Diana F. Spears

Adjunct Associate Professor
Mathematics Department
University of Wyoming, Laramie WY 82071
Last updated: October 11, 2009

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EDUCATION

University of Maryland, College Park MD
Ph.D., Computer Science, May 1990

University of Maryland, College Park MD
M.S., Computer Science, December 1986

University of New Mexico, Albuquerque NM
B.A., Fine Arts, December 1974

ACADEMIC AND INDUSTRIAL EXPERIENCE

5/08–present **Owner, Swarmotics, LLC**, Laramie WY

10/09–present **Adjunct Associate Professor, Mathematics Dept - University of Wyoming**, Laramie WY

5/08–present **Adjunct Associate Professor, Computer Science Dept - University of Wyoming**, Laramie WY

8/01–5/08 **Associate Professor, Computer Science Dept - University of Wyoming**, Laramie WY; *Granted tenure July, 2005.*

6/86–6/01 **Research Scientist, AI Center - Naval Research Laboratory**, Washington DC

12/80–6/86 **Research Scientist, National Institute of Standards and Technology**, Gaithersburg MD

12/77–12/80 **Data Analyst, NASA, Goddard Space Flight Center**, Greenbelt MD

PRIMARY RESEARCH INTERESTS

- Computational fluid dynamics based algorithms for multi-robot chemical/biological plume tracing
- Adaptive swarm robotic sensing networks/grids
- Behaviorally-assured adaptive and machine learning systems ("safe learning")
- Mathematical/graphical modeling and homeomorphic surface reconstruction

HONORS AND RECOGNITION

• D. Spears's M.S. student Antons Rebguns won the first prize in the "best student paper" competition at the 2008 IEEE Swarm Intelligence Symposium (SIS'08).
• D. Spears's Ph.D. student Dimitri Zarzhitsky won the "best student paper" award at the IEEE International Conference on Systems, Man, and Cybernetics (SMC'05). He also twice won the "best student presentation" award at the Graduate Student Symposium, 2005 and 2006.
• NRL Alan Berman Research Publication Award: 2001 (for "Asimovian adaptive agents" paper)
• NRL Notable Achievement Award: 1999 (for "Using Artificial Physics to control agents" paper)
• NRL Alan Berman Research Publication Award: 1994 (for "Using genetic algorithms for concept learning" paper)
• Certificate of appreciation from ONR sponsor for outstanding contribution on Hybrid Learning Project: 1998
• Marquis Who's Who in the U.S.: 2002 – present
• Marquis Who's Who in the East: 1995 – 2001
• NRL Awards: 1982, 1983, 1985, 1990, 1991, 1992, 1995, 1998, 2000
• Research publications of Diana Spears have been used in courses at Rutgers, Princeton, University of Southern California, Carnegie-Mellon University, University of Rochester, University of Illinois, University of Michigan, George Mason University, Johns Hopkins University, Swedish Institute of Computer Science, California Institute of Technology, and Rice University.
• The publications of Diana F. Spears (formerly Gordon) have been cited approximately 700 times by other researchers, according to CiteSeer.

PRINCIPAL AREAS OF TEACHING

• COSC 4550/5550 Artificial Intelligence; Fall 2001, Fall 2003, Fall 2004, Fall 2005, Fall 2006, Fall 2007, 3 credit hours
• COSC 4560/5560 Modern Robots and Softbots (New course developed by D. Spears); Spring 2006, Spring 2007, Spring 2008, 3 credit hours
• COSC 4555/5555 Machine Learning (New course developed by D. Spears); Spring 2004, Spring 2005, Spring 2006, Fall 2007, 3 credit hours
• COSC/MATH 2300 Discrete Structures; Spring 2002, Spring 2003, Spring 2004, Spring 2005, 3 credit hours
• COSC 5050 Research Writing; Spring 2007, 3 credit hours
• ES 3070 C With Numerical Methods; Fall 2002, Spring 2003, 3 credit hours

PAPERS IN REVIEW

Rebguns, A., D. Spears, R. Anderson-Sprecher, W. Spears, and A. Kletsov. Robot scouts for estimating swarm success probability. *Journal paper in review*.

Rebguns, A., D. Green, D. Spears, G. Levine, and U. Kuter. Learning and verification of safety parameters for airspace deconfliction. *Journal paper in review*.

Zhang, X., ..., D. Green, ..., A. Rebguns, ..., D. Spears, and ... An ensemble architecture

for learning complex problem solving techniques from demonstration. *Journal paper in review*.

REFEREED JOURNAL PUBLICATIONS

Spears, D., D. Thayer, and D. Zarzhitsky (2009). Foundations of swarm robotic chemical plume tracing from a fluid dynamics perspective. *International Journal of Intelligent Computing and Cybernetics, Special Issue on Swarm Robotics*.

Spears, D., W. Kerr, and W. Spears (2006). Physics-based robot swarms for coverage problems. *International Journal of Intelligent Control and Systems 11*(3).

Spears, W., D. Spears, J. Hamann, and R. Heil (2004). Distributed, physics-based control of swarms of vehicles. *Autonomous Robots 17*(2-3).

Gordon-Spears, D. and K. Kiriakidis (2004). Reconfigurable robot teams: Modeling and supervisory control. *IEEE Transactions On Control Systems Technology 12*(5).

Kellogg, J., C. Bovais, J. Dahlburg, R. Foch, J. Gardner, D. Gordon, R. Hartley, B. Kamgar-Parsi, H. McFarlane, F. Pipitone, R. Ramamurti, A. Sciambi, W. Spears, D. Srull, and C. Sullivan (2002). The NRL micro tactical expendable (MITE) air vehicle. *The Aeronautical Journal 106*(1062), 431–441.

Gordon, D. (2000). Asimovian adaptive agents. *Journal of Artificial Intelligence Research 13*, 95–153.

Gordon, D. and M. des Jardins (1995). Evaluation and selection of biases for machine learning. *Machine Learning 20*(1).

De Jong, K., W. Spears, and D. Gordon (1993). Using genetic algorithms for concept learning. *Machine Learning 13*(2/3), 161–188.

Gordon, D. and D. Subramanian (1993). A multistrategy learning scheme for agent knowledge acquisition. *Informatica 17*, 331–346.

Gordon, D. (1991). Active learning and bias adjustment. *Naval Research Laboratory Review*.

Gordon, D. and D. Perlis (1989). Explicitly biased generalization. *Computational Intelligence 5*(10), 67–81.

Meyers, D. and D. Gordon (1982). Kinematic equations for industrial manipulators. *The Industrial Robot*, 162–165.

REFEREED LECTURE NOTES IN ARTIFICIAL INTELLIGENCE

Spears, D., W. Kerr, and W. Spears (2009). Fluid-like swarms with predictable macroscopic behavior. In *Lecture Notes in Artificial Intelligence, Volume 4324*. Springer-Verlag.

Spears, W., D. Spears, R. Heil, and W. Kerr (2005). An overview of physicomimetics. In E. Sahin and W. Spears (Eds.), *Lecture Notes in Artificial Intelligence, State-of-the-Art Series*.

Zarzhitsky, D., D. Spears, D. Thayer, and W. Spears (2004). Agent-based chemical plume tracing using fluid dynamics. In *Lecture Notes in Artificial Intelligence, Volume 3228*. Springer-Verlag.

Kerr, W., D. Spears, W. Spears, and D. Thayer (2004). Two formal gas models for multiagent sweeping and obstacle avoidance. In *Lecture Notes in Artificial Intelligence, Volume 3228*. Springer-Verlag.

Spears, W., D. Spears, and R. Heil (2004). A formal analysis of potential energy in a multiagent system. In *Lecture Notes in Artificial Intelligence, Volume 3228*. Springer-Verlag.

Gordon-Spears, D. and W. Spears (2003). Analysis of a phase transition in a physics-based multiagent system. In *Lecture Notes in Artificial Intelligence, Volume 2699*. Springer-Verlag.

Kiriakidis, K. and D. Gordon-Spears (2003). Formal modeling and supervisory control of reconfigurable robot teams. In *Lecture Notes in Artificial Intelligence, Volume 2699*. Springer-Verlag.

Gordon, D. (2001). APT agents: Agents that are adaptive, predictable and timely. In *Lecture Notes in Artificial Intelligence, Volume 1871*. Springer-Verlag.

Kiriakidis, K. and D. Gordon (2001). Adaptive supervisory control of multiagent systems. In *Lecture Notes in Artificial Intelligence, Volume 1871*. Springer-Verlag.

REFEREED INTERNATIONAL CONFERENCE PUBLICATIONS

Zhang, X., ..., D. Green, ..., A. Rebguns, ..., D. Spears, and ... (2009). An ensemble learning and problem solving architecture for airspace management. In *The 21st Conference on Innovative Applications of Artificial Intelligence (IAAI'09)*.

Agassounon, W., W. Spears, R. Welsh, D. Zarzhitsky, and D. Spears (2009). Toxic plume source localization in urban environments using collaborating robots. In *IEEE International Conference on Technologies for Homeland Security (Poster Session)*.

Frey, C. L., D. Zarzhitsky, W. Spears, D. Spears, C. Karlsson, B. Ramos, J. Hamann, and E. Widder (2008). A physicomimetics control framework for swarms of autonomous surface vehicles. *Oceans'08 Conference*.

Hettiarachchi, S., P. Maxim, W. Spears, and D. Spears (2008). Connectivity of collaborative robots in partially observable domains. In *International Conference on Control, Automation, and Systems*.

Zarzitsky, D., D. Spears, and W. Spears (2005). Distributed robotics approach to chemical plume tracing. In *IEEE/RSJ International Conference on Intelligent Robots and Systems* ***(IROS)***.

Kerr, W. and D. Spears (2005). Robotic simulation of gases for a surveillance task. In *IEEE/RSJ International Conference on Intelligent Robots and Systems* ***(IROS)***.

Zarzitsky, D. and D. Spears (2005). Swarm approach to chemical source localization. In *IEEE International Conference on Systems, Man, and Cybernetics (SMC)*.

Spears, W., D. Spears, and D. Zarzitsky (2005, Invited). Physicomimitics positioning methodology for distributed, autonomous swarms. In *GOMACTech-05 Intelligent Technologies*.

Zarzhitsky, D., D. Spears, D. Thayer, and W. Spears (2004). A fluid dynamics approach to multi-robot chemical plume tracing. In *International Conference on Autonomous Agents and Multi Agent Systems **(AAMAS)***.

Spears, W., R. Heil, D. Spears, and D. Zarzhitsky (2004). Physicomimetics for mobile robot formations. In *International Conference on Autonomous Agents and Multi Agent Systems **(AAMAS)***.

Kiriakidis, K. and D. Gordon (2001). Supervision of multiple-robot systems. In *American Control Conference **(ACC)***.

Kellogg, J., C. Bovais, J. Dahlburg, R. Foch, J. Gardner, D. Gordon, R. Hartley, B. Kamgar-Parsi, H. McFarlane, F. Pipitone, R. Ramamurti, A. Sciambi, W. Spears, D. Srull, and C. Sullivan (2001). The NRL Mite Air Vehicle. In *Proceedings of the Bristol RPV/AUV Systems Conference*.

Gordon, D. and K. Kiriakidis (2000). Adaptive supervisory control of interconnected discrete event systems. In *IEEE Conference on Control Applications*.

Gordon, D. and K. Kiriakidis (2000b). Design of adaptive supervisors for discrete event systems via learning. In *International Mechanical Engineering Congress and Exposition*.

Gordon, D., W. Spears, O. Sokolsky, and I. Lee (1999). Distributed spatial control, global monitoring and steering of mobile agents. In N. Bourbakis (Ed.), *IEEE International Conference on Information, Intelligence, and Systems (ICIIS)*, pp. 681–688. IEEE.

Spears, W. and D. Gordon (1999). Using Artificial Physics to control agents. In N. Bourbakis (Ed.), *IEEE International Conference on Information, Intelligence, and Systems (ICIIS)*, pp. 281–288. IEEE.

Gordon, D. (1998). Well-behaved Borgs, Bolos, and Berserkers. In *International Conference on Machine Learning **(ICML)***, pp. 224–232. Morgan Kaufmann.

Gordon, D., D. Subramanian, M. Haught, R. Kobayashi, and S. Marshall (1998). Modeling individual differences in learning a navigation task. In *Conference of the Cognitive Science Society **(COG-SCI)***, pp. 271–276. Lawrence Erlbaum.

Gordon, D. and D. Subramanian (1997). A cognitive model of learning to navigate. In *Conference of the Cognitive Science Society **(COG-SCI)***. Lawrence Erlbaum.

Gordon, D. and D. Subramanian (1996). Cognitive modeling of action selection learning. In *Conference of the Cognitive Science Society **(COG-SCI)***, pp. 546–551. Lawrence Erlbaum.

Rao, B., D. Gordon, and W. Spears (1995). For every generalization action, is there an equal and opposite reaction? (Analyzing the conservation law for generalization performance). In *International Conference on Machine Learning **(ICML)***, pp. 471–479.

Gordon, D. and J. Grefenstette (1990). Explanations of empirically derived reactive plans. In *International Conference on Machine Learning* ***(ICML)***.

Gordon, D. (1989). Concept learning using adjustable bias. In *Annual Conference of the International Association of Knowledge Engineers*.

Gordon, D. (1988). A cautious method for explicitly biasing generalization. In *Rocky Mountain Conference on Artificial Intelligence*, pp. 200–210.

REFEREED WORKSHOP AND SYMPOSIUM PUBLICATIONS

Maxim, P., W. Spears, and D. Spears (2009). Robotic chain formations. *IFAC Workshop on Networked Robotics (NetRob'09)*.

Levine, G., U. Kuter, K. VanSloten, J. DeJong, D. Green, A. Rebguns, and D. Spears (2009). Using qualitative domain proportionalities for learning mission safety in airspace operations. *IJCAI'09 Workshop on Learning Structural Knowledge From Observations*.

Rebguns, A., R. Anderson-Sprecher, D. Spears, W. Spears, and A. Kletsov (2008). Using scouts to predict swarm success rate. *Swarm Intelligence Symposium (SIS'08)*.

Rebguns, A., D. Green, G. Levine, U. Kuter, and D. Spears (2008). Inferring and applying safety constraints to guide an ensemble of planners for airspace deconfliction. *CP/ICAPS COPLAS'08 Workshop on Constraint Satisfaction Techniques for Planning and Scheduling Problems*.

Maxim, P., S. Hettiarachchi, W. Spears, D. Spears, J. Hamann, T. Kunkel, and C. Speiser (2008). Trilateration localization for multi-robot teams. In *International Conference on Informatics in Control, Automation and Robotics, 4th International Workshop on Multi-Agent Robotic Systems (MARS'08)*.

Kuter, U., G. Levine, D. Green, A. Rebguns, G. DeJong, and D. Spears (2007). Learning constraints via demonstration for safe planning. In *AAAI Workshop on Acquiring Planning Knowledge Via Demonstration*. AAAI Press.

Spears, W., J. Hamann, P. Maxim, T. Kunkel, R. Heil, D. Zarzhitsky, D. Spears, and C. Karlsson (2006). Where are you? In *SAB Swarm Robotics Workshop*.

Kelly, C., D. Spears, C. Karlsson, and P. Polyakov (2006). An ensemble of anomaly classifiers for identifying cyber attacks. In *International SIAM Workshop on Feature Selection for Data Mining; Also, selected as the best paper in the MURI and republished in the book ONR Critical Infrastructure Protection Research*. Wiley Publishers.

Spears, D., D. Thayer, and D. Zarzitsky (2005, Invited). Multi-robot chemical plume tracing. In A. Schultz, L. Parker, and F. Schneider (Eds.), *Third International Workshop on Multi-Robot Systems*.

Zarzitsky, D., D. Spears, and W. Spears (2005). Swarms for chemical plume tracing. In *IEEE Swarm Intelligence Symposium (SIS)*.

Spears, W. and D. Gordon (2000). Evolving finite-state machine strategies for protecting resources. In Springer-Verlag (Ed.), *International Symposium on Methodologies for Intelligent Systems (ISMIS)*, Volume 12.

Gordon, D. and D. Subramanian (1996). A comparison of action selection learning methods. In *International Workshop on Multistrategy Learning*, pp. 95–102. George Mason University.

Gordon, D., P. Tag, and R. Bankert (1994). Unsupervised classification procedures applied to satellite cloud data. In *AIRIES Workshop*.

De Jong, K., W. Spears, and D. Gordon (1994). Using Markov chains to analyze GAFOs. In M. Vose and D. Whitley (Eds.), *Foundations of Genetic Algorithms **(FOGA)***, Volume 3, pp. 115–137. Morgan Kaufmann.

Drapkin, J., D. Gordon, S. Kraus, M. Miller, M. Nirkhe, and D. Perlis (1994). Calibrating, counting, grounding, grouping. In *Working Notes of the AAAI94 Fall Symposium on Control of the Physical World by Intelligent Agents*.

Gordon, D. and D. Subramanian (1993). A multistrategy learning scheme for assimilating advice in embedded agents. In *International Workshop on Multistrategy Learning*, pp. 218–223. George Mason University.

Gordon, D. (1992). Queries for bias testing. In *Workshop on Problem Reformulation and Representation Change*.

Spears, W. and D. Gordon (1992). Is consistency harmful? In *Biases in Inductive Learning Workshop at the International Conference on Machine Learning*.

Spears, W. and D. Gordon (1991). Adaptive strategy selection for concept learning. In *International Workshop on Multistrategy Learning*, pp. 231–236. George Mason University.

Gordon, D. (1991). Active bias testing and adjustment for concept learning. In *IJCAI Workshop on Evaluating and Changing Representation in Machine Learning*.

Gordon, D. (1991b). Improving the comprehensibility, accuracy, and generality of reactive plans. In *International Symposium on Methodologies for Intelligent Systems (ISMIS)*, pp. 358–367.

Gordon, D. (1991c). An enhancer for reactive plans. In *International Workshop on Machine Learning*, pp. 505–508.

Gordon, D. (1989). Screening hypotheses with explicit bias. In *International Workshop on Machine Learning*.

EDITED BOOKS AND COLLECTIONS

Barley, M., H. Mouratidis, A. Unruh, D. Spears, P. Scerri, and F. Masacci (Eds.) (2009). *Safety and Security in Multiagent Systems: The Early Years, Lecture Notes in Artificial Intelligence, Volume 4324*. Springer-Verlag.

Fisher, M., M. Singh, D. Spears, and M. Wooldridge (Eds.) (2007). *Special Issue of the Journal of Applied Logic on Logic-Based Agent Verification, Volume 5, Issue 2*.

Rouff, C., M. Hinchey, J. Rash, W. Truzskowski, and D. Gordon-Spears (Eds.) (2006). *Agent Technology From a Formal Perspective*. Springer.

Truzskowski, W., J. Rash, C. Rouff, D. G. Spears, and M. Hinchey (Eds.) (2003). *Formal Approaches to Agent-Based Systems, Lecture Notes in Computer Science, Volume 2699*. Springer-Verlag.

Truzskowski, W., J. Rash, C. Rouff, D. Gordon, and M. Hinchey (Eds.) (2001). *Formal Approaches to Agent-Based Systems, Lecture Notes in Computer Science, Volume 1871*. Springer-Verlag.

des Jardins, M. and D. Gordon (Eds.) (1995). *Special issue of Machine Learning Journal on Bias Evaluation and Selection*. Kluwer.

Gordon, D. and J. Shavlik (Eds.) (1995). *Online Proceedings of the ICML95 Workshop on Agents That Learn from Other Agents*.

Gordon, D. (Ed.) (1992). *Proceedings of the ICML92 Workshop on Biases in Inductive Learning*.

INVITED BOOK CHAPTERS AND MAGAZINE ARTICLES

Frey, C. L., D. Zarzhitsky, and D. Spears (2009). A physics-based framework for distributed control of mobile sensor networks in the marine environment. *Sea Technology Magazine*.

Kelly, C., D. Spears, C. Karlsson, and P. Polyakov (2006). An ensemble of anomaly classifiers for identifying cyber attacks. Book chapter. In *ONR Critical Infrastructure Protection Research*. Wiley.

Kannan, S., I. Lee, W. Lee, O. Sokolsky, D. Spears, and W. Spears (2006). Anomaly and misuse detection in network traffic streams: Checking and machine learning approaches. Book chapter. In *ONR Critical Infrastructure Protection Research*. Wiley.

Gordon-Spears, D. (2006). Assuring the behavior of adaptive agents. Book chapter. In *Agent Technology From a Formal Perspective*. Kluwer.

Spears, W. and D. Gordon (2002). Evolution of strategies for resource protection problems. Book chapter. In *Theory and Application of Evolutionary Computation: Recent Trends*. Springer-Verlag.

Gordon, D. and D. Perlis (1995). Explicitly biased generalization. Book chapter. In *Goal-Driven Learning*. MIT Press.

De Jong, K., W. Spears, and D. Gordon (1993). Using genetic algorithms for concept learning. Book chapter. In *Goal-Driven Learning*. Kluwer.

UNIVERSITY OF WYOMING TECHNICAL REPORTS

Shin, J. and D. Spears (2006). The basic building blocks of malware. Technical report, University of Wyoming.

DOCTORAL THESIS

Gordon, D. (1990). Active bias adjustment for incremental, supervised concept learning. Technical report, (advisor: Don Perlis) University of Maryland, College Park, MD.

INVITED PRESENTATIONS (since at UW)

- Workshop on "Trustable Deployed Adaptive Systems," meeting of the DARPA-sponsored Information Science and Technology (ISAT) study, 2006. Invited by DARPA.
- Naval Research Laboratory Workshop on "Multi-Robot Systems," 2005
- Naval Research Laboratory, 2003
- Panel member, Second Goddard Workshop on Formal Approaches to Agent-Based Systems, 2002.

RESEARCH GRANTS

- Co-Principal Investigator: NOAA, "Mobile distributed in-situ sensing networks," joint with Florida Atlantic University (FAU). Dates TBD.
- Sub-Principal Investigator: Harbor Branch Oceanographic Institution (HBOI), Woods Hole Oceanographic Institution, Ocean Research and Conservation Association, Waitt Institute for Discovery, Virginia Institute of Marine Science, Monterey Bay Aquarium Institute, and Univ. of Queensland. 1-09–8-09.
- Sub-Principal Investigator: DARPA, "Generalized Integrated Learning Architecture (GILA)," (total amount is proprietary). Ken Whitebread, Lockheed-Martin Co., is the PI. Includes Lockheed-Martin ATL, Univ. of Maryland, Georgia Institute of Technology, University of Illinois, Arizona State University, Stanford University, Univ. of Massachusetts, Fujitsu Laboratories, and Univ. of Wyoming. $550K total to UW for 5-06–12-08.
- Investigator: ONR, "Bioluminescence truth data management", joint with Harbor Branch Oceanographic Institution, Inc., $862K total; $91K total to UW for 1-07–5-08.
- Investigator: OSD Joint Robotics Program (JRP) project "Autonomous Data Exchange in Multi-Robot Collectives", $200K for 1-07–8-08.
- UW Principal Investigator: ONR MURI project, joint with University of Pennsylvania and Georgia Institute of Technology, "Anomaly and Misuse Detection in Network Traffic Streams - Checking and Machine Learning Approaches", $1M total; $262K total to UW for 6-04–6-07.
- Principal Investigator: NSF SGER, "Robotic Sensor Networks for Chemical Plume Tracing" ($100K for 9-05–8-06).
- Investigator: DARPA project "Optimizing Interaction Potentials for Multi-Agent Surveillance", $115K for 6-04–5-05.
- Investigator: NIH/BRIN project "INBRE; Genetic Algorithms", $125K for 9/04–5/06.
- Co-Principal Investigator: NIH/BRIN project "Viral Epidemiology", $50K for 12-03–6-04.

Prior to UW:

- Principal Investigator: Naval Research Laboratory Base Funding ($100K in FY01).
- Co-Principal Investigator: ONR "Artificial Physics" ($260K in FY01).
- NRL "Fleet Contact": ONR "Semantic Consistency" MURI ($120K per year in FY99, FY00, FY01).
- Principal Investigator: Naval Research Laboratory Base Funding ($150K in FY00).
- Co-Principal Investigator: ONR "Information Warfare Defense" $100K in FY99 and $150K in FY00).
- Co-Principal Investigator: ONR "Hybrid Learning project", co-investigators from Rice and San Diego State Universities ($70K in FY96, $108K in FY97, and $120K in FY98).

STUDENTS SUPERVISED

Current M.S. Students (Co-Chair)

- Brandon Skari: M.S. in COSC, Co-Chair. Prof. Hamann is the Committee Chair.

Previous Ph.D. Student (Advisor/Chair)

- Dimitri Zarzhitsky: Ph.D. 8/08 in COSC; Advisor and Chair. *Dimitri is currently employed by the U.S. Air Force Academy (USAFA), directing three federally-funded research projects on micro-air vehicles with Dr. Daniel Pack. He is also a University of Wyoming Adjunct Professor.* While a graduate student, he was supported by a DARPA grant, and then he was supported full-time by a one-year NSF grant on chemical plume tracing, followed by full-time support by an ONR grant on "Bioluminescence truth data measurement." He did postdoctoral research at USAFA. *Dimitri won the best student paper award at the IEEE International Conference on Systems, Man, and Cybernetics (SMC'05). He also twice won the best student presentation award at the Graduate Student Symposium, 2005 and 2006.*

Previous M.S. Students (Advisor/Chair)

- Antons Rebguns: M.S. 12/08 in COSC, Advisor and Chair; was supported full-time on the DARPA Generalized Integrated Learning Architecture (GILA) grant. *Antons won the first prize in the best student paper competition at the 2008 IEEE Swarm Intelligence Symposium (SIS'08). Antons is currently a Ph.D. student at the University of Arizona.*
- Jinwook Shin: M.S. 5/06 in COSC; Advisor and Chair; was supported full-time by an ONR MURI grant on intrusion detection. *Jinwook is currently working for Microsoft Corp.*
- Alina Bilt: M.S. Plan B 5/06 in COSC; Advisor and Chair; was supported full-time by an ONR MURI grant on intrusion detection.
- Wes Kerr: M.S. 8/05 in COSC; Advisor and Chair; was supported full-time on DARPA grant. *Wes is currently a Ph.D. student at the University of Arizona.*
- Jan-Eric Duden: Advisor and Co-Chair; M.S. 5/02 in COSC.

Previous Postdoctoral Student (Advisor)

- Aleksey Kletsov: Ph.D. in physics; second Ph.D. in ECE. Advisor during summer 2007.

Current Ph.D. Students (Committee Member)

- Lee Frey: Ph.D. in Ocean Engineering, Florida Atlantic University.
- Steve Diersen: Ph.D. in COSC.
- Ryan Harkins: Ph.D. in COSC.
- John Benson: Ph.D. in ECE.

Current M.S. Students (Committee Member)

- Jeff Switzer: M.S. in COSC.

Previous Ph.D. Students (Committee Member)

- Paul Maxim: Ph.D. 12/08 in COSC; was supported full-time by the OSD JRP grant on robotics, and before that he was supported by an NIH/BRIN grant. *Paul is currently working for WYDOT.*
- Suranga Hettiarachchi: Ph.D. 12/07 in COSC; was supported full-time by the OSD JRP grant on robotics, and earlier supported full-time by a DARPA grant. *Suranga is currently a tenure-track Assistant Professor at Indiana University Southeast.*
- Tim Brothers: Ph.D. 12/07 in ECE.
- Dan Grecu: Ph.D. 5/00 in COSC from Worcestor Polytechnic Institute; Sigma Xi award for best dissertation.

Previous M.S. Students (Committee Member)

- Hongjiang Li: M.S. 8/08 in COSC.
- Brennan Kilty: M.S. Plan B, 12/07 in ECE.
- Miranda Bryant: Committee Chair; M.S. 8/07 in COSC.
- Travis Anderson: M.S. 8/07 in ECE.
- Lucas Shaw: M.S. 5/07 in COSC; was supported full-time by an NIH INBRE grant and an NIH/BRIN grant.
- Matthew Geu: M.S. 5/07 in ECE.
- Jeremy Long: M.S. Plan B, 12/06 in ECE.
- Roopa Prabhakara: M.S. 5/06 in ECE.
- Gayathri Sivasankaran: M.S. Plan B, 5/06 in ECE.
- Mike Presho: M.S. 12/05 in MATH.
- Carlos Kelly: RA supervisor, committee member, and co-advisor with Dr. Polyakov, M.S. 8/05 in MATH; was supported full-time on my ONR MURI grant. *Carlos is currently employed by Northrup-Grumann in Denver, Colo.*
- Robert Madsen: M.S. 8/05 in ECE.
- William Harman: M.S. 8/05 in ECE; *won the outstanding thesis award in 2006; currently employed by the Naval Air Warfare Center at China Lake.*
- John Benson: M.S. Plan B, 8/05 in ECE.
- Thomas Schei: M.S. 8/04 in ECE.
- Rodney Heil: M.S. 8/04 in ECE;*currently employed by the Naval Air Warfare Center at China Lake.*
- Paul Maxim: Committee member and RA supervisor 1/04-6/04 on a DARPA grant.
- Mahbub Sardar: M.S. 5/04 in ECE.
- Eric Tastad: M.S. 12/03 in ECE.
- Michael Stauffer: M.S. 5/03 in ECE.
- Thomas Boehne: M.S. 8/02 in COSC.
- Rodney Heil: PROMS M.S. 5/02 in COSC.

Previous Undergraduate Students

- Christer Karlsson(COSC/MATH): Advisor for an ONR-funded project on intrusion detection; advisor for an EPSCoR-funded project, Summer and Fall 2005
- Larry Blackburn (COSC): Supervisor, Spring'07 Senior Design Project on Bayesian networks

PROFESSIONAL AND SCIENTIFIC SERVICE

Organizing Committee Membership

- AAMAS Workshops: "International Workshop on the Safety and Security of Multiagent Systems (SASEMAS)" (*Program Co-Chair in 2006*).
- Goddard Workshops on Formal Approaches to Agent-Based Systems (FAABS) 2000–2002.
- AAAI Spring Symposium on "Safe Learning Agents" 2002.
- ICML Workshop on "Learning in Multi-agent Systems" 1997.
- ICML Workshop on "Agents That Learn from Other Agents" (chair) 1995.
- ICML Workshop on "Biases in Inductive Learning" (chair) 1992.

Program Committee Membership

- International Joint Conferences on Autonomous Agents and Multi-Agent Systems (AAMAS) 2002–2010.
- International Conferences on Machine Learning (ICML) 1998–2002; reviewer 2009.
- IFAC Workshop on Networked Robotics (NetRob) 2009.
- International Conference on Agents and Artificial Intelligence (ICAART) 2009.
- AAMAS Workshops: "International Workshop on the Safety and Security of Multiagent Systems (SASEMAS)" 2003–2007.
- Workshop on "Radical Agent Concepts" (WRAC) 2005.
- National Conferences on Artificial Intelligence (AAAI) 1993–1998.
- International Symposia on Methodologies for Intelligent Systems (ISMIS) 1997.
- Workshops on Intelligent Adaptive Systems 1995-1996.
- Workshop on Comprehensibility 1995.
- Multi-strategy Learning Workshop 1996–1998.
- Human-Computer Interfaces and Machine Learning Workshop 1996.
- Workshop on Learning and Adaptation in Multi-agent Systems 1996.

Referee Service

- IEEE/RSJ International Conferences on Intelligent Robots and Systems (IROS)
- American Control Conference (ACC)
- Autonomous Robots Journal
- IEEE Transactions on Robotics Journal
- Machine Learning Journal
- Journal of Experimental and Theoretical Artificial Intelligence
- Journal of Intelligent Information Systems
- International Journal of Intelligent Computing and Cybernetics
- IEEE Transactions on Systems, Man and Cybernetics Journal
- Simulation: Transactions of the Society for Modeling and Simulation International
- International Journal of Intelligent Control and Systems
- AAAI Student Program
- National Conferences on Artificial Intelligence (AAAI)
- International Joint Conferences on Artificial Intelligence (IJCAI) (selected "outstanding reviewer" in 1997)
- International Symposia on Methodologies for Intelligent Systems
- Conferences on Tools for Artificial Intelligence

Proposal Reviewer Service

- NSF Reviewer on several panels and as an ad hoc reviewer
- DARPA
- ONR

Contributions to Government Program Design

- Contributed part of a section on "Foundations of Cyber Security" for the CIIP/DHS Cyber Security R&D Plan, 2004.
- Co-designed (with ONR PM Ralph Wachter) the AFOSR URI on "Architectures for Secure and Robust Distributed Infrastructures," which resulted in three M.S. theses, three Ph.D. theses, and numerous publications. URI initiated in 2001.

Journal Editorial/Board Responsibilities

- Advisory Board: Journal of Artificial Intelligence Research (JAIR), 2004–present.
- Co-Editor: Special Issue of Journal of Applied Logic, 2006.
- Associate Editor: Journal of Artificial Intelligence Research, 2000–2002.
- Editorial Board: Journal of Artificial Intelligence Research, 1998–2000.
- Co-Editor: Special Issue of Machine Learning Journal, 1995.

OTHER ACTIVITIES

- Invited member of the *AAAI Presidential Panel on the Future of Artificial Intelligence*, 2008–present.
- Interviewed for an article in *IEEE Intelligent Systems* magazine, 2008.
- Member, University of Wyoming Distributed Robotics Laboratory, 2003–present.
- Member of the UW "Wyoming Information, Signal Processing, and Robotics (WISPR)" Research Organization, 2004–present.
- Member of the "Wyoming Institute for Discrete Mathematics and Information Assurance (WIDMIA)" 2005–present.
- Co-Director, University of Wyoming Distributed Robotics Laboratory, 2001–2008.
- Annual talks and demos to Wyoming junior and senior high school girls for the Women in Science Program, 2001–2008.
- Director, University of Wyoming Intrusion Laboratory (UWIL), 2004–2006.
- Interviewed for a documentary that appeared on Wyoming Public Television, 2005.
- Interviewed for an article that appeared in the Laramie Boomerang newspaper, front page, 2005.
- Interviewed for a UW press release, 2005.
- Robotics TV interview for KCWY, 2005.
- Robots used for UW promotional recruitment video, 2004. Video won the Regional Conference first prize award.
- Robot demonstrations for Wyoming Legislators, 2005.
- National Public Radio interview, 2003.
- Naval Research Laboratory "Fleet Contact" for an Office of Naval Research MURI on "Semantic Consistency" of computer security, 1999–2001.
- Group Leader, Adaptive Systems Group, Naval Research Laboratory, 1999–2000.
- General Workshops Chair: International Conference on Machine Learning, 1997.

UNIVERSITY COMMITTEE SERVICE

- COSC ABET Accreditation Committee (chair), 2003–2008.
- College of Engineering Academic Programs Committee, 2004–2008.
- College of Engineering Dean Search Committee, 2006–2007.
- ECE/COSC Mobile Robots Seminar Series Committee, 2004–2007.
- COSC Faculty Search Committee, 2006–2007.
- COSC Department Head Evaluation Committee (chair), 2006–2007.
- COSC Faculty Search Committee, 2005–2006.
- ECE Faculty Search Committee, 2004–2005.
- COSC Graduate Admissions Committee, 2002–2006.