

# **Thomas M. English, Ph.D.**

**Bounded Theoretics  
Oklahoma City, Oklahoma USA**

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## **Education**

### **Doctor of Philosophy in Computer Science**

Mississippi State University, 1990

### **Master of Science in Computer Science**

Mississippi State University, 1988

### **Master of Arts in English**

Mississippi College, 1984

### **Bachelor of Arts in Psychology (with High Honors)**

Mississippi College, 1978

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## **Areas of Interest**

### **Teaching**

Machine intelligence, programming, data structures, algorithm analysis, discrete mathematics, theory of computation

### **Research**

Machine intelligence, evolutionary computation, optimization, forecasting, parallel processing

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## **Professional Positions**

### **Resource Faculty Member**

Eastern New Mexico University, Spring 2009

Online instruction

### **Researcher and Software Developer**

Doing business as Bounded Theoretics, 2003-present

Specializing in forecasting, optimization, and parallel processing

### **Associate Professor**

Jackson State University, 2001-2003

### **Researcher and Software Developer**

Doing business as The Tom English Project, 1998-2001

### **Assistant Professor**

Texas Tech University, 1990-1998

### **Lecturer**

Mississippi State University, 1988-1990

### **Graduate Assistant**

Mississippi State University, 1987-1988

**Programmer**

USDA Agricultural Research Service, Crop Simulation Unit, 1985-1986

**Graduate Assistant**

Mississippi State University, 1983-1986

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**Professional Service****Member**

Institute of Electrical and Electronics Engineers (Senior Member, 2005)

IEEE Computational Intelligence Society

**Associate Editor**

*IEEE Transactions on Evolutionary Computation*, 2001-2003

**Tutorials Chair**

2004 Congress on Evolutionary Computation (CEC 2004), Portland

**Technical Chair**

2001 International Symposium on Adaptive Systems (ISAS 2001), Havana (with H. Mühlenbein and P. Larrañaga)

**Task Force Member**

IEEE Computational Intelligence Society Task Force on Coevolution, 2003-present

IEEE Computational Intelligence Society Task Force on Evolutionary Gaming, 2002-present

**Conference Session Organizer**

“Theory and Foundation of Evolutionary Computation,” 2001 Congress on Evolutionary Computation (CEC2001), Seoul (with D. B. Fogel)

“Theory and Foundation of Evolutionary Computation,” 2000 Congress on Evolutionary Computation (CEC2000), San Diego (with D. B. Fogel)

**Tutorial Lecturer**

“Introduction to ‘No Free Lunch’ in Optimization and Learning,” 2001 Congress on Evolutionary Computation (CEC2001), Seoul

“No Free Lunch: A Gentle Introduction to Conservation in Optimization and Learning,” Sixth International Conference on Parallel Problem Solving from Nature (PPSN VI), Paris, 2000

**Referee**

*Journal of Combinatorial Optimization* (2011)

*International Journal of Bio-Inspired Computation* (2011)

*IEEE Transactions on Evolutionary Computation* (2010, 2005, 2004, 2001, 1997, 1996)

*Theoretical Computer Science* (2008)

*Data Mining and Knowledge Discovery* (2008)

*BioSystems* (2005, 1995, 1994)

*Optical Engineering* (2000)

*IEEE Transactions on Neural Networks* (1993, 1992)

**Technical Editor**

D. B. Fogel, 1998. *Evolutionary Computation: The Fossil Record*, IEEE Press.

**Technical Reviewer**

D. B. Fogel, 1995. *Evolutionary Computation: Toward a New Philosophy of Machine Intelligence*, IEEE Press.

**Program Committee Member**

2011 IEEE Congress on Evolutionary Computation (CEC 2011), New Orleans

Eleventh International Conference on Parallel Problem Solving from Nature (PPSN 2010), Krakow, Poland  
 2010 World Congress on Computational Intelligence (WCCI 2010), Barcelona, Spain  
 2009 IEEE Congress on Evolutionary Computation (CEC09), Trondheim, Norway  
 Tenth International Conference on Parallel Problem Solving from Nature (PPSN X), Dortmund, Germany, 2008  
 2008 IEEE World Congress on Computational Intelligence (WCCI2008), Hong Kong  
 2007 IEEE Congress on Evolutionary Computation (CEC07), Singapore  
 2007 IEEE Symposium on Computational Intelligence and Games (CIG'07), Honolulu  
 Ninth International Conference on Parallel Problem Solving from Nature (PPSN IX), Reykjavik, Iceland, 2006  
 2006 Congress on Evolutionary Computation (CEC2006), Vancouver, British Columbia  
 MENDEL 2006: 12th International Conference on Soft Computing, Brno, Czech Republic  
 2006 IEEE Symposium on Computational Intelligence and Games (CIG'06), Reno  
 2005 Congress on Evolutionary Computation (CEC2005), Edinburgh, Scotland  
 MENDEL 2005: 11th International Conference on Soft Computing, Brno, Czech Republic  
 2005 IEEE Symposium on Computational Intelligence and Games (CIG'05), Essex, UK  
 2004 Congress on Evolutionary Computation (CEC2004), Portland  
 Applications and Science of Neural Networks, Fuzzy Systems, and Evolutionary Computation VII (part of SPIE's International Symposium on Optical Science and Technology), Denver, 2004  
 MENDEL 2004: 10th International Conference on Soft Computing, Brno, Czech Republic  
 2003 Congress on Evolutionary Computation (CEC2003), Canberra, Australia  
 Applications and Science of Neural Networks, Fuzzy Systems, and Evolutionary Computation VI (part of SPIE's International Symposium on Optical Science and Technology), San Diego, 2003  
 MENDEL 2003: Ninth International Conference on Soft Computing, Brno, Czech Republic  
 The 6th World Multiconference on Systemics, Cybernetics and Informatics (SCI 2002), Orlando  
 Applications and Science of Neural Networks, Fuzzy Systems, and Evolutionary Computation V (part of SPIE's International Symposium on Optical Science and Technology), Seattle, 2002  
 MENDEL 2002: Eighth International Conference on Soft Computing, Brno, Czech Republic  
 2002 Congress on Evolutionary Computation (CEC 2002), Honolulu  
 Applications and Science of Neural Networks, Fuzzy Systems, and Evolutionary Computation IV (part of SPIE's International Symposium on Optical Science and Technology), San Diego, 2001  
 The 5th World Multiconference on Systemics, Cybernetics and Informatics (SCI 2001), Orlando  
 Seventh International Mendel Conference on Soft Computing (MENDEL 2001), Brno, Czech Republic  
 2001 Congress on Evolutionary Computation (CEC 2001), Seoul, Korea  
 2001 Symposium on Adaptive Systems (ISAS 2001), Havana, Cuba  
 2000 Congress on Evolutionary Computation (CEC 2000), San Diego  
 Sixth International Conference on Parallel Problem Solving from Nature (PPSN VI), Paris, 2000  
 Applications and Science of Neural Networks, Fuzzy Systems, and Evolutionary Computation III (part of SPIE's 45th Annual Meeting on Optical Science, Engineering, and Instrumentation), San Diego, 2000  
 Sixth International Mendel Conference on Soft Computing (MENDEL 2000), Brno, Czech Republic

1999 Congress on Evolutionary Computation (CEC99), Washington, DC  
Fifth International Mendel Conference on Soft Computing (MENDEL '99), Brno, Czech Republic  
Seventh Annual Conference on Evolutionary Programming (EP98), San Diego  
Fourth International Mendel Conference on Genetic Algorithms, Optimization Problems, Fuzzy Logic, Neural Networks, and Rough Sets (MENDEL '98), Brno, Czech Republic  
Sixth Annual Conference on Evolutionary Programming (EP97), Indianapolis  
Third International Conference on Genetic Algorithms (MENDEL '97), Brno, Czech Republic  
Fifth Annual Conference on Evolutionary Programming (EP96), San Diego  
Second International Conference on Genetic Algorithms (MENDEL '96), Brno, Czech Republic  
IEEE 1995 International Conference on Evolutionary Computation (ICEC95), Perth, Australia  
Fourth Annual Conference on Evolutionary Programming (EP95), San Diego  
First International Conference on Genetic Algorithms (MENDEL '95), Brno, Czech Republic

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## Grants Received

“Collaborative Project: A Cyber Service Scholarship Proposal,” Principal Investigator, 2002-2003 (National Science Foundation, \$222,074)  
“Collaborative Project: Expansion and Enhancement of the Center of Excellence in Information Assurance Program,” Principal Investigator, 2002-2003 (National Science Foundation, \$127,527)  
“Completion and Demonstration of the Hybrid Modeling Facility Prototype,” Principal Investigator, 1994-1995 (FSI International, \$77,093)  
“Mitigation of Hurricane Damage to Constructed Facilities,” Co-Principal Investigator (K. C. Mehta, PI), 1994-1995 renewal. (National Science Foundation, \$45,207)  
“Study of Fundamental Issues in the Hybrid Modeling Facility,” Principal Investigator, 1993-1994 (FSI International, \$75,446)  
“Mitigation of Hurricane Damage to Constructed Facilities,” Co-Principal Investigator (K. C. Mehta, PI), 1993-1994 renewal. (National Science Foundation, \$45,826)  
“Mitigation of Hurricane Damage to Constructed Facilities,” Co-Principal Investigator (K. C. Mehta, PI), 1992-1993. (National Science Foundation, \$21,552)  
“Development of a Hybrid Modeling Facility for the FSI Generic Semiconductor Control System,” Principal Investigator (50% of responsibilities were assumed by Hua Li), 1992-1993. (FSI International, \$150,952)  
“Advanced Techniques for Modeling Human Performance in Computerized and Automated Systems,” Faculty Associate (M. M. Ayoub, PI), 1992-1993. (State of Texas, \$19,800)  
“Generic Cluster Controller Software Development,” Co-Principal Investigator (W. M. Marcy, PI), 1991-1992. (FSI International, \$142,668)  
“A Generic Approach for Advanced Equipment Control Systems,” Co-Principal Investigator (W. M. Marcy, PI), 1991-1992. (State of Texas, \$49,064)

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## Edited Volume

A. Ochoa, H. Mühlenbein, T. English and P. Larrañaga, editors, 2001. *Proceedings of International Symposium on Adaptive Systems: Evolutionary Computation and Probabilistic Graphical Models (ISAS 2001)*.

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## Chapter in Edited Volume

T. English and G. Greenwood, 2008. "Intelligent Design and Evolutionary Computation," in *Design by Evolution—Advances in Evolutionary Design*, P. F. Hingston, L. C. Barone, and Z. Michalewicz, editors. Springer.

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## Refereed Publications

"No More Lunch: Analysis of Sequential Search," *Proceedings of the 2004 IEEE Congress on Evolutionary Computation*, pp. 227-234, 2004.

"On the Structure of Sequential Search: Beyond 'No Free Lunch,'" *Evolutionary Computation in Combinatorial Optimization, Proceedings of the 4th European Conference, EvoCOP 2004*, pp. 95-103, 2004.

"Learning to Focus Selectively on Possible Lines of Play in Checkers," *Proceedings of the 2001 Congress on Evolutionary Computation: CEC01*, pp. 1019-1024.

"Coevolutionary Learning of Selective Extensions in Game Tree Search: Preliminary Results," *Proceedings of International Symposium on Adaptive Systems: Evolutionary Computation and Probabilistic Graphical Models (ISAS 2001)*, pp. 56-63, 2001.

"Practical Implications of New Results in Conservation of Optimizer Performance," *Parallel Problem Solving from Nature: PPSN VI*, pp. 69-78, 2000.

"Ranking Models for Combination," *Proceedings of SPIE: Applications and Science of Neural Networks, Fuzzy Systems, and Evolutionary Computation III*, pp. 162-169, 2000.

"Optimization Is Easy and Learning Is Hard in the Typical Function," *Proceedings of the 2000 Congress on Evolutionary Computation: CEC00*, pp. 924-931, 2000.

"Some Information Theoretic Results on Evolutionary Optimization," *Proceedings of the 1999 Congress on Evolutionary Computation: CEC99*, pp. 788-795, 1999.

"The Modeling of Expertise: The Use of Situation Models for Knowledge Engineering," *International Journal of Cognitive Ergonomics*, 1(2), pp. 119-136, 1997. (M. R. Endsley, T. M. English, and M. Sundararajan)

"Some Geometric and Algebraic Results on Crossover," in *Evolutionary Programming VI*, pp. 285-295, 1997.

"Nonlinear Combination of Neural Networks From a Diverse and Evolving Population," in *Integrating Multiple Learned Models (IMLM-96)*.

"Evaluation of Evolutionary and Genetic Optimizers: No Free Lunch," in *Evolutionary Programming V: Proceedings of the Fifth Annual Conference on Evolutionary Programming*, pp. 163-169, 1996.

"Stacked Generalization and Simulated Evolution," *BioSystems*, 39(1), pp. 3-18, 1996.

"Evolution and Nonlinear Combination of Diverse Models," in *Mendel '95: First International Conference on Genetic Algorithms*, pp. 41-46, 1995.

"The Effects of Generating More Offspring for Less Fit Parents," in *Evolutionary Programming IV: Proceedings of the Fourth Annual Conference on Evolutionary Programming*, pp. 437-47, 1995. (H. P. Haiduk, M. Ahn, J. Burgin, M. Gotesman, H. Lyra, H. W. Means, J. Monroe, S. Patro, and T. English)

"Stacked Generalization and Fitness Ranking in Evolutionary Algorithms," *Evolutionary Programming IV: Proceedings of the Fourth Annual Conference on Evolutionary Programming*, pp. 205-218, 1995. (T. M. English and M. Gotesman)

"Development of a Novel Method of Knowledge Engineering for the Creation of Hybrid

Automation,” *Fourth International Conference on Human Aspects of Advanced Manufacturing and Hybrid Automation*, 1994. (M. R. Endsley, T. M. English, and M. Sundararajan)

“Situation Awareness Assessment as a Means of Defining Learning Tasks for Neural Networks,” *International Symposium on Integrating Knowledge and Neural Heuristics*, pp. 237-44, 1994. (T. M. English, M. R. Endsley, and M. Sundararajan)

“A Hybrid Modeling Facility for Networks of Controllers,” *Proceedings of the 1994 International Fuzzy Systems and Intelligent Control Conference*, pp. 16-24, 1994. (P. M. R. Durai, T. M. English, and J. R. Burgin)

“Generalization in Populations of Recurrent Neural Networks,” *Proceedings of the Third Annual Conference on Evolutionary Programming*, pp. 26-33, 1994.

“A Comparison of Neural Network and Nearest-Neighbor Classifiers of Handwritten Lower-Case Letters,” *1993 IEEE International Conference on Neural Networks*, pp. 1618-21, 1993. (T. M. English, M. del P. Gomez-Gil, and W. J. B. Oldham)

“Back-Propagation Training of a Neural Network for Word Spotting,” *ICASSP-92: 1992 IEEE International Conference on Acoustics, Speech, and Signal Processing*, vol. II, pp. 357-60, 1992. (T. M. English and L. C. Boggess)

“Implementation of Massively Parallel Genetic Algorithms on the MasPar MP-1,” *Proceedings of the 1992 ACM/SIGAPP Symposium on Applied Computing*, pp. 1015-20, 1992. (A. M. Logar, E. M. Corwin, and T. M. English)

“Efficient Classification of Frequent Words in Dictation,” *Proceedings: 26th Annual [ACM] Southeast Regional Conference*, J. H. Cross and E. Ellis, editors, pp. 536-42, 1988.

“Fast Preclassification of Frequent Words in Dictation,” *Proceedings AVIOS '88: Voice I/O Systems Applications Conference*, unpaginated, 1988. (T. M. English and L. C. Boggess)

“The HWYE Speech Recognition System: A User-Specific Model for Expectation-Based Recognition,” *Proceedings of the ACM Southeast Regional Conference*, pp. 9-15, 1987. (L. C. Boggess and T. M. English)

“A Grammatical Approach to Reducing the Statistical Sparsity of Language Models in Natural Domains,” *ICASSP 86 Proceedings: IEEE-IECEJ-ASJ International Conference on Acoustics, Speech, and Signal Processing*, pp. 1141-44, 1986. (T. M. English and L. C. Boggess)

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### **Solicited Book Reviews**

“Review of ‘Evolutionary Programming VI,’” solicited by D. B. Fogel, Editor-in-Chief, *IEEE Transactions on Evolutionary Computation*, 1(3):218-19.

“Review of ‘Proceedings of the Third Annual Conference on Evolutionary Programming,’” solicited by D. B. Fogel, Associate Editor, *BioSystems*, 36(1):79-82, 1995.

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### **Published Abstracts**

“Compact Input Coding for Speech Recognition by Neural Net,” abstract in *Proceedings: 1990 ACM Eighteenth Annual Computer Science Conference*, p. 444, 1990. (T. M. English and L. C. Boggess)

“Facilitating Speech Recognition with Automatically Generated ATN’s, Theme Identifiers, and Syntax Analyzers,” abstract in *Proceedings of the 1985 ACM Computer Science Conference*, 1985. (T. M. English and L. C. Boggess)

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## **Invited Workshop Presentations**

“Theory of Evolutionary Programming,” invited by P. J. Angeline, organizer of the “Evolutionary Programming” workshop, International Conference on Genetic Algorithms, 1997.

“A Polynomial Generator,” invited by W. Spears, co-organizer of the “Test Function Generators” workshop, International Conference on Genetic Algorithms, 1997.

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## **Other Presentations**

“Overview of the FSI Hybrid Modeling Facility,” presentation at the SEMATECH AEC/APC [Advanced Equipment Control/Advanced Process Control] Workshop VI, 1994.

“Development of a Computer System to Predict Hurricane Damage to Roofing,” presentation at a meeting of the Roofing Industry Committee on Wind Issues, 1993.

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## **Reports to Research Sponsor**

“Stacked Generalization and Simulated Evolution,” draft of an article subsequently published in *BioSystems*, with foreword prepended; delivered to FSI International, Inc., 1994.

“Study of Schedulers for the FSI Hybrid Modeling Facility,” delivered to FSI International, Inc., 1994. (Text by S. D. Liman, foreword by T. M. English)

“FSI Hybrid Modeling Facility Version 1.0,” delivered to FSI International, Inc., 1993. (J. Burgin, P. Durai, and T. English)

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## **Theses Supervised**

“Administration of a Network Modeling Server,” K. L. Gibson, MS, Computer Science, Texas Tech University, 1995.

“Evaluation of a Building with Respect to Wind in a Microsoft Windows Environment,” M. H. Teal, MS, Computer Science, Texas Tech University, 1995.

“Realtime Scheduling with Soft Deadlines and Cost/Value Functions,” P. M. R. Durai, MS, Computer Science, Texas Tech University, 1995. Co-Chair with S. D. Liman.

“A Neural Network Approach to Model Decision Processes,” M. Sundararajan, MS, Industrial Engineering, Texas Tech University, 1993. Co-Chair with M. R. Endsley.

“Neural Network Classification of Handwritten Characters Using an Adaptive Input Window,” D L. Phillips, MS, Computer Science, Texas Tech University, 1992.

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## **Undergraduate Research Projects Supervised**

“Sports Predictions with Evolutionary Programming,” G. Kraus, Texas Tech University, 1997.

“Optimal Path Search Algorithm for the Towers of Hanoi Problem,” C. Smith, Texas Tech University, 1993.

“A Word Spotting Neural Network Research Project,” M. Buckles and T. Rea, Texas Tech University, 1992.

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## **Consulting**

Pavilion, Inc., Austin, Texas (December 7-8, 1995). Consulted in evolutionary algorithms.

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## **Entrepreneurial Activity**

Founded 2NI, LLC, in Lubbock, Texas, with William Marcy, Ph.D.; Mica Endsley, Ph.D.; and Randy Hickle, MD. Collaborated from 1994-1995 in the design of an advanced patient monitoring system for intensive-care units.

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## **Miscellaneous**

Curator, "Salvage Work," visual art by Bonnie Buchanan, Louise Hopkins Underwood Center for the Arts, Lubbock, Texas, 2009

Curator and exhibitor, "The Body Poetic," short writings by the Ad Hoc Writers, Louise Hopkins Underwood Center for the Arts, Lubbock, Texas, 2006

"Books" column editor and writer, *Mississippi: A View of the Magnolia State* (monthly magazine with estimated readership of 75,000), 1983-1986

Winner of the first Mississippi Marathon, 1976

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## **Honors and Distinctions**

Sigma Xi Junior Faculty Research Award, Texas Tech University, 1996

Sigma Xi, 1996

Phi Kappa Phi, 1988

Upsilon Pi Epsilon (computer science honor society), 1986

National Science Foundation Doctoral Fellow, Center for Advanced Computer Studies, University of Louisiana at Lafayette, 1986-1987

First Place, Mississippi State University Student Programming Competition, 1985

Presidential Scholar, Mississippi College, 1974-1978