Dr. Theodore (Ted) P. Pavlic **Curriculum vitae**

CONTACT INFORMATION

Arizona State University
School of Computing, Informatics, and Decision Systems Engineering
PO Box 878809, Room 553
Tempe, AZ 85287-8809 USA

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WWW: www.tedpavlic.com

QUALIFICATIONS AND INTERESTS

Advanced control systems, complex adaptive systems, computational agent-based modeling, hybrid dynamic systems, distributed algorithms, decentralized decision making, emergence and self organization, amorphous computing, autonomous systems and vehicles, networks, communications, verification, cooperation, optimization, game theory, parallel computation, robotics, sustainability in the built environment, energy systems, analog electronics, behavioral ecology, bio-mimicry

AVAILABILITY

- Start time is negotiable; may be possible to start immediately
- Geographic location is flexible, but there is preference for Tempe, AZ

SECURITY CLEARANCE

Department of Defense Top Secret SCI with polygraph (expired: 2002)

EDUCATION

The Ohio State University, Columbus, OH

Ph.D., Electrical and Computer Engineering, August 2010 GPA: 3.70 (4.0 scale)

- Thesis Topic: Design and Analysis of Optimal Task-Processing Agents
- Candidacy: Research Problems in Distributed Control for Energy Systems
- Adviser: Professor Kevin M. Passino
- Area of Study: Control Engineering

M.S., Electrical and Computer Engineering, August 2007 GPA: 3.70 (4.0 scale)

- Thesis Topic: Optimal Foraging Theory Revisited
- Adviser: Professor Kevin M. Passino
- Area of Study: Control Engineering

B.S., Electrical and Computer Engineering, June 2004 GPA: 3.86 (4.0 scale)

- Magna cum Laude, With Honors in Engineering
- Electrical specialization (emphasis on electromagnetics and digital computers)
- Minor in Computer and Information Systems (programming and algorithms)

PROFESSIONAL EXPERIENCE

Arizona State University, Tempe, AZ

Assistant Professor **August 2015 to present**

- Joint Appointment:
  - School of Computing, Informatics, and Decision Systems Engineering
  - School of Sustainability
- Graduate faculty in Industrial Engineering/Operations Research, Computer Engineering, Sustainability, Applied Math for the Life and Social Sciences, Biology, and Animal Behavior.
- Interdisciplinary laboratory focus on decision making and organization.

Associate Research Scientist **August 2014 to July 2015**
Postdoctoral Scholar **July 2012 to August 2014**

- Supervisor: Professor Stephen C. Pratt
- Novel application of sophisticated quantitative analysis and modeling techniques to animals, with social insects as a particular focus.

- Development of new algorithms for robotics and other autonomous systems based on animal behavior, with focus on distributed decision making.
- Supervision of graduate and undergraduate students in engineering, computer science, and biology in tasks related to biological analysis and modeling as well as technological bio-mimetic design.

The Ohio State University, Columbus, OH

Postdoctoral Researcher **September 2010 to June 2012**

- Funding: National Science Foundation Cyber-Physical Systems (ENG, ECCS)
  - "Autonomous Driving in Mixed-Traffic Urban Environments" (grant #0931669)
  - Supervisor (co-PI): Professor Paolo A. G. Sivilotti
  - PI: Professor Ümit Özgüner
- Development of new approaches to software verification in the context of hybrid-state and hybrid-time dynamical systems.
- Supervision of student design project for novel vehicle-to-vehicle communications systems to assist in adaptive cruise control.

National Instruments, Austin, TX

Hardware R&D Intern for Multifunction DAQ **June 2003 to September 2003**

- Designed final verification test fixture for use with STC2 MIO products.
- Designed and executed study of the effect of varying burn-in time on long-term drift of common industry voltage references.

Hardware R&D Intern for Multifunction DAQ **June 2002 to September 2002**

- Designed and performed validation tests for 16-bit 800 kHz NI-6120 SMIO DAQ.
- Designed high-quality source to use with NI-5411 arbitrary function generator.

IBM Network Storage, Research Triangle Park, NC

Core Systems Software Developer for FlexNAS **June 2001 to September 2001**

- Designed and implemented highly available multihop communications subsystem.
- Participated in software development of various vital box services.

CallTech Communications, Columbus, OH

Information Technology Systems Engineer **June 1997 to May 2001**

- Responsible for the acquisition, setup, and administration of all hardware and software systems supporting NetWalk Internet service and web presence provider.
- Designed and implemented state-of-the-art open-source highly available load-balancing system supporting thousands of virtual servers.
- Developed call-center software for clients such as CompuServe, AOL, and Priceline.

MegaLinx Communications, Dublin, OH

Web Developer and Support Representative **June 1995 to May 1997**

- Produced web content for commercial clients.
- Assisted in administration of UltraSPARC, x86, 680x0, and PowerPC systems.
- Developed multi-platform open-source file-sharing solution.
- Provided technical support for Internet and web presence customers.

Refereed Journal Publications

[1] Wilson, S., T.P. Pavlic, G.P. Kumar, A. Buffin, S. Pratt, and S. Berman. Design of ant-inspired stochastic control policies for collective transport by robotic swarms. Swarm Intelligence, 8(4):303–327, December 2014. doi:10.1007/s11721-014-0100-8

[2] Pavlic, T.P., S. Wilson, G.P. Kumar, and S. Berman. Control of stochastic boundary coverage by multi-robot systems. Journal of Dynamic Systems, Measurement, and Control [Special Issue on Stochastic Models, Control and Algorithms in Robotics], 137(3):034505, October 21, 2014. doi:10.1115/1.4028353

[3] Pavlic, T.P., and K.M. Passino. Distributed and Cooperative Task Processing: Cournot Oligopolies on a Graph. IEEE Transactions on Cybernetics. 44(6):774–784, June 2014. doi:10.1109/TCYB.2013.2271776

[4] Pavlic, T.P., and K.M. Passino. Generalizing foraging theory for analysis and design. The International Journal of Robotics Research [Special Issue on Stochasticity in Robotics and Bio-Systems Part 1], 30(5):505–523, 2011. doi:10.1177/0278364910396551

[5] Pavlic, T.P., and K.M. Passino. The sunk-cost effect as an optimal rate-maximizing behavior. Acta Biotheoretica, 59(1):53–66. 2011. doi:10.1007/s10441-010-9107-8

[6] Pavlic, T.P., and K.M. Passino. When rate maximization is impulsive. Behavioral Ecology and Sociobiology, 64(8):1255–1265. August 2010. doi:10.1007/s00265-010-0940-1

[7] Pavlic, T.P., and K.M. Passino. Foraging theory for autonomous vehicle speed choice. Engineering Applications of Artificial Intelligence, 22(3):482–489, April 2009. doi:10.1016/j.engappai.2008.10.017

Conference Publications

[8] Pavlic, T.P., A. Adams, P.C.W. Davies, and S.I. Walker. Self-referencing cellular automata: A model of the evolution of information control in biological systems. In: Proceedings of the 14th International Conference on the Synthesis and Simulation of Living Systems (ALIFE 14), July 30 – August 2, 2014. doi:10.7551/978-0-262-32621-6-ch083

[9] Pavlic, T.P.. Using Physical Stigmergy in Decentralized Optimization Under Multiple Non-separable Constraints: Formal Methods and an Intelligent Lighting Example. In: Proceedings of the 2014 Workshop on Nature Inspired Distributed Computing (NIDISC 2014), pp. 402–411, May 19, 2014. doi:10.1109/IPDPSW.2014.52

[10] Pavlic, T.P., S. Wilson, G.P. Kumar, and S. Berman. An enzyme-inspired approach to stochastic allocation of robotic swarms around boundaries. In: Proceedings of the 16th International Symposium on Robotics Research (ISRR 2013), pp. 631–647, December 16–19, 2013. doi:10.1007/978-3-319-28872-7_36

[11] Kumar, G.P., A. Buffin, T.P. Pavlic, S.C. Pratt, and S.M. Berman. A Stochastic Hybrid System Model of Collective Transport in the Desert Ant Aphaenogaster cockerelli. In: Proceedings of the 16th International Conference on Hybrid Systems: Communication and Control (HSCC 2013), pp. 119–124, April 8–11, 2013. doi:10.1145/2461328.2461349

[12] Pavlic, T.P., and K.M. Passino. Cooperative task-processing networks. In: Proceedings of the Second International Workshop on Networks of Cooperating Objects (CONET 2011), April 11, 2011.

[13] Freuler, R.J., M.J. Hoffmann, T.P. Pavlic, J.M. Beams, J.P. Radigan, P.K. Dutta, J.T. Demel, and E.D. Justen. Experiences with a Comprehensive Freshman Hands-On Course – Designing, Building, and Testing Small Autonomous Robots. In: Proceedings of the 2003 American Society for Engineering Education Annual Conference & Exposition, 2003.

CONFERENCE TALKS

[14] Pavlic, T.P., and S.C. Pratt. Numerical Methods within the Ant Colony: The Illuminating Case of Multi-Objective Macronutrient Regulation in Eusocial Insects. In: 2nd Workshop on Biological Distributed Algorithms (BDA 2014), Austin, TX, October 11–12, 2014.

[15] Pavlic, T.P., and S.C. Pratt. Understanding foraging patterns that achieve colony-level macronutrient regulation. In: 2014 International Union for the Study of Social Insects International Congress (IUSSI 2014), Queensland, Australia, July 13–18, 2014.

[16] Pavlic, T.P. Kinetic modeling of social insect behavior and beyond: Lessons from stochastic robotics. In: 2013 International Symposium on Biomathematics and Ecology Education and Research (BEER 2013), Arlington, VA, October 11–13, 2013.

[17] Pavlic, T.P., and S.C. Pratt. Sequential-sampling models of quorum sensing in house-hunting Temnothorax ants. In: 50th Annual Conference of the Animal Behavior Society, July 28–August 1, 2013.

[18] Pavlic, T.P. Speed–accuracy tradeoffs in Temnothorax rugatulus ants: Sequential-sampling models of quorum detection while house hunting. In: 2013 Society for Mathematical Biology Annual Meeting and Conference (SMB 2013), June 10–13, 2013.

[19] Pavlic, T.P., and S.C. Pratt. Sequential-sampling models of quorum detection in house-hunting ants. In: 2012 North American Section Meeting of the International Union for the Study of Social Insects (IUSSI-NAS 2012), October 5–7, 2012.

CONFERENCE POSTERS

[20] Pavlic, T.P. Physical Stigmergy for Decentralized Constrained Optimization: An Intelligent Lighting Example. In: Proceedings of the 4th International Conference on Cyber-Physical Systems (ICCPS 2013), April 8–11, 2013. Poster abstract.

[21] Pavlic, T.P., S. P. Peddi, P.A.G. Sivilotti, and B.W. Weide. Getting Out of the Way – Safety Verification without Compromise. In: Proceedings of the 2012 IEEE/ACM Third International Conference on Cyber-Physical Systems (ICCPS 2012), April 17–19, 2012. Poster abstract.

[22] Pavlic, T.P., P.A.G. Sivilotti, A.D. Weide, and B.W. Weide. Verification of Smooth and Close Collision-Free Cruise Control. In: Proceedings of the 2011 Symposium on Control and Modeling Cyber-Physical Systems, October 20–21, 2011. Poster abstract.

[23] Özgüner, Ü., A. Krishnamurthy, F. Özgüner, K. Redmill, P. Sivilotti, B. Weide, and T. Pavlic. CPS: Autonomous driving in urban environments. In: Proceedings of the 2011 NSF CPS PI Meeting, August 1–2, 2011. Poster abstract.

[24] Pavlic, T.P., and K.M. Passino. Cooperative task processing. In: Proceedings of the ICAM 2009 Symposium: Emergence in Physical, Biological, and Social Systems IV, November 13, 2009. Poster abstract.

INVITED TALKS

[25] Pavlic, T.P. Algorithmic foundations of biological matter: faster, cheaper, and more out of control. In: Algorithmic Foundations of Programmable Matter (Dagstuhl Seminar 16271), July 3–8, 2016.

[26] Pavlic, T.P. Kinetic modeling of collective behavior: When a good match goes bad. In: KI-Net Workshop on Collective Dynamics and Model Verification: Connecting Kinetic Modeling to Data, April 17–19, 2015.

[27] Pavlic, T.P. The hidden demographics of distributed information processing: The role of intermediates in a social-insect colony. In: Social Insects as Models for Biological Complexity: Lessons Learned and Challenges on the Horizon, symposium of the 2014 Annual Meeting of the Entomological Society of America (Entomology 2014). November 16–19, 2014.

[28] Pavlic, T.P. Understanding foraging patterns that achieve colony-level macronutrient regulation. In: ASU–UWü International Symposium and Workshop on Frontiers in Insect Behavior, Social Organization, and Evolution, May 23–30, 2014.

[29] Pavlic, T.P. Take Home Messages: Evolution of Distributed Computational Networks. In: BEYOND Center Physics of Living Matter Workshop: Information, Complexity, and Life, February 24–25, 2013.

[30] Pavlic, T.P. Biomathematics at "The New American University." In: "Biomathematics Courses and Programs" expert panel at 2013 International Symposium on Biomathematics and Ecology Education and Research (BEER 2013), October 11–13, 2013.

[31] Pavlic, T.P. The Economic Framework: Constrained Optimization and Colony Collapse Disorder. In: Perspectives for Mathematical and Biological Interdisciplinary Research on Honeybees and Pollination, June 14, 2013.

[32] Pavlic, T.P. Stochastic Robotics: Complexity, Compositionality, and Scalability. In: KI-Net Workshop on Kinetic Theory for the Emergence of Complex Behavior in Social and Economic Systems, February 22–24, 2013.

BOOK CHAPTERS

[33] Weinstein, S., and T.P. Pavlic. Noise and function. In: S.I. Walker, P.C.W. Davies, and G.F.R. Ellis (Eds), From Matter to Life, ch. 9, pp. 126–143, 2016. In print.

[34] Pavlic, T.P., and S.C. Pratt. Superorganismic Behavior via Human Computation. In: P. Michelucci (Ed.), Handbook of Human Computation, ch. 74, pp. 911–960. 2013. doi:10.1007/978-1-4614-8806-4_74

OTHER PUBLICATIONS

[35] Pavlic, T.P., P.A.G. Sivilotti, A.D. Weide, and B.W. Weide. Comments on 'Adaptive Cruise Control: Hybrid, Distributed, and Now Formally Verified'. Tech. report OSU-CISRC-7/11-TR22, The Ohio State University, 2011.

[36] Pavlic, T.P., and K.M. Passino. Cooperative Task-processing Networks: Parallel Computation of Non-trivial Volunteering Equilibria. Tech. report OSU-CISRC-3/11-TR05, The Ohio State University, 2011.

[37] Pavlic, T.P. Design and Analysis of Optimal Task-Processing Agents. PhD thesis, The Ohio State University, Columbus, OH, 2010.

[38] Pavlic, T.P. Optimal Foraging Theory Revisited. Master's thesis, The Ohio State University, Columbus, OH, 2007.

BOOKS IN PREPARATION

[39] Pavlic, T.P., B.W. Andrews, K.M. Passino, and T.A. Waite. Foraging Theory for Engineering. In preparation.

PAPERS IN PREPARATION

[40] Pavlic, T.P., and S.C. Pratt. The Economic Framework: Using constrained optimization to unify the ideal free distribution, the marginal value theorem, and the geometric framework of nutrition.

[41] Pavlic, T.P. Risk-sensitive foraging and the Sharpe ratio.

GRANTS

Awaiting Decision

[1] Senior staff, "A new multi-objective optimization framework for investigating mechanisms of social resource allocation", NIH, NIGMS, 2015. Revision in progress.

Awarded

[2] Co-Principal Investigator, "Emergent Computation in Collective Decision Making by the Crevice-Dwelling Rock Ant Temnothorax rugatulus", NSF PHY-1505048, $595,520, May 1, 2016 to April 30, 2019.

[3] Senior staff, "CPS:Synergy: Collaborative Research: Collaborative Vehicular Systems", NSF ECCS-1446730, $914,802, January 1, 2015 to December 31, 2017.

[4] Senior staff, "Autonomous Driving in Mixed-Traffic Urban Environments", NSF, ECCS-0931669, $1,499,833, September 1, 2009 to August 31, 2012.

Not Awarded

[5] Senior staff, "Informational architecture of collective decision making by Temnothorax ants", NSF, POLS, 2013. Not awarded.

[6] Senior staff, "Biological stoichiometry of horizontal gene transfer and the social dynamics of microbial communities", Army Research Office, 2013. Not awarded.

[7] Senior staff, "Biologically-inspired strategies for collective transport and construction by multi-robot systems", NSF, RI, 2013. Not awarded.

[8] Co-PI, "An Ant Model System for the Study of Nutrient Balance in Social-Insect Pollinators", USDA, NIFA-AFRI Foundational proposal, 2013. Not awarded.

[9] Senior staff, "Cooperative LED Arrays for Preference-Adaptive Lighting in Smart Buildings", NSF, EFRI-SEED preliminary proposal, 2009. Not awarded.

ACADEMIC SERVICE

Arizona State University, Tempe, AZ

- College of Liberal Arts and Sciences Research Operations Committee, Center for Social Dynamics and Complexity Representative, 2016–present.
- Biosocial Complexity Initiative Directorate, Liaison for Cross-University Activities, 2016–present.
- Engineering Management Undergraduate Program Committee, Member, 2015–present.
- The Biomimicry Center, Associate Director of Research, 2015–present.
- Committee for the Development of Biomimicry and Bio-inspired Research and Education Initiatives at ASU, Chairman. 2013.
- Interdisciplinary Complexity Science Student Organization, Founding faculty co-adviser. 2013.

COMMITTEE SERVICE

- Officer, IEEE Special Technical Community for Human Computation

REFEREE SERVICE

- 49th Annual Conference on Decision and Control
- International Journal of Control
- ASME Journal of Dynamic Systems, Measurement, and Control
- IEEE Transactions on Signal Processing
- IEEE Transactions on Control Systems Technology
- IEEE Transactions on Cybernetics
- IEEE Transactions on Intelligent Transportation Systems
- The International Journal of Robotics Research
- Engineering Applications of Artificial Intelligence
- International Journal of Nonlinear Sciences and Numerical Simulation
- Bioinspiration & Biomimetics
- Swarm and Evolutionary Computation
- Journal of the Royal Society Interface
- Scientific Reports
- American Naturalist
- Biology Letters
- Behavioral Ecology
- Animal Behaviour
- Ecology and Evolution
- Ecological Research
- Current Zoology
- Journal of Theoretical Biology
- International Journal of the Commons

EDITORIAL SERVICE

- Human Computation, editorial board (2014–)
- Frontiers in Robotics and AI, Computational Intelligence, review editorial board (2014–)

CONFERENCE SERVICE

Program Committee: 2016 International Symposium on Intelligent Control (ISIC 2016), Buenos Aires, Argentina, September 19–22, 2016.

Local Organizing Committee: 2015 Conference on Complex Systems (CCS'15), Tempe, AZ, September 28 – October 2, 2015.

Co-organizer (with Yun Kang) for technical session: "Complex Systems of Social Insects in Research and Education", 2013 International Symposium on Biomathematics and Ecology Education and Research (BEER 2013), Arlington, VA, October 11–13, 2013.

Organizer for mini-symposium: "MS19: Optimization and Rationality in Eusocial Insects", 2013 Society for Mathematical Biology Annual Meeting and Conference (SMB 2013), Tempe, AZ, June 10–13, 2013.

Organizer/Associate Editor for invited session: "Correctness by Verification and Design", 14th IEEE Conference on Intelligent Transportation Systems (ITSC 2011), Washington, DC, October 5–7, 2011.

STUDENT ADVISING

Alyssa Adams
Graduate student in Physics, Arizona State University. Modeling and analysis of top-down causation in self-referencing cellular-automata models of the origins of life. Primary adviser: Sara I. Walker. 2013–2014.

Hana Putnam and **Alex Nachman**
Undergraduate students in Biology, Arizona State University. Laboratory support of research on decentralized nutrient regulation in Temnothorax rugatulus ants. Primary adviser: Stephen C. Pratt. 2013.

Taylor Vance and **P. Logan Rogers** and **Betsy Siegworth**
Undergraduate students in Biology, Arizona State University. Laboratory support of research on quorum detection by encounter rate in Temnothorax rugatulus ants. Primary adviser: Stephen C. Pratt. 2013.

Sean T. Wilson
Graduate student in Mechanical Engineering, Arizona State University. Dynamical modeling and analysis of the collective carrying behaviors of Aphaenogaster cockerelli ants. Primary adviser: Spring Berman. 2012–2013.

Ganesh P. Kumar
Graduate student in Computer Science, Arizona State University. Bio-mimetic design of collective carrying algorithms for robotics, inspired by the ant Aphaenogaster cockerelli. Primary adviser: Spring Berman. 2012–2013.

Christal Johnson
Undergraduate student in Biology, Arizona State University. Modeling and analysis of quorum detection during emigration behavior in Temnothorax rugatulus ants. Honors thesis. Primary adviser: Stephen C. Pratt. 2012.

Cory Henderson, **James O'Donnell**, **Ian Neack**, and **Patrick Whewell**
Undergraduate students in Electrical and Computer Engineering, The Ohio State University. Group design project on retrofittable vehicle-to-vehicle communications system for adaptive-cruise-control in mixed-traffic environments. Primary adviser: Keith Redmill. 2012.

Manas Agrawal Graduate student in Computer Science and Engineering, The Ohio State University. Software verification and model checking applied to railroad safety problems. Primary adviser: Bruce W. Weide. 2012.

Sai Prathyusha Peddi Graduate student in Computer Science and Engineering, The Ohio State University. Software verification applied to adaptive cruise control and instrumented intersection signal timing. Primary adviser: Bruce W. Weide. 2011–2012.

Jaeyong Park. Graduate student in Electrical and Computer Engineering, The Ohio State University. Provably correct on-line control synthesis for autonomous vehicles with hybrid dynamics. Primary adviser: Ümit Özgüner. 2011–2012.

TEACHING EXPERIENCE

Arizona State University, Tempe, AZ

Guest Lecturer **April 2015**

- ASM 394: Great Adaptations: Origins of Complexity in Nature
  - Undergraduate course in the science and mathematics of anthropology
  - Main instructor: Joan B. Silk
  - Lecture: "Connecting Evolutionary Adaptation and the Engineering Design Process"

Guest Lecturer **October 2013**

- ANB 601: Research Strategies in Animal Behavior
  - Graduate-level course in animal behavior
  - Main instructor: Ronald L. Rutowski
  - Lecture: "Mathematical, Computational, and Experimental Modeling: Granularity and Parsimony"

The Ohio State University, Columbus, OH

Instructor **March 2012 to August 2012**

- Instructor for ECE 683: Undergraduate Design Project
  - Students designed retrofitable vehicle-to-vehicle communications system to aid in the development of verifiably safe adaptive cruise control.
  - Design project folded into larger research project on autonomous vehicles in mixed-traffic urban environments.

Teaching Assistant **September 2007 to August 2009**
(sample graded material and student evaluations available upon request)

- Instructor for ECE 327: Electronic Devices and Circuits Laboratory I
  - Autumn 2007, Winter (2) and Spring 2008 (2), Winter (2) and Summer 2009
  - Responsible for 1-hour lecture and supervision of 3-hour laboratory. Students design and implement infrared modem and 8-ohm speaker driver.
  - Authored hundreds of pages of course material archived at http://www.tedpavlic.com/teaching/osu/ece327.
- Grader for ECE 481 Ethics in Electrical and Computer Engineering
  - Autumn 2007 and Autumn 2008
- Instructor for ECE 209: Circuits and Electronics Laboratory
  - Autumn 2008
  - Responsible for lecture and supervision of basic electronics laboratory.
  - Authored material at http://www.tedpavlic.com/teaching/osu/ece209.
- Instructor for ECE 557: Control, Signals, and Systems Laboratory
  - Summer 2008 (2 sections) and Summer 2009
  - Responsible for lecture and supervision of laboratory. Students used Simulink and dSPACE RTI1104 units for linear system control design.
  - Authored material at http://www.tedpavlic.com/teaching/osu/ece557.
- Lab Instructor for ECE 758: Control Systems Implementation Laboratory
  - Spring 2009 (2 sections)
  - Responsible for lecture and supervision of laboratory. Graduate and senior undergraduate students used Simulink, with dSPACE RTI1104 units for analysis of and advanced control implementation for linear and non-linear systems.
  - Authored material at http://www.tedpavlic.com/teaching/osu/ece758.

National Science Foundation GK-12 Graduate Fellow **September 2006 to October 2007**

Developed, implemented, and evaluated daily inquiry-based fourth-grade science lessons for a local inner-city public school class.

Instructor **March 2002 to June 2004**

- Member of Fundamentals of Engineering for Honors instructional team.
- Special graduate teaching appointment as undergraduate.
- Lectured weekly engineering laboratory for ENG H191, H192, and H193.
- Trained in-class undergraduate teaching assistants in laboratory procedure.
- Graded weekly lab reports and provided laboratory exams.

Teaching Assistant **September 2000 to March 2002**

- Assisted Fundamentals of Engineering for Honors instructional team.
- Provided support to first-year engineering students (ENG H191, H192, and H193).
- Graded daily assignments on programming and drafting.

- Developed on-line journal submission and report system for Physics Education Research Group (PERG).

Undergraduate Researcher **September 2000 to March 2002**

- Participated in the Europa Undergraduate Research Forum, a part of the Reusable Software Research Group.
- Studied component-based software engineering undergraduate pedagogy.
- Researched changes to RESOLVE/C++ implementation for ANSI compliance.

Grader **September 2011 to December 2001**

- Graded daily electromagnetics assignments (ECE 311).

Professional Memberships

Institute for Operations Research and the Management Sciences (INFORMS), Member, 2015–present

- Applied Probability Society (2015–present)
- Artificial Intelligence Section (2015–present)
- Behavioral Operations Management (2015–present)
- Computing Society (2015–present)
- Decision Analysis Society (2015–present)
- Group Decision and Negotiation (2015–present)
- Optimization Society (2015–present)
- Organization Science Section (2015–present)
- Simulation Society (2015–present)
- Transportation Science and Logistics Society (2015–present)

Institute for Industrial Engineers (IIE), Member, 2015–present

- Operations Research division (2015–present)
- Sustainable Development division (2015–present)

Institute for Electrical and Electronics Engineers (IEEE), Member, 2002–present

- IEEE Control Systems Society (2004–present)
- IEEE Communications Society (2012–present)
- IEEE Computer Society (2009–present)
- IEEE Intelligent Transportation Systems Society (2011–present)
- IEEE Systems, Man, and Cybernetics Society (2011–present)
- IEEE Robotics and Automation Society (2011–present)
- IEEE Computational Intelligence Society (2013–present)
- IEEE Circuits and Systems Society (2013–present)
- IEEE Information Theory Society (2013–present)

Game Theory Society, Member, 2016–present

Animal Behavior Society (ABS), Member, 2011–present

International Union for the Study of Social Insects (IUSSI), Member, 2012–present

- North American Section (2012–present)

Entomological Society of America, Member, 2014–present

- Southwestern and Pacific Branch (2014–present)
- Systematics, Evolution, and Biodiversity Section (2014–present)

Society for Mathematical Biology (SMB), Member, 2012–present

Society for Industrial and Applied Mathematics (SIAM), Member, 2015–present

OTHER MEETING ATTENDANCE

Invited Participant

- 12th Annual National Academies Keck Futures Initiative Conference (NAKFI 2014) on Collective Behavior: From Cells to Societies, November 13–15, 2014
- 2014 Computing Community Consortium Human Computation Roadmap Summit Workshop, June 18–20, 2014
- BEYOND Center for Fundamental Concepts in Science Workshop: Complex Systems Theory and Cancer Biology, February 22–23, 2014

General Participant

- NSF Workshop on Self-organizing Particle Systems, January 8, 2014
- 1st IEEE/ACM Workshop on Signal Processing Advances in Sensor Networks, April 8, 2013
- CoMSES Workshop on ABM in Education, February 28 – March 2, 2013
- 49th IEEE Conference on Decision and Control, December 15–17, 2010

SERVICE

Arizona State University School of Life Sciences Graduate Retreat 2014

- Panelist, “Securing a post-doc” session

Intel International Science and Engineering Fair (ISEF) 2013

- Grand Award Judge for Animal Sciences

Night of the Open Door, Arizona State University, 2013

- Staffed the “Ants of Arizona” exhibit
- Answered questions about ants and research related to them

Recent contributor to several open-source software projects, including:

- Vim-LaTeX suite
- Vimperator and Pentadactyl Firefox extensions
- Git distributed version control system
- Mercurial distributed version control system
- Personal projects archived at http://hg.tedpavlic.com/

Frequent contributor to Wikipedia

- Significant contributions to articles on control theory, electronics, and signals and systems.

Contributor to Quora

- Contributions to articles on thermodynamics, chaos theory, electronics, and evolutionary biology.

OSU FIRST Robotics Team, The Ohio State University, 2000–2004

- Introduced middle school and high school students to science and technology by participating with them in national robotics competitions.
- Led 2002 team to regional silver medal Engineering Inspiration Award.
- Lead Team Mentor, 2002–2004
- Component Design Team Lead Mentor, 2001–2002

Ohio Science Olympiad state competition, Robot Ramble Event, 2003

- Supervised setup and judging of event for middle-school and high-school students

Director of Computers, Engineers’ Council, The Ohio State University, 2002

Linux Virtual Server Project, 1999–2000

- Early member of the team that formed the open-source project that is now an important load balancing solution for the Linux software platform.

Greater Columbus Free-Net, 1995–1997

- Provided technical support services.

CompuTeen Bulletin Board System, 1993–1995
- Administrated dial-up bulletin board system.
- Founded and administrated TeenLiNK, an international electronic mail network that spread through the United States, Canada, and Australia and delivered mail over a series of electronic dial-up drop offs.

AWARDS

National Science Foundation
- GK-12 Graduate Fellowship, 2006–2007
- Graduate Research Fellowship Honorable Mention, 2005

The Ohio State University
- Dean's Distinguished University (DDU) Graduate Fellowship, 2004–2010
- Electrical and Computer Engineering Bradshaw Scholarship, 2002–2004
- Electrical and Computer Engineering Shafstall Scholarship, 2001–2003
- University Scholarship, 1999–2003

POPULAR MEDIA

Pavlic, Theodore P. "Cognition in Ants, Robots, and Pre-biotic Chemistries: A Science on Google+ HOA with Dr. Ted Pavlic." Interview by Chris Robinson. Science on Google+: A Public Database, April 15, 2015. https://plus.google.com/u/0/events/cmbuh4hdnc558tqg1p86dqna35k

Sigfried, Tom. "If the world is a computer, life is an algorithm", Science News: Context, June 18, 2014. https://www.sciencenews.org/blog/context/if-world-computer-life-algorithm

"The Free & Unfree: Open Source Everywhere – How a Global Coding Coalition Built an Open Source Superserver", Wired, 12(06), June 2004.

APPLICATION AREAS

Autonomous/Unmanned Vehicles, Flexible Manufacturing Systems, Distributed Power Generation, Intelligent Lighting, Power Demand Response, Microgrids, Smart Grids

HARDWARE AND SOFTWARE SKILLS

Analog and Digital Electronics:
- Bipolar and FET implementations of continuous and switched amplifiers, modulators, converters, and filters
- Computer-Aided Design Tools: Cadence OrCAD, NI Multisim, SPICE, pst-circ

Embedded and Real-time Systems:
- Software and hardware development with several MCU and DSP platforms (e.g., Motorola MCU's, Texas Instruments DSP's, Atmel ATmega MCU's, Microchip PIC MCU's, and others)

Instrumentation, Control, Data Acquisition, Test, and Measurement:
- dSPACE hardware (e.g., RTI1104) and Control Desk software, Simulink, LabVIEW and other National Instruments control and data acquisition hardware and software (e.g., MIO, SMIO, DSA, DMM, and others), Hewlett-Packard and Agilent bench-top equipment

Computer Programming:
- C, C++, Java, JavaScript, NetLogo, Pascal, Perl, PHP, Lisp, UNIX shell scripting (including POSIX.2), GNU make, AppleScript, SQL, MySQL, and others

Numerical Analysis:
- MATLAB, R, Maple, Mathematica

Version Control and Software Configuration Management:
- DVCS (Mercurial/MQ, Git/StGit), VCS (RCS, CVS, SVN, SCCS), and others

MATLAB skill set:
- Linear algebra, Fourier transforms, Monte Carlo analysis, nonlinear numerical methods, polynomials, statistics, N-dimensional filters, visualization
- Toolboxes: communications, control system, filter design, genetic algorithm and direct search, signal processing, system identification

Software Verification:
- KeY, PRISM, KeYmaera

Information/Internet Technology:
- Networking (UDP, TCP, ARP, DNS, Dynamic routing), Services (Apache, SQL, MediaWiki, POP, IMAP, SMTP, application-specific daemon design)

Desktop Editing and Productivity Software:
- Vim, Emacs, Eclipse
- TEX (LATEX, BIBTEX, PSTricks),
- Microsoft Office, OpenOffice.org, LibreOffice, Corel WordPerfect, Google Docs
- GIMP, InkScape

Operating Systems:
- Microsoft Windows family, Apple OS X, IBM OS/2, Linux, BSD, IRIX, AIX, Solaris, and other UNIX variants

EXPERTISE

Mathematics:
- Applied Mathematics, Real and Complex Analysis, Measure Theory, Differential Geometry, Game Theory, Graph Theory, Combinatorics

Control Theory and Engineering:
- Linear and Nonlinear Systems Theory, Feedback, Variable Structure Systems and Sliding Modes, Distributed and Intelligent Control, Dynamic Optimization, Biomimicry, Bioinspiration, Hybrid and CyberPhysical Systems

Communications and Signal Processing:
- Probability, Random Variables, Stochastic Processes, Information Theory, Estimation, Networks

Computer Science and Engineering:
- Model Checking (automated, distributed, hybrid, probabilistic), Hybrid Automata, Software Verification, Component-Based Reusable Software

Natural and Social Sciences (Biology, Neuroscience, Psychology, Anthropology):
- Behavioral Ecology, Foraging Theory, Cooperation/Altruism, Impulsiveness, Evolution

REFERENCES AVAILABLE TO CONTACT

Available upon request. Otherwise, see:
http://www.tedpavlic.com/engjobsearch/docs/pavlic_reference_list.pdf.

MORE INFORMATION

More information and auxiliary documents can be found at
http://www.tedpavlic.com/engjobsearch/.