distance-Based Model Restrictions. *Parallel Problem Solving from Nature (PPSN X)*, 417–427.

CP-47 Hauschild, M., Pelikan, M. (2009). Intelligent Bias of Network Structures in the Hierarchical BOA. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2009)*, ACM Press, 413–420.

CP-48 Pelikan, M., Katzgraber, H. (2009). Analysis of Evolutionary Algorithms on the One-Dimensional Spin Glass with Power-Law Interactions. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2009)*, ACM Press, 843–850.

CP-49 Radetic, E., Pelikan, M., Goldberg, D.E. (2009). Effects of a Deterministic Hill climber on hBOA. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2009)*, ACM Press, 437–444.

CP-50 Pelikan, M., Sastry, K., Goldberg, D.E., Butz, M.V., Hauschild, M. (2009). Performance of Evolutionary Algorithms on NK Landscapes with Nearest Neighbor Interactions and Tunable Overlap. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2009)*, ACM Press, 851–858.

CP-51 Pelikan, M., Sastry, K. (2009). Initial-Population Bias in the Univariate Estimation of Distribution Algorithm. Effects of a Deterministic Hill climber on hBOA. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2009)*, ACM Press, 429–436.

CP-52 Pelikan, M. NK Landscapes, Problem Difficulty, and Hybrid Evolutionary Algorithms. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2010)*, ACM Press, 665–672.

CP-53 Radetic., E., Pelikan, M. Spurious Dependencies and EDA Scalability. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2010)*, ACM Press, 303–310.

CP-54 Hauschild, M., Pelikan, M. Network crossover performance on NK landscapes and deceptive problems. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2010)*, ACM Press, 665–672.

CP-55 Hauschild, M., Pelikan, M. (2010). Performance of Network Crossover on NK Landscapes and Spin Glasses. *Parallel Problem Solving from Nature (PPSN XI)*, 462–471.

CP-56 Pelikan, M. (2011). Analysis of Epistasis Correlation on NK Landscapes with Nearest-Neighbor Interactions. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2011)*, ACM Press, 1013–1020.

CP-57 Hauschild, M., Pelikan, M. (2011). Advanced Neighborhoods and Problem Difficulty Measures. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2011)*, ACM Press, 625–632.

CP-58 Pelikan, M., Hauschild, M., Thierens, D. (2011). Pairwise and Problem-Specic Distance Metrics in the Linkage Tree Genetic Algorithm. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2011)*, ACM Press, 1005–1012.

CP-59 Pelikan, M., Hauschild, M. W. (2012). Distance-based bias in model-directed optimization of additively decomposable problems. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2012)*, ACM Press, 273–280.

CP-60 Hauschild, M. W., Bhatia, S., Pelikan, M. (2012). Image Segmentation using a Genetic Algorithm and Hierarchical Local Search. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2012)*, ACM Press, 633–639.

CP-61 Brownlee, A., McCall, J., Pelikan, M. (2012). Influence of Selection on Structure Learning in Markov Network EDAs: An Empirical Study. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2012)*, ACM Press, 249–256.

CP-62 Pelikan, M., Hauschild, M.W., Lanzi, P.L. (2012, in press). Transfer Learning, Soft Distance-Based Bias, and the Hierarchical BOA. *Parallel Problem Solving from Nature (PPSN-2012)*, ACM Press, 249–256.

Refereed Conference Posters

P-1 Pelikan, M., Kvasnicka, V., & Pospichal, J. (1997). Read's linear codes and genetic programming. *Proceedings of the Genetic Programming Conference (GP-97)*, 268.

P-2 Pelikan, M., Goldberg, D. E., & Cantú-Paz, E. (2000c). Parameter-less genetic algorithm: A worst-case time and space complexity analysis. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2000)*, 370.

P-3 Ondas, R., Pelikan, M., Sastry, K. (2005). Scalability of Genetic Programming and Probabilistic Incremental Program Evolution. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2005)*, 1785–1786.

P-4 Pelikan, M., Hartmann, A. K. (2007). Obtaining Ground States of Ising Spin Glasses via Optimizing Bonds Instead of Spins. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2007)*, 628.

P-5 Pelikan, M., Tsutsui, S., & R. Kalapala, R. (2007). Dependency Trees, Permutations, and Quadratic Assignment Problem. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2007)*, 629.

P-6 Brownlee, S., Pelikan, M., McCall, J., Petrovski, A. (2008). An Application of a Multivariate Estimation of Distribution Algorithm to Cancer Chemotherapy. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2008)*, 464.

P-7 Helmi, H., (2012, in press). Linkage Learning Using the Maximum Spanning Tree of the Dependency Graph. *ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO-2012)*, ACM Press, 1429–1430.

Source Code

SW-1 Pelikan, M. (1999). *Bayesian Optimization Algorithm (BOA) in C/C++.*
`http://www.cs.umsl.edu/~pelikan/software/sBOA.tar.Z`

SW-2 Pelikan, M. (2000). *Bayesian Optimization Algorithm (BOA) with Decision Graphs in C/C++.*
`ftp://www-illigal.ge.uiuc.edu/pub/src/decisionGraphBOA/C++/dBOA1-1.tar.Z`

SW-3 Pelikan, M., & Goldberg, D. E. (2002). *Hierarchical BOA (hBOA) in C/C++.*
`http://www-hboa.ge.uiuc.edu/`

SW-4 Pelikan, M., Sastry, K., Butz, M. V., & Goldberg, D. E. (2006). *Generator of Random Additively Decomposable Problems in C.*
`http://medal.cs.umsl.edu/files/decomposable-problems.tar.gz`

SW-5 Pelikan, M. (2006). *Dependency-Tree Estimation of Distribution Algorithm (dtEDA) in C/C++.*
`http://medal.cs.umsl.edu/files/dt-eda.tar.gz`

SW-6 Pelikan, M. (2008). *NK Landscapes: Generator of random instances, branch-and-bound solver, and genetic algorithm.*
`http://medal.cs.umsl.edu/files/nk-landscapes.tar.gz`

Patents

- *Method for optimizing a solution set.*
  Inventors: Pelikan, M., Goldberg, D. E.
  Status: U.S. Patent 7047169 (issued on May/16, 2006).

- *Method for efficiency enhancement of competent genetic and evolutionary algorithms using probabilistic endogenous fitness-estimation models.*
  Inventors: Sastry, K., Pelikan, M., Goldberg, D. E.
  Status: Pending.

Professional Service

Journal Editorial Boards

- Member, Editorial Board; Journal of Global Optimization, Springer; 2006–present.
- Member, Editorial Board; Newsletter of ACM SIGEVO, ACM Special Interest Group on Genetic and Evolutionary Computation; 2006–present.
- Member, Editorial Board; Advances in Artificial Intelligence Journal, Hindawi Publishing Corp.; 2007–present.
- Member, Editorial Board; Swarm and Evolutionary Computation, Elsevier; 2010–present.
- Member, Editorial Board; Neural Computing and Applications, Springer; 2012–present.

Organization of Conferences and Workshops

- Chair; Estimation of Distribution Algorithms Track, ACM SIGEVO Genetic and Evolutionary Computation Conference 2012 (GECCO-2012), Philadelphia (PA); 2012.
- Member, Program Committee; Evolutionary Multi-Criterion Optimization; 2011.
- General Chair; ACM SIGEVO Genetic and Evolutionary Computation Conference 2010 (GECCO-2010), Portland (OR); 2010.
- Publicity Chair; ACM SIGEVO Genetic and Evolutionary Computation Conference 2009 (GECCO-2009), Montreal (Canada); 2009.
- Chair; Genetic Algorithms Track, ACM SIGEVO Genetic and Evolutionary Computation Conference 2008 (GECCO-2008), Atlanta (GA); 2008.
- Chair; Estimation of Distribution Algorithms Track, ACM SIGEVO Genetic and Evolutionary Computation Conference 2007 (GECCO-2007), London (England); 2007.
- Chair; Estimation of Distribution Algorithms Track, ACM SIGEVO Genetic and Evolutionary Computation Conference 2005 (GECCO-2005), Washington, D.C.; 2005.
- Organizer; Workshop on Optimization by Building and Using Probabilistic Models (OBUPM), Las Vegas (NE), San Francisco (CA), Seattle (WA), Washington, D.C., Seattle (WA), London (UK), Atlanta (GA), Portland (OR); 2000, 2001, 2004, 2005, 2006, 2007, 2008, 2010.
- Chair and Organizer; Special Session on Genetic Algorithms, INFORMS Annual Meeting, Denver, CO; October 24–27, 2004.
- Member, Program Committee; ACM SIGEVO Genetic and Evolutionary Computation Conference (GECCO); 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012.
- Member, Program Committee; IEEE Congress on Evolutionary Computation (CEC); 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011.
- Member, Program Committee; Parallel Problem Solving from Nature (PPSN); 2000, 2002, 2004, 2006, 2008, 2010, 2012.
- Member, Program Committee; Annual ACM Symposium on Applied Computing (SAC); 2005, 2006, 2007.
- Member, Program Committee; Workshop on Parameter Setting in Genetic and Evolutionary Algorithms (PSGEA 2005); 2005.

- Member, Program Committee; International Symposium on Adaptive Systems (ISAS-2001) at the CIMAF-2001; 2001.
- Member, Program Committee; International Symposium on Computational Intelligence 2000 (ISCI 2000); 2000.

Reviewer (selected journals)

- Artificial Intelligence Journal (AIJ), Elsevier.
- Complex Systems, Complex Systems Publications, Inc.
- Computational Optimization and Applications, Springer.
- Evolutionary Computation, MIT Press.
- European Journal of Operational Research, Elsevier.
- Genetic Programming and Evolvable Machines, Springer.
- IEEE Transactions on Evolutionary Computation, IEEE Press.
- IEEE Transactions on Systems, Man and Cybernetics, IEEE Press.
- Information and Computation Journal, Elsevier.
- Journal of Computing and Informatics.
- Journal of Heuristics, Springer.
- Journal of Mathematical Modeling and Algorithms (JMMA), Springer.
- Journal of Parallel and Distributed Computing, Elsevier.
- Journal of Scheduling, Springer.
- Machine Learning Journal, Springer.
- Theoretical Computer Science Journal, Elsevier.

Invited Talks and Tutorials

Tutorials

- *Probabilistic Model-Building Genetic Algorithms*. ACM SIGEVO Genetic and Evolutionary Computation Conference 2010 (GECCO-2010), Portland (OR), July 12, 2011.
- *Probabilistic Model-Building Genetic Algorithms*. ACM SIGEVO Genetic and Evolutionary Computation Conference 2010 (GECCO-2010), Portland (OR), July 7, 2010.
- *Probabilistic Model-Building Genetic Algorithms*. ACM SIGEVO Genetic and Evolutionary Computation Conference 2009 (GECCO-2009), Atlanta (GA), July 9, 2009.

  Probabilistic Model-Building Genetic Algorithms. ACM SIGEVO Genetic and Evolutionary Computation Conference 2008 (GECCO-2008), Atlanta (GA), July 13, 2008.
- *Probabilistic Model-Building Genetic Algorithms*. ACM SIGEVO Genetic and Evolutionary Computation Conference 2007 (GECCO-2007), London (England), July 7, 2007.
- *Probabilistic Model-Building Genetic Algorithms*. ACM SIGEVO Genetic and Evolutionary Computation Conference 2006 (GECCO-2006), Seattle (WA), July 8, 2006.
- *Probabilistic Model-Building Genetic Algorithms*. ACM SIGEVO Genetic and Evolutionary Computation Conference 2005 (GECCO-2005), Washington, D.C., June 25, 2005.

- *Probabilistic Model-Building Genetic Algorithms.* Genetic and Evolutionary Computation Conference 2004 (GECCO-2004), Seattle (WA), June 27, 2004.
- *Genetic algorithms.* Institute of Computational Sciences (ICOS), Swiss Federal Institute of Technology (ETH), Zurich, Switzerland, June 27, 2003.
- *Probabilistic Model-Building Genetic Algorithms.* Genetic and Evolutionary Computation Conference 2002 (GECCO-2002), New York (NY), July 10, 2002.

Plenary Speeches

- *Hierarchical Bayesian Optimization Algorithm.* WSEAS International Conference on Evolutionary Computing 2005, Lisbon (Portugal), June 16, 2005.
- *Hierarchical Bayesian Optimization Algorithm: Toward a New Generation of Evolutionary Algorithms.* Artificial Neural Networks in Engineering 2003 (ANNIE 2003), St. Louis (MO), November 5, 2003.

Invited Talks

- *Hierarchical Bayesian Optimization Algorithm.* University of Mannheim, Mannheim (Germany), June 3, 2005.
- *Hierarchical Bayesian Optimization Algorithm.* University of Southern California (USC), Los Angeles (CA), October 31, 2003.
- *Hierarchical Bayesian Optimization Algorithm.* Information Sciences Institute (ISI), Marina Del Rey (CA), October 30, 2003.
- *Hierarchical Bayesian Optimization Algorithm: Toward a New Generation of Evolutionary Algorithms.* The Society of Instrument and Control Engineers (SICE) Annual Conference 2003, Fukui, Japan, August 6, 2003.
- *Hierarchical Bayesian Optimization Algorithm: Toward a New Generation of Evolutionary Algorithms.* Department of Computational Intelligence and Systems Science, Tokyo Institute of Technology, Tokyo, Japan, July 28, 2003.
- *Hierarchical Bayesian Optimization Algorithm: Toward a New Generation of Evolutionary Algorithms.* Human Information Sciences Laboratories, Advanced Telecommunications Research Institute (ATR), Nara, Japan, July 31, 2003.
- *A Survey to Optimization by Building and Using Probabilistic Models.* American Control Conference 2000 (ACC-2000), Chicago (IL), June 30, 2000.
- *Research on the Bayesian Optimization Algorithm or How the BOA Saved the Building Blocks.* Theory of Evolutionary Algorithms, Schloss Dagstuhl (Germany), February 17, 2000.

Selected Research Contributions

- Design of estimation of distribution algorithms
  - Bayesian optimization algorithm (BOA).
  - Bayesian optimization algorithm with decision graphs (dBOA).
  - Hierarchical Bayesian optimization algorithm (hBOA).
  - Multiobjective estimation of distribution algorithms (mohBOA and mECGA).
  - Histogram-based estimation of distribution algorithms for real-valued and permutation domains.
- Efficiency enhancement techniques for evolutionary algorithms
  - Internal fitness modeling using probabilistic fitness models.
  - Parallelization of BOA and hBOA.
  - Hybridization.

  - Sporadic model building.
- Theoretical models of evolutionary algorithms
  - Scalability theory for multivariate estimation of distribution algorithms.
  - Dimensional theoretical models for various efficiency enhancement techniques.
- Design of test problems
  - Hierarchical trap functions.
  - Random additively decomposable problems.
  - Random Boolean problems for learning classifier systems.
- Bioinformatics
  - Structural analysis of large flexible proteins.
  - Detection of isotopically labeled MS/MS spectrum peptide pairs.
- Learning Classifier Systems
  - Design of robust learning classifier systems by incorporating graphical models into XCS.
  - Applications of XCS to random Boolean classification problems.
- Other applications of evolutionary algorithms
  - 2D and 3D Ising spin glasses with periodic boundary conditions.
  - Prediction of chemical properties from near-infrared spectra.
  - MAXSAT.
  - Minimum vertex cover.
  - Scheduling.
  - Traveling salesman problem.
  - Random additively decomposable problems.
  - Quadratic assignment problem.

Current Research

- Efficiency enhancement for model-directed optimizers and other stochastic optimization techniques
  - Parallelization, hybridization, time continuation, fitness evaluation relaxation, prior knowledge utilization, incremental & sporadic model building, learning from experience.
- Model-directed hybridization and use of prior knowledge in stochastic optimization
  - Use of models built by model-directed optimization techniques for design of efficient hybrids of model-directed metaheuristics and more traditional optimization techniques, use of prior knowledge and inductive transfer in model-directed optimization, automated knowledge extraction from model-directed optimization techniques for design of problem-specific search operators.
- Analysis of problem difficulty and performance of stochastic optimization algorithms
  - Problem difficulty measures, relationship of problem features and algorithm performance, use of problem-difficulty measures for choosing effective operators and parameters for a particular optimization algorithm.
- Applications of BOA, hBOA, EDAs, and other metaheuristics
  - Bioinformatics, computational physics, computational chemistry, operations research.

Selected Research Collaborators

- Fabien Alet, Service de Physique Théorique in Saclay, France.
- Sandy Brownlee, School of Computing, Robert Gordon University, UK.
- Martin V. Butz, Dept. of Cognitive Psychology, University of Würzburg, Germany.
- Erick Cantú-Paz, Yahoo!, Inc., CA.

- Linda Csefalvayova, University College London, United Kingdom.
- Ashish Ghosh, Indian Statistical Institute in Calcutta, India.
- David E. Goldberg, Dept. of Industrial and Enterprise Systems Engineering, University of Illinois at Urbana-Champaign, IL.
- Michal Hammel, Lawrence Berkeley National Laboratory, Berkeley, CA.
- Alexander K. Hartmann, Institute of Theoretical Physics, University of Goettingen, Germany.
- Mark Hauschild, Dept. of Mathematics and Computer Science, University of Missouri–St. Louis, MO.
- Rajiv Kalapala, Dept. of Mathematics and Computer Science, University of Missouri–St. Louis, MO.
- Helmut G. Katzgraber, Institute of Theoretical Physics, Swiss Federal Institute of Technology (ETH) Zurich, Switzerland; University of Austin, TX.
- Vladimir Kvasnicka, Institute of Applied Informatics, Slovak Technical University, Slovakia.
- James Laury, Jr., Dept. of Mathematics and Computer Science, University of Missouri–St. Louis, MO.
- Tz-Kai Lin, Dept. of Mathematics and Computer Science, University of Missouri–St. Louis, MO.
- Claudio F. Lima, Dept. of Electrical Engineering and Informatics, University of Algarve, Portugal.
- Xavier Llorà, National Center for Supercomputing Applications (NCSA), IL.
- Fernando G. Lobo, Dept. of Electrical Engineering and Informatics, University of Algarve, Portugal.
- John McCall, School of Computing, Robert Gordon University, UK.
- Heinz Mühlenbein, German National Center for Information Technology (GMD), Germany.
- Jiri Ocenasek, Kimotion, Inc., Belgium.
- Radovan Ondas, Dept. of Mathematics and Computer Science, University of Missouri–St. Louis, MO.
- Jiri Pospichal, Institute of Applied Informatics, Slovak Technical University, Slovakia.
- Frank Potthast, Functional Genomics Center in Zurich, Switzerland.
- Patrick Reed, Dept. of Civil and Environmental Engineering, Pennsylvania State University, PA.
- Dorothea Rutishauser, Functional Genomics Center in Zurich, Switzerland.
- Kumara Sastry, Intel, Portland, OR.
- Ralph Schlapbach, Functional Genomics Center in Zurich, Switzerland.
- Josef Schwarz, University of Technology Brno, Czech Republic.
- Matija Strlic, University College London, United Kingdom.
- Simon Trebst, Microsoft Research/Station Q, University of California, CA.
- Matthias Troyer, Institute of Theoretical Physics, Swiss Federal Institute of Technology (ETH) Zurich, Switzerland.
- Shigeyoshi Tsutsui, Dept. of Management and Information Science, Hannan University, Japan.
- Tian-Li Yu, Dept. of Electrical Engineering, National Taiwan University, Taiwan.

Courses Taught

- CS1250: Introduction to computing (1 semester).
- CS2250: Data structures and problem solving (2 semesters).
- CS3130: Design and analysis of algorithms (11 semesters).
- CS4300: Introduction to artificial intelligence (6 semesters).
- CS4140: Theory of computation (1 semester).
- CS4880: Independent studies (2 students).
- CS5130: Advanced design and analysis of algorithms (4 semesters).
- CS5320: Introduction to evolutionary computation (3 semesters).
- CS5880: Computer science independent project (14 students).
- CS6320: Advances in evolutionary computation (2 semesters).

Committee Membership

- Member, Graduate Council; University of Missouri–St. Louis; 2009–present.
- Member, Undergraduate Computer Science Curriculum Revision Subcommittee; University of Missouri–St. Louis; 2009–present
- Member, Graduate Committee; Dept. of Mathematics and Computer Science; 2009–present.
- Graduate Student Advisor; Dept. of Mathematics and Computer Science; 2009–present.
- Chair, Computing Committee; Dept. of Mathematics and Computer Science; 2009–2011.
- Member, Research Council; College of Arts and Sciences, University of Missouri–St. Louis; 2009–2010.
- Member, Computing Committee; Dept. of Mathematics and Computer Science; 2008–2009.
- Member, Library Committee; Dept. of Mathematics and Computer Science; 2008–2009.
- Undergraduate Student Advisor; Dept. of Mathematics and Computer Science; 2005–2009.
- Member, Andalafte, Spencer, and Scholarship Committee; Dept. of Mathematics and Computer Science; 2005–2006.
- Chair, Department Chair Election Committee; Dept. of Mathematics and Computer Science; 2005.
- Member, Colloquium Committee; Dept. of Mathematics and Computer Science; 2006–2007.