

## Theodore P. Pavlic

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CONTACT INFORMATION	Department of Electrical and Computer Engineering The Ohio State University 205 Drees Labs 2015 Neil Avenue Columbus, OH 43210 USA	Cell: (760) 483-3390 Fax: (614) 292-7596 E-mail: <a href="mailto:pavlic.3@osu.edu">pavlic.3@osu.edu</a> WWW: <a href="http://www.tedpavlic.com">www.tedpavlic.com</a>
OBJECTIVE	Placement in an academic faculty position doing research in distributed systems	
SECURITY CLEARANCE	Department of Defense Top Secret SCI with polygraph (expired: 2002)	
CITIZENSHIP	USA	
RESEARCH INTERESTS	Agent-based modeling, hybrid systems, distributed algorithms, amorphous computing, control theory, communication theory, behavioral ecology, cooperation theory, engineering education	
EDUCATION	<b>The Ohio State University</b> , Columbus, Ohio USA  Ph.D., Electrical and Computer Engineering, August 2010 <ul style="list-style-type: none"><li>• Thesis Topic: <i>Design and Analysis of Optimal Task-Processing Agents</i></li><li>• Thesis Proposal: <i>Cooperative Task Processing</i></li><li>• Candidacy Exam: <i>Research Problems in Distributed Control for Energy Systems</i></li><li>• Adviser: Professor Kevin M. Passino</li><li>• Area of Study: Control Engineering</li></ul> M.S., Electrical and Computer Engineering, August 2007 <ul style="list-style-type: none"><li>• Thesis Topic: <i>Optimal Foraging Theory Revisited</i></li><li>• Adviser: Professor Kevin M. Passino</li><li>• Area of Study: Control Engineering</li></ul> B.S., Electrical and Computer Engineering, June 2004 <ul style="list-style-type: none"><li>• <i>Magna cum Laude</i>, With Honors in Engineering</li><li>• Electrical specialization (emphasis on electromagnetics and digital computers)</li><li>• Minor in Computer and Information Systems (programming and algorithms)</li></ul>	
ACADEMIC APPOINTMENTS	<b>Postdoctoral Researcher</b> Department of Computer Science and Engineering, The Ohio State University <ul style="list-style-type: none"><li>• National Science Foundation Cyber-Physical Systems (ENG, ECCS)<ul style="list-style-type: none"><li>• Autonomous Driving in Mixed-Traffic Urban Environments (#0931669)</li><li>• Automatic verification of hybrid systems</li></ul></li></ul>	September 2010 to present
PUBLICATIONS	Pavlic, T.P., and K.M. Passino. Cooperative task processing. <i>IEEE Transactions of Automatic Control</i> . 2010. Submitted.  Pavlic, T.P., and K.M. Passino. Generalizing foraging theory for analysis and design. <i>The International Journal of Robotics Research</i> . 2009. Submitted.  Pavlic, T.P., and K.M. Passino. When rate maximization is impulsive. <i>Behavioral Ecology and Sociobiology</i> , 64(8):1255–1265. August 2010. doi:10.1007/s00265-010-0940-1	

	<p>Pavlic, T.P., and K.M. Passino. The sunk-cost effect as an optimal rate-maximizing behavior. <i>Acta Biotheoretica</i>. 2010. In press. doi:10.1007/s10441-010-9107-8</p> <p>Pavlic, T.P., and K.M. Passino. Foraging theory for autonomous vehicle speed choice. <i>Engineering Applications of Artificial Intelligence</i>, 22(3):482–489, April 2009. doi:10.1016/j.engappai.2008.10.017</p> <p>Pavlic, T.P. <i>Optimal Foraging Theory Revisited</i>. Master’s thesis, The Ohio State University, Columbus, OH, 2007.</p>
CONFERENCE PUBLICATIONS	<p>Pavlic, T.P., and K.M. Passino. Cooperative task processing. In: <i>Proceedings of the ICAM 2009 Symposium: Emergence in Physical, Biological, and Social Systems IV</i>, November 13, 2009. Poster abstract.</p> <p>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: <i>Proceedings of the 2003 American Society for Engineering Education Annual Conference &amp; Exposition</i>, 2003.</p>
BOOKS IN PREPARATION	<p>Pavlic, T.P., B.W. Andrews, K.M. Passino, and T.A. Waite. <i>Foraging Theory for Engineering</i>.</p>
REFeree FOR JOURNALS	<ul style="list-style-type: none"> <li>• <i>IEEE Transactions on Signal Processing</i></li> <li>• <i>The International Journal of Robotics Research</i></li> <li>• <i>49<sup>th</sup> Annual Conference on Decision and Control</i></li> <li>• <i>Behavioral Ecology</i></li> <li>• <i>Bioinspiration &amp; Biomimetics</i></li> </ul>
AWARDS	<p>National Science Foundation</p> <ul style="list-style-type: none"> <li>• GK-12 Fellowship, 2006</li> <li>• Graduate Research Fellowship Honorable Mention, 2005</li> </ul> <p>The Ohio State University</p> <ul style="list-style-type: none"> <li>• Dean’s Distinguished University Fellowship, 2004</li> <li>• Electrical and Computer Engineering Bradshaw Scholarship, 2002–2004</li> <li>• Electrical and Computer Engineering Shafstall Scholarship, 2001–2003</li> <li>• University Scholarship, 1999–2003</li> </ul>
TEACHING EXPERIENCE	<p><b>The Ohio State University</b>, Columbus, Ohio USA</p> <p><i>Teaching Assistant</i> <b>September 2007 to August 2009</b> (sample graded material and student evaluations available upon request)</p> <ul style="list-style-type: none"> <li>• Instructor for ECE 327: Electronic Devices and Circuits Laboratory I <ul style="list-style-type: none"> <li>• Autumn 2007, Winter 2008 (2 sections), Spring 2008 (2 sections), Winter 2009 (2 sections), and Summer 2009</li> <li>• Sample student evaluations available upon request</li> <li>• Responsible for 1 hour lecture and supervision of 3 hour laboratory where junior and senior undergraduate students design and implement infrared modem and speaker driver for analog electronic audio signals</li> <li>• Developed hundreds of pages of supplementary course material, including a course web page archived at <a href="http://www.tedpavlic.com/teaching/osu/ece327">http://www.tedpavlic.com/teaching/osu/ece327</a></li> </ul> </li> <li>• Grader for ECE 481 Ethics in Electrical and Computer Engineering <ul style="list-style-type: none"> <li>• Autumn 2007 and Autumn 2008</li> </ul> </li> </ul>

- Instructor for ECE 209: Circuits and Electronics Laboratory
  - Autumn 2008
  - Sample student evaluations available upon request
  - Responsible for 0.5 hour lecture and supervision of 3.5 hour laboratory where sophomore undergraduate students learn how to use basic laboratory equipment to study properties of electronic circuits
  - Developed supplementary course material, including a course web page archived at <http://www.tedpavlic.com/teaching/osu/ece209>
- Instructor for ECE 557: Control, Signals, and Systems Laboratory
  - Summer 2008 (2 sections) and Summer 2009
  - Sample student evaluations available upon request
  - Responsible for 0.5 hour lecture and supervision of 3.5 hour laboratory where senior undergraduate students combine [Simulink](#), with [dSPACE RTI1104](#) real-time control hardware and software to do analysis and control implementation for linear systems
  - Developed supplementary course material, including a course web page archived at <http://www.tedpavlic.com/teaching/osu/ece557>
- Lab Instructor for ECE 758: Control Systems Implementation Laboratory
  - Spring 2009 (2 sections)
  - Sample student evaluations available upon request
  - Responsible for 0.5 hour lecture and supervision of 3.5 hour laboratory where graduate students and senior undergraduate students combine [Simulink](#), with [dSPACE RTI1104](#) real-time control hardware and software to do analysis and advanced control implementation for linear and non-linear systems
  - Developed supplementary course material, including a course web page archived at <http://www.tedpavlic.com/teaching/osu/ece758>

*Graduate Student*

**June 2004 to present**

- [Dean's Distinguished University Fellow](#) (June 2004 to present)  
Includes M.S. and Ph.D. research and course work.
- [National Science Foundation GK-12 Fellow](#) (September 2006 to October 2007)  
Developed, implemented, and evaluated daily 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 laboratory on engineering fundamentals (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 in-class 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](#).

- Worked to improve undergraduate education of component based software engineering topics.
- Researched needed changes to RESOLVE/C++ implementation for ANSI/C++ compliance.

*Grader* **September 2001 to December 2001**

- Graded daily electromagnetics assignments (ECE 311).

*Undergraduate Student* **September 1999 to June 2004**

## PROFESSIONAL EXPERIENCE

### **National Instruments**, Austin, Texas USA

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

- Designed final verification testing 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 on new 16-bit 800 kHz NI-6120 SMIO DAQ board.
- Designed high quality filter/amplifier source for use with NI-5411 arbitrary function generator.

### **IBM Network Storage**, Research Triangle Park, North Carolina USA

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

- Designed and implemented high-availability, redundant internode communications subsystem.
- Participated in software development of various vital box services.

### **CallTech Communications**, Columbus, Ohio USA

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

- Responsible for the acquisition, setup, maintenance, and administration of all Internet hardware and software supporting [NetWalk](#) Internet service and web presence provider.
- Designed and implemented state of the art open source high-availability load balancing system supporting thousands of virtual servers.
- Developed software call center support software for clients such as CompuServe, AOL, and Priceline.

### **MegaLinx Communications**, Dublin, Ohio USA

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

- Produced web content for commercial clients.
- Assisted in administration of UltraSPARC, x86, 68020, 68030, and PowerPC systems running Sun Solaris, Linux, Microsoft DOS, Microsoft Windows NT, and Apple Macintosh operating systems.
- Developed multi-platform open source file sharing solution.
- Provided technical support for Internet and web presence customers.

## SERVICE

Director of Computers, [Engineers' Council](#), [The Ohio State University](#), 2002

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

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.

TECHNICAL SKILLS Extensive hardware and software experience in networking, information technology, and analog and digital electronics

**MATLAB** experience: linear algebra, Fourier transforms, nonlinear numerical methods, polynomials, statistics,  $N$ -dimensional filters, visualization

**MATLAB** toolboxes: communications, control system, filter design, genetic algorithm and direct search, signal processing, system identification

Embedded 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 and Control: **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)

Analog and Digital Electronics: Bipolar and FET implementations of continuous and switched amplifiers, modulators, and filters

Programming: C, C++, Java, JavaScript, Pascal, Perl, PHP, Lisp, UNIX shell scripting, GNU make, AppleScript, SQL, DVCS (Mercurial, git), VCS (RCS, CVS, SVN, SCCS), and others

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

Computer Applications: **T<sub>E</sub>X** (**L<sup>A</sup>T<sub>E</sub>X**, **BIB<sub>T</sub>E<sub>X</sub>**, **PSTricks**), most common productivity packages (for Windows, OS X, and Linux platforms), Vim

Computer-Aided Design: Cadence OrCAD, NI Multisim, SPICE, pst-circ

	Operating Systems: Microsoft Windows family, Apple OS X, Linux, BSD, IRIX, AIX, Solaris, and other UNIX variants
MATHEMATICAL EXPERTISE	Real and Complex Analysis, Measure Theory, Differential Geometry, Game Theory, Graph Theory, Combinatorics
ENGINEERING EXPERTISE	Control: Linear and Nonlinear Systems Theory, Feedback, Variable Structure Systems and Sliding Modes, Distributed and Intelligent Control, Dynamic Optimization, Biomimicry
	Communications and Signal Processing: Probability, Random Variables, Stochastic Processes, Estimation, Networks
BIOLOGICAL EXPERTISE	Behavioral Ecology: Foraging Theory, Cooperation, Impulsiveness, Evolution
APPLICATION AREAS	Autonomous and Unmanned Vehicles, Flexible Manufacturing Systems, Distributed Power Generation, Intelligent Lighting, Power Demand Response, Microgrids, Smart Grids
REFERENCES	Available upon request