Keith S. Decker

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293 Chippenham Lane	DECKER@CIS.UDEL.EDU	Computer & Info Sciences
Hockessin, DE 19707–1934	*Fax*	University of Delaware
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Research Interests Distributed problem solving, multi-agent systems, parallel and distributed planning and scheduling, multi-agent learning, distributed information gathering, AI and wearable devices, health informatics, bioinformatics, computational organization design.

Education

University of Massachusetts, Amherst, Massachusetts. September 1987 – May 1995.
Doctor of Philosophy, **Computer Science**.
PhD Thesis: *Environment Centered Analysis & Design of Coordination Mechanisms*
Advisor: Dr. Victor R. Lesser

Rensselaer Polytechnic Institute, Troy, New York. September 1984 – June 1987.
Master of Science: **Computer Science**
Master's Thesis: Distributed Expert Systems
Advisor: Dr. Piero P. Bonissone

Carnegie Mellon University, Pittsburgh, PA. September 1980 – June 1984.
Bachelor of Science: **Applied Math / Computer Science**

Employment

Associate Professor, Department of Computer and Information Sciences, University of Delaware. June 2002 — present.

JPMC Fellow, Institute for Financial Services Analytics, University of Delaware. Sep 2019 — present.

Consultant, Revolutionary Integration Group May 2019 — present.

Consultant, NewVectors, LLC. [ONR STIFLE] Dec 2006 — March 2009.

Consultant, Active Computing, Inc. [DARPA Coordinators] Sep 2006 — Sep 2008.

Consultant, CACI Dynamic Systems, Inc. [DARPA Coordinators] Jan 2005 — Aug2006.

Research Fellow, Intelligent Agents and Multimedia, Department of Electronics and Computer Science, University of Southampton, UK. Sep 2002 — June 2003.

Co-Director, Delaware Biomedical Research Infrastructure Network Bioinformatics Core. Sep 2001 — Aug 2004.

Research Scientist, Quantum Leap Innovations, Aug 1999 — Aug 2005.

Assistant Professor, Department of Computer and Information Sciences, University of Delaware. Sep 1996 — June 2002.

Postdoctoral Research Fellow, School of Computer Science, Carnegie Mellon University, Pittsburgh, Pennsylvania. Sep 1995 — Aug 1996.

Postdoctoral Research Associate, Department of Computer Science, University of Massachusetts, Amherst, Massachusetts. Mar 1995 — Sep 1995.

Research Assistant, Department of Computer Science, University of Massachusetts, Amherst, Massachusetts. Sep 1987 — Mar1995.

Computer Scientist, General Electric Corporate Research and Development, Schenectady, New York. June 1984 — Sep1987.

Computer Programmer, Carnegie-Mellon University Computer Science Department, Pittsburgh, Pennsylvania. Oct 1982 – May 1984.

Computer Science Co-op, IBM Communication Products Division, Research Triangle Park, North Carolina. May 1983 — Aug 1983.

Computer Science Co-op, Harris Computer Systems Division, Fort Lauderdale, Florida. May 1982 — Aug 1982.

Awards DARPA Information Processing Technology Office. Special Recognition award *"For foundational research in generalized coordination technologies. Your superior research efforts and vision fostered the development of a new paradigm which enables loosely coupled distributed autonomous systems to work effectively together. This paradigm is an important technical discriminator for the Department of Defense and for the United States."* May 2006.

NSF Career Award, 1998–2003.

Nominated, ACM SIGART Autonomous Agents Research Award, 2012.

Nominated, UD Excellence in Undergraduate Academic Advising and Mentoring, 2014, 2016.

Nominated, UD Excellence in Undergraduate Teaching, 2016.

Patents US 7,512,558 *Automated Method and System for Facilitating Market Transactions.* J Elad, A. Johnson, R. Aulews, D. Chester, D. Cleaver, *K. Decker*, D. Paules, T. Pelaia. Mar 2009.

US 7,092,928 *Intelligent Portal Engine.* J Elad, A. Johnson, D. Cleaver, D. Chester, *K. Decker*, T. Roper, I. Phillips. Aug 2006.

US 8,027,945 *Intelligent Portal Engine.* J Elad, A. Johnson, D. Cleaver, D. Chester, *K. Decker*, T. Roper, I. Phillips. Sep 2011 (continuation).

Journal Articles, Highly Refereed Conference Papers, and Book Chapters

*__A. Vemuri__, M. Heintzelman, A. Waad, M. Mauriello, *K. Decker*, G. Dominick. Towards Dynamic Action Planning with User Preferences in Automated Health Coaching. Special Issue IEEE/ACM CHASE 2023, *Smart Health* Vol 28, 2023.

*__A. Vemuri__, *K.Decker*, __M. Sapponaro__, G. Dominick. Multi Agent Architecture for Automated Health Coaching. *Journal of Medical Systems* 45:11, November 2021.

*__M. Sapponaro__, __A. Vemuri__, G. Dominick, *K.Decker*. Contextualization and Individualization for Just-in-Time Adaptive Interventions to Reduce Sedentary Behavior. in *Proc. ACM Conference on Health, Inference, and Learning* (ACM-CHIL 2021) [Acceptance 20%]

*__K. Corder__, *K. Decker*. Shapley Value Approximation with Divisive Clustering. In *Proc. IEEE 18th International Conference on Machine Learning and Applications ICMLA 2019*, 2019. [Acceptance 28%]

*__H. Wei__, X. Liu, *K. Decker*, L. Mashayekhy. Mixed-Autonomy Traffic Control with Proximal Policy Optimization. IEEE Vehicular Networking Conference (VNC), 2019

*__H. Wei__, __K. Corder__, *K. Decker*. Q-Learning Acceleration via State-space Partitioning. In *Proc. IEEE 17th International Conference on Machine Learning and Applications ICMLA 2018*, 2018 [Acceptance 31%]

*__B. Boman__, __T. Dinh__^{u}, *K. Decker*, B. Emerick, C. Raymond, G. Schleiniger. *Why Do Fibonacci Numbers Appear in Patterns of Growth in Nature? A Model for Tissue Renewal Based on Asymmetric Cell Division. Fibonacci Quarterly*, 55(5), pp. 30–41, 2016.

*__S. Kamboj__, *K. Decker*. W. Kempton, *Deploying Power Grid-Integrated Electric Vehicles as a Multi-Agent System. In Proceedings of the Tenth International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS 2011)*, pp 13–20, 2011. *Nominated for the Best Application Paper Award.* [Acceptance 22%].

*__J. Atlas__ and *K. Decker*. Coordination for Uncertain Outcomes using Distributed Neighbor Exchange. In *Proceedings of the Ninth International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS 2010)*, pp 1047–1054, 2010. [Acceptance 24%]

*__W. Chen__, R. Levy, *K. Decker*. Integrated Multi-Agent Coordination. In *Intelligent Systems for Operations*, edited by Barin Nag, IGI Global Publications, (2010).

***L. Jin**, *K. Decker*, and C. Schmidt. BioPlanner: A Plan Adaptation Approach for the Discovery of Biological Pathways across Species. In *Proceedings of the Twenty-First Annual Conference on Innovative Applications of Artificial Intelligence* (IAAI-09), pp. 99-106, 2009.

***J. Atlas**, T. Estrada, *K. Decker*, M. Taufer. Balancing Scientist Needs and Volunteer Preferences in Volunteer Computing using Constraint Optimization. In *Proc. International Conference on Computational Science 2009* (ICCS-09), LNCS-5544, Springer, pp 143–152, 2009.

***S. Kamboj**, *K. Decker*. The use of Organizational Self-Design for generating organizations in worth-oriented domains, In *Handbook of Research on Multi-Agent Systems: Semantics and Dynamics of Organizational Models*, edited by Virginia Dignum, IGI Global Publications, Chapter 22, (2009).

***S. Kamboj** and *K. Decker*. Exploring Robustness in the context of Organizational Self-Design. In *Coordination, Organizations, Institutions, and Norms in Agent Systems IV* (COIN IV), edited by Jomi F. Hubner et al., Springer Lecture Notes in Artificial Intelligence 5428, pp 80–95 (2009).

***J. Atlas**, *K. Decker*. A Complete Distributed Constraint Optimization Method For Non-Traditional Pseudotree Arrangements. In *Proceedings of the Sixth International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS 07)*, pp 736-743, May 2007. [Acceptance 22%]

***S. Kamboj**, *K. Decker*, K. Organizational Self-Design in Semi-dynamic Environments. In *Proceedings of the Sixth International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS 07)*, pp 1220-1227, May 2007. [Nominated for Best Student paper] [Acceptance 22%]

***W. Chen**, *K. Decker*. Analyzing characteristics of task structures to develop GPGP coordination mechanisms. In Proceedings of the Fifth International Joint Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 06), pp. 662–669, May 2006. [Acceptance 23%]

*Q. Chen, **J. Watson**^{u}, S. Marengo, *K. Decker*, I. Coleman, P. Nelson and R. Sikes. Gene expression in the LNCaP human prostate cancer progression model: Progression associated expression in vitro corresponds to expression changes associated with prostate cancer progression in vivo (short communication). *Cancer Letters*, 244(2), pp. 274-288, 2006.

*M. Huhns, M. Singh, M. Burstein, *K. Decker*, E. Durfee, T. Finin, L. Gasser, H. Goradia, N. Jennings, K. Lakkaraju, H. Nakashima, V. Parunak, J. Rosenschein, A. Ruvinsky, G. Sukthankar, S. Swarup, K. Sycara, M. Tambe, T. Wagner, L. Zavala. Research Directions for Service-Oriented Multi-Agent Systems. *IEEE Internet Computing*, Nov/Dec, pp. 65–70, 2005.

***T. Harvey**, *K. Decker*, S. Carberry. Multi-agent decision support via user-modelling. In Proceedings of the Fourth International Joint Conference on Autonomous Agents and Multi Agent Systems (AAMAS 05), July 2005. [Acceptance 24%]

***T. Harvey**, S. Carberry, *K. Decker*. Tailored Responses for Decision Support. In *User Modeling 2005: 10th International Conference*, L. Ardissono, P. Brna, A. Mitrovic (eds). LNCS-3538, Springer, 2005.

***W. Chen**, *K. Decker*. The Analysis of Coordination in an Information System Application - Emergency Medical Services. in *Agent-Oriented Information Systems*, P. Bresciani, P. Giorgini, B. Henderson-Sellers, and M. Winikoff (Eds.), pp. 36–51, LNAI-3508, Springer, 2005.

*V. Lesser, *K. Decker* et al. Evolution of the GPGP/TAEMS Domain-Independent Coordination Framework. Autonomous Agents and Multi-Agent Systems, 9(1), Kluwer Academic Publishers, pp. 87-143. July 2004.

*L. Moreau, M. Luck, S. Miles, J. Papay, *K. Decker* and T. Payne. Agents and the Grid. In *Methodologies and Software Engineering for Agent Systems*, F. Bergenti, M. Gleizes and F. Zambonelli eds., Kluwer Publishing, pp 413–430, 2004.

K. Decker. A Vision for Multi-Agent Systems Programming. in *Programming Multiagent Systems: languages, frameworks, techniques and tools*, M. Dastani, J. Dix, A. Seghrouchni eds. Springer-Verlag LNAI–3067,PP. 1–17, 2004.

***W. Chen** and *K. Decker*. Applying Coordination Mechanisms for Dependency Relationships Under Various Environments. In *Multi-Agent Systems: An Application Science*, T. Wagner, editor. Kluwer (Springer) 2004.

***F. McGeary** and *K. Decker*. Employment Decisions Supporting Organizations of Autonomous Agents. in *Multi-Agent-Based Simulation III*, Hales, D., Edmonds, B., Norling, E. and Rouchier, J. eds. Springer, Lecture Notes in Artificial Intelligence, 2927, pp. 8–25, 2003.

*S. Miles, J. Papay, V. Dialani, M. Luck, *K. Decker*, T. Payne and L. Moreau. Personalised Grid Service Discovery. IEE Proceedings Software Special Issue on Performance Engineering, 150(4), pp 252-256, 2003.

*R. Lawley, *K. Decker*, M. Luck, T. Payne, L. Moreau. Automated Negotiation for Grid Notification Services. In *Proceedings of the Ninth International Conference on Parallel and Distributed Computing (Euro-Par)*, Springer-Verlag LNCS 2790, pages 384-393, Klagenfurt, Austria, 2003. [Acceptance 30%]

*T. Paulussen, N. Jennings, *K. Decker*, A. Heinzl. Distributed Patient Scheduling in Hospitals. In *Proceedings of the Eighteenth International Joint Conference on Artificial Intelligence*, pp. 1224–1229, Mexico, 2003. [Acceptance 21%]

***S. Khan**, **R. Makkena**, **F. McGeary**, *K. Decker*, W. Gillis, and C.J. Schmidt. A Multi-Agent System for the Quantitive Simulation of Biological Networks. In *Proceedings of the International Conference on Autonomous Agents and Multi-Agent Systems*, 2003. [Acceptance 25%]

***S. Khan**, *K. Decker*, W. Gillis, and C.J. Schmidt. A Multi-Agent System-driven AI Planning Approach to Biological Pathway Discovery. In *Proceedings of the International Conference on Automated Planning*, 2003. [Acceptance 30%]

***S. Khan**, **G. Situ**, *K. Decker*, and C.J. Schmdt. GO-Figure: a tool to visualize automated Gene Ontology annotation. *Bioinformatics*19,pp. 2484–2485, 2003.

*H. Kim, C.J. Schmidt, *K. Decker* and M.G. Emara. A double-screening method to identify reliable candidate non-synonymous SNPs from chicken EST data. *Animal Genetics.* 34(4) pp. 249–254, 2003.

***J. Graham**, *K. Decker*, M. Mersic. DECAF: A Flexible Multi-Agent System Architecture. *Autonomous Agents and Multi-Agent Systems.* 7(1–2): 7–27, 2003.

*_K. Decker_, **S. Khan**, C.J. Schmidt, D. Michaud. BioMAS: a Multi-Agent System for Genomic Annotation. *International Journal on Intelligent and Cooperative Information Systems.* 11 (3-4): 265-292, 2002

*_K. Decker_. Coordinating Intelligent Agents. In *Foundations and Applications of Multi-Agent Systems: UKMAS 1996-2000*, M. D'Inverno, M. Fisher, M. Luck, C. Priest, eds. Springer-Verlag 2002.

K. Decker, **S. Khan**, C.J. Schmidt, D. Michaud. Extending a Multi-Agent System for Genomic Annotation. In *Proceedings of the Fifth International Workshop on Cooperative Information Agents*, Modena, September 2001. LNAI #2182, pp. 106–117, Springer 2001.

K. Decker, **X. Zheng**, C.J. Schmidt. A Multi-Agent System for Automated Genetic Annotation. In *Proceedings of the Fifth International Conference on Autonomous Agents*, pp. 433–440, Montreal, June 2001.

J. Graham, D. McHugh, **M. Mersic**[u], **F. McGeary**, **M. Windley**[u], **D. Cleaver**[u], *K. Decker*. Tools for Developing and Monitoring Agents in Distributed Multi-Agent Systems. In T. Wagner and O. Rana (eds.) Infrastructure for Agents, Multi-Agent Systems, and Scalable Multi-Agent Systems. Lecture Notes in Computer Science #1887, pp. 12–27, Springer 2001.

F. McGeary and *K. Decker*. Modeling a Virtual Food Court Using DECAF. In S. Moss and P. Davidsson (eds.) Multi-Agent Based Simulation. LNAI #1979, pp. 68–81, Springer 2001.

Keith Decker and **Jinjiang Li**. Coordinating mutually exclusive resources using GPGP. *Autonomous Agents and Multi-Agent Systems*, 3(2): 133–158, 2000.

M. Wooldridge and *K. Decker*. Agents on the Net: Infrastructure, Technology, Applications. Guest Editors' Introduction, IEEE Internet Computing, pp. 46–48, March/April 2000.

J. Graham and *K. Decker*. Towards a Distributed, Environment-Centered Agent Framework. In N. Jennings and Y. Lespérance, editors, Intelligent Agents VI: Agent Theories, Architectures, and Languages. LNAI #1757, pp 290–304, Springer 2000.

K. Decker, M. Fisher, M. Luck, M. Tennenholz, et al. Continuing research in multi-agent systems. The Knowledge Engineering Review, 14(3):279–283, 1999.

Keith Decker and **Jinjiang Li**. Coordinated Hospital Patient Scheduling. In *Proceedings of the Third International Conference on Multi-Agent Systems*, pp. 104–111, Paris, France, July 1998.

Keith S. Decker. Coordinating Human and Computer Agents. In Wolfram Conen, Gustaf Neumann, editors, Coordination Technology for Collaborative Applications - Organizations, Processes, and Agents. LNCS #1364, pp. 77–98, Springer-Verlag, 1998.

Keith S. Decker. Task Environment Centered Simulation. In M. Prietula, K. Carley, and L. Gasser, editors, *Simulating Organizations: Computational Models of Institutions and Groups*. pp. 105–131, AAAI Press/MIT Press, 1998.

Katia Sycara, Keith Decker, and Dajun Zeng. Intelligent Agents in Portfolio Management. In N. Jennings and M. Wooldridge, editors, Agent Technology: Foundations, Applications, and Markets. Chapter 14, pp. 267-283,Springer 1998.

Keith Decker and Katia Sycara. Intelligent Adaptive Information Agents. *Journal of Intelligent Information Systems*, 9 : 239–260, 1997.

Keith Decker, Katia Sycara, and Mike Williamson. Middle-Agents for the Internet. In *Proceedings of the 15th International Joint Conference on Artificial Intelligence,* pp. 578–583, Nagoya, Japan, August 1997.

Keith Decker, Anandeep Pannu, Katia Sycara, and Mike Williamson, Designing behaviors for Information Agents. In *Proceedings of the First International Conference on Autonomous Agents*, pp. 404–413, Marina del Rey, February 1997.

Keith S. Decker and Victor R. Lesser. Designing a Family of Coordination Algorithms. In M. Huhns and M. Singh, editors, *Readings in Agents*. pp 450-458, Morgan Kaufmann, 1997. Selected for reprinting from *Proceedings of the First International Conference on Multi-Agent Systems*, pp. 73–80, San Francisco, July 1995.

Keith S. Decker, Katia Sycara, and Mike Williamson. Cloning in Intelligent, Adaptive Information Agents. In C. Zhang and D. Lukose, editors, *Multi-Agent Systems: Methodologies and Applications*, Lecture Notes in Artificial Intelligence #1286, pp. 63–75, Springer-Verlag, 1997.

Katia Sycara, Keith Decker, Anandeep Pannu, Mike Williamson, and Dajun Zeng. Distributed Intelligent Agents. *IEEE Expert*, 11(6):36–46, December 1996.

M.V. Nagendra Prasad, Keith Decker, Alan Garvey, and Victor Lesser, Exploring Organizational Designs with TAEMS: A Case Study of Distributed Data Processing. In *Proceedings of the Second International Conference on Multi-agent Systems*, Kyoto, Japan, December 1996.

Keith S. Decker. Distributed Artificial Intelligence Testbeds. In G. O'Hare and N. Jennings, editors, *Foundations of Distributed Artificial Intelligence*. Chapter 3, Wiley Inter-Science, 1995.

Keith S. Decker. TÆMS: A framework for analysis and design of coordination mechanisms. In G. O'Hare and N. Jennings, editors, *Foundations of Distributed Artificial Intelligence*. Chapter 16, Wiley Inter-Science, 1995.

Keith S. Decker and Victor R. Lesser. Quantitative modeling of complex environments. *International Journal of Intelligent Systems in Accounting, Finance, and Management*, 2(4):215–234, December 1993. Special issue on "Mathematical and Computational Models of Organizations: Models and Characteristics of Agent Behavior".

Keith S. Decker and Victor R. Lesser. Analyzing a quantitative coordination relationship. *Group Decision and Negotiation*, 2(3):195–217, 1993.

Keith S. Decker, Alan J. Garvey, Marty A. Humphrey, and Victor R. Lesser. Control heuristics for scheduling in a parallel blackboard system. *International Journal of Pattern Recognition and Artificial Intelligence*, 7(2):243–264, 1993.

Keith S. Decker, Alan J. Garvey, Marty A. Humphrey, and Victor R. Lesser. A real-time control architecture for an approximate processing blackboard system.*International Journal of Pattern Recognition and Artificial Intelligence*, 7(2):265–284, 1993.

Keith S. Decker and Victor R. Lesser. A one-shot dynamic coordination algorithm for distributed sensor networks. In *Proceedings of the Eleventh National Conference on Artificial Intelligence*, pages 210–216, Washington, July 1993.

Keith S. Decker and Victor R. Lesser. Quantitative modeling of complex computational task environments. In *Proceedings of the Eleventh National Conference on Artificial Intelligence*, pages 217–224, Washington, July 1993.

Keith S. Decker and Victor R. Lesser. An approach to analyzing the need for meta-level communication. In *Proceedings of the Thirteenth International Joint Conference on Artificial Intelligence*, pp. 360–366, Chambéry, August 1993.

Keith S. Decker and Victor R. Lesser. Generalizing the partial global planning algorithm. *International Journal of Intelligent and Cooperative Information Systems*, 1(2):319–346, June 1992.

Keith S. Decker. Blackboard Systems. *IEEE Expert*, 6(5):71–72, October 1991.

Keith S. Decker, Alan J. Garvey, Marty A. Humphrey, and Victor R. Lesser. Effects of parallelism on blackboard system scheduling. In *Proceedings of the Twelfth International Joint Conference on Artificial Intelligence*, pages 15–21, Sydney, Australia, August 1991.

Keith S. Decker, Victor R. Lesser, and Robert C. Whitehair. Extending a blackboard architecture for approximate processing. *The Journal of Real-Time Systems*, 2(1/2):47–79, 1990.

Keith S. Decker, Edmund H. Durfee, and Victor R. Lesser. Evaluating research in cooperative distributed problem solving. In L. Gasser and M. N. Huhns, editors, *Distributed Artificial Intelligence, Vol. II*, pages 485–519. Pitman Publishing Ltd., 1989.

D. Besemer, *K. Decker*, D. Politi, J. Schnoor. A Synergy of Industrial and Academic Education. In R. Fairley and P. Freeman, editors, *Issues in Software Engineering Education*, pages 399–413. Springer-Verlag, 1989.

Piero P. Bonissone, Steven S. Gans, and Keith S. Decker. RUM: A layered architecture for reasoning with uncertainty. In *Proceedings of the Tenth International Joint Conference on Artificial Intelligence*, August 1987.

Keith S. Decker. Distributed problem solving: A survey. *IEEE Transactions on Systems, Man, and Cybernetics*, 17(5):729–740, September 1987.

Piero P. Bonissone and Keith S. Decker. Selecting uncertainty calculi and granularity: An experiment in trading-off precision and complexity. In L. N. Kanal and J. F. Lemmer, editors, *Uncertainty in Artificial Intelligence.* pp. 217–247, North Holland, 1986.

Other Refereed Conference and Workshop Papers

*A. Vemuri, C. Firkin, **T. Rahman**, S. Malone, Q. Chen, bf M. Lutz[u], G. Dominick, *K. Decker*. Development of the 'walking with JITAIs' Just-in-Time Adaptive Intervention to Promote Walking Behavior and Reduce Stationary Time in Physically Inactive Adults. Intl. Soc. for the Measurement of Physical Behavior (ISMPB) Fall Symposium 2023. Abstract and Presentation.

*C. Firkin, **A. Vemuri**, **J. Kingham**[u], bf M. Lutz[u], G. Dominick, *K. Decker*, I. Obrrusnikova. Assessing Physical Activity and Sedentary Behavior with the Apple Watch: the MPAS Application. Intl. Soc. for the Measurement of Physical Behavior (ISMPB) Fall Symposium 2023. Abstract and Presentation.

***J. Sharpe** and *K. Decker*. Topic Analysis of SEC Letters for Initial Public Offerings. AI in Finance Bridge Program at AAAI-23. Washington, D.C. 2023

***J. Sharpe** and *K. Decker*. Prospectus Language and IPO Performance. In *Proceedings of the 4th Workshop on Financial Technology and Natural Language Processing*. Vienna, Austria: ACL Anthology. 2022.

*L. Hsu, R. M. Hernandez, K. McCoy, *K. Decker*, **A. Vemuri**, G. Dominick and M. Heintzelman. Towards Development of an Automated Health Coach. In *Proceedings of the First Workshop on Natural Language Generation in Healthcare* (pp. 27-39). July 2022.

***T. Rahman**, Ribo Yuan, Matthew Saponaro, Gregory Dominick, Richard Suminski, *Keith Decker*. A Case Study of Counting the Number of Unique Users in Jack A. Markell Trail - A Multi-Agent System Approach. SHIFT Summit, Fort Collins, CO 2022. Poster.

*Ribo Yuan, **Tanvir Rahman**, Matthew Saponaro, Richard Suminski, Gregory Dominick, *Keith Decker*. Improving Automated Trail Usage Assessments By Reducing Implementation Requirements. SHIFT Summit, Fort Collins, CO 2022. Short Paper/Talk.

*M. Heintzelman, G. Dominick, **A. Vemuri**, and *K. Decker*. Development of the BE SMART Feasibility Trial to Increase Physical Activity in Midlife Adults. *Annals of Behavioral Medicine*, (Vol. 56, No. SUPP 1, pp. S253-S253). April 2022. Abstract.

***A. Vemuri**, *K.Decker*, **M. Sapponaro**, G. Dominick. Multi Agent Architecture for Automated Health Coaching. XIII Workshop on Agents Applied in Healthcare, AAMAS-21.

***K. Corder**, M.Vindiola, *K. Decker*. Decentralized Multi-Agent Actor-Critic with Generative Inference. In *Proceedings of the Deep Reinforcement Learning Workshop*, at NeurIPS 2019.

***H. Wei**, *K. Decker*. Multi-agent Model-based Actor-critics. In *Proceedings of the 2nd Workshop on Scaling Up Reinforcement Learning (SURL-19)*, at IJCAI-2019, Macau, China 2019.

***M. Saponaro**, and *K. Decker*. Partial policy re-use in connected health systems. In *Proceedings of the AAAI Fall Symposium on Reasoning and Learning in Real-World Systems for Long-Term Autonomy*, pp. 74–81, 2018

*B. Boman, **Yihan Ye**^{u}, *K. Decker*, C. Raymond, G. Schleiniger. Geometric Branching Patterns based on P-Fibonacci Sequences: Self-similarity Across Different Degrees of Branching and Multiple Dimensions. 18th International Conference on Fibonacci Numbers and Their Application. pp 1–12, 2018.

***M. Saponaro**, **H. Wei**, *K. Decker*. Learning Efficient Intervention Policies for Wearable Devices [Short Paper] in *Proceedings of IEEE/ACM CHASE-2017*, 2017

***M. Saponaro**, *K. Decker*. Analysis of Meta-level Communication for Distributed Resource Allocation Problems [Short Paper]. in *Proceedings of the 16th International Joint Conference on Autonomous Agents and Multiagent Systems* (AAMAS 2017). (Short Acceptance Rate: 22%)

*B. Boman, **T. Dinh**^{u}, *K. Decker*, B. Emerick, G. Schleiniger. Why do Fibonacci numbers appear in patterns of growth in nature: Clues from modeling asymmetric cell division. 17th Intl. Conf. on Fibonacci Numbers and thier Applications, Caen, 2016.

***M. Saponaro**, *K. Decker*, B. Boman and G. Schleiniger. Investigation of Normal Colonic Crypt Behaviors Through Agent-based Simulations. Proc. of the Agent-Directed Simulation (ADS) Symposium, Spring Simulation Multi-Conference, The Society for Modeling & Simulation, San Diego 2013.

**K. Decker*, P. Anday, L. Sun, and C. Schmidt. Using Expression Data to help Pathway Curation. Proc. of the Workshop on Integrative Data Analysis in Systems Biology (IDASB 2012), BIBM-2012, Philadelphia 2012.

*C. Schmidt, L. Sun, C. Arighi, *K. Decker*, K. Vijay-Shanker, M. Torii, C. O. Tudor, C. Wu, and P D'Eustachio. Pathway Curation: Application of Text?Mining Tools eGIFT and RLIMS?P. Proc. of the Workshop on Integrative Data Analysis in Systems Biology (IDASB 2012), BIBM-2012, Philadelphia 2012.

*Kamboj, Pearce, Kempton, Trnka, Kern, Decker. Exploring the formation of Electric Vehicle Coalitions for Vehicle-To-Grid Power Regulation. *Proceedings of the First International Workshop on Agent Technologies for Energy Systems*, at AAMAS-2010.

***L. Jin** and *K. Decker*. Ontology Oriented Exploration of an HTN Planning Domain through Hypotheses and Diagnostic Execution. *Proceedings of the Workshop on Knowledge Engineering for Planning and Scheduling*, at ICAPS-2010.

*H. V. Parunak, T. Belding, R. Bisson, S. Brueckner, *K. Decker*, E. Downs, R. Hilscher. Stigmergic Modeling of Hierarchical Task Networks. In *Proceedings of the 2009 Workshop on Multi-Agent Based Simulation*, AAMAS-09.

*[*** Note: I removed my name from all papers submitted by my students to AAMAS-09, for which I was Program Co-Chair. These papers were reviewed blindly by reviewers, and final decisions were made by my Co-Chair without my involvement. I've included them in "Other" papers to show my group was still at work in 2009.]*

*****S. Kamboj**. Analyzing the tradeoffs between breakup and cloning in the con- text of organizational self-design [Full Paper], in *Proceedings of the Eighth International Joint Conference on Autonomous Agents and Multiagent Systems* (AAMAS 2009). (Full Paper Acceptance Rate: 22.3%)

*****J. Atlas**. A Distributed Constraint Optimization Approach for Coordination under Uncertainty [extended abstract]. AAMAS09. Acceptance Rate: 22% full, 20% extended abstract.

*** **L. Jin**. Stability Oriented Task-Structure Based Multi-Agent Re-Planning [extended abstract]. AAMAS09. Acceptance Rate: 22% full, 20% extended abstract.

***S. Kamboj** and *K. Decker*. Exploring Robustness In The Context Of Orga- nizational Self-Design, in *Proceedings of the 2008 AAAI Workshop on Coordination, Organizations, Institutions and Norms in Agent Systems* (COIN@AAAI 2008), June 2008.

***J. Atlas**, M. Warner, *K. Decker*. A Memory Bounded Hybrid Approach to Distributed Constraint Optimization. In *Proceedings of the International Workshop on Distributed Constraint Reasoning* (DCR) at AAMAS-08, pp. 37-51, May 2008.

***J. Atlas**, *K. Decker*. Task Scheduling for Uncertainty using Constraint Optimization. In *AAMAS-07 Workshop on Coordinating Agents' Plans and Schedules (CAPS-07)*, pp. 25-28, May 2007.

***W. Chen**, *K. Decker*. An Integrated Multi-Agent Coordination Including Planning, Scheduling, and Task Execution. In *AAMAS-07 Workshop on Coordinating Agents' Plans and Schedules (CAPS-07)*, May 2007.

***S. Kamboj** and *K. Decker*. Organizational Self-Design in Semi-dynamic Environments", In *IJCAI-07 workshop on Agent Organizations: Models and Simulations (AOMSIJCAI 07)*. January 2007.

***S. Kamboj**, *K. Decker*. Poster: Organizational Self-Design in Semi-dynamic Environments (3 page poster). In *Proceedings of the Fifth International Joint Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS 06), pp. 335-337, May 2006. [127 full, 135 poster, 550 submissions]

***L. Jin**, K. Steiner, C. Schmidt, **G. Situ**, **S. Kamboj**, K. Hlaing, M. Conner, H. Kim, M. Emara, and *K. Decker*. A multiagent framwork to integrate and visualize gene expression information. In *IEEE-ICDM Workshop on MultiAgent Data Warehousing and MultiAgent Data Mining*, ICDM-05, Houston, Nov 2005.

***J. Atlas**, *K. Decker*, M. Swany. Flexible Grid Workflows using TÆMS. In *Workshop on Exploring Planning and Scheduling for Web Services, Grid and Autonomic Computing*, AAAI-05, Pittsburgh, July 2005.

***W. Chen** and *K. Decker*. Managing Multi-Agent Coordination, Planning, and Scheduling (poster). In *Proceedings of the Third International Conference on Autonomous Agents and Multi-Agent Systems*, New York, 2004.

*P. Lord, C. Wroe, R. Stevens, C. Goble, S. Miles, L. Moreau, *K. Decker*, T. Payne and J. Papay. Semantic and Personalised Service Discovery. In WI/IAT 2003 Workshop on Knowledge Grids and Grid Intelligence. pp. 100-107. Halifax, Canada, October 2003

*P. Lord, C. Wroe, R. Stevens, C. Goble, S. Miles, L. Moreau, *K. Decker*, T. Payne, and J. Papay. Semantic and personalised service discovery. In Proceedings of the UK OST e-Science second All Hands Meeting 2003 (AHM'03), pages 787-794, Nottingham, UK, September 2003.

*S. Miles, J. Papay, V. Dialani, M. Luck, *K. Decker*, T. Payne, L. Moreau. Personalised Grid Service Discovery. 19th Annual UK Performance Engineering Workshop (UKPEW 2003), pp. 131–140, University of Warwick, Conventry, England, July 2003.

***F. McGeary** and *K. Decker*. Simulation of Economic Actors Using Limitedly Rational Autonomous Agents (poster). Proceedings of the International Conference on Autonomous Agents and Multi-Agent Systems, 2003.

***W. Chen** and *K. Decker*. Coordination Mechanisms for Dependency Relationships among Multiple Agents (poster). First International Joint Conference on Autonomous Agents and Multi-Agent Systems, ACM Press, July 2002.

***M. Mostagir** and *K. Decker.* A Multi-agent system architecture for active networks (poster). First International Joint Conference on Autonomous Agents and Multi-Agent Systems, ACM Press, July 2002.

***W. Chen** and *K. Decker.* Applying coordination mechanisms for Dependency Relationships under Various Environments. Toward an Application Science: MAS Problem Spaces and Their Implications to Achieving Globally Coherent Behavior, AAMAS-02 Workshop, July 2002.

K. Decker, **S. Khan**, C. Schmidt, D. Michaud. BioMAS: a Multi-Agent System for Genomic Annotation (A Summary). Bioinformatics and Multi-Agent Systems (BIXMAS 2002), AAMAS-02 Workshop, July 2002.

*H. Kim, C.J. Schmidt, *K. Decker* and M.G. Emara. Chicken SNP discovery by EST data mining. Plant and Animal Genome X meeting, San Diego, CA. 2002.

*M.G. Emara, H. Kim, C.J. Schmidt, *K.S. Decker* and H.S. Lillehoj. Genetic markers and their application in poultry breeding. 91th Annual meeting of Poultry Science Association. 2002.

*H. Kim, C.J. Schmidt, *K.S. Decker* and M.G. Emara. Development of a Chicken SNPs database at the University of Delaware. 91th Annual meeting of Poultry Science Association. 2002.

T. Harvey and K. Decker. Planning Ahead to provide Scheduler Choice. Workshop on Infrastructure for Scalable Multi-Agent Systems, 5th International Conference on Autonomous Agents, pp. 105–113, May 2001.

F. McGeary and K. Decker. DECAF Programming: Agents for Undergraduates. Workshop on Infrastructure for Scalable Multi-Agent Systems, 5th International Conference on Autonomous Agents, pp. 53–60, May 2001.

T. Harvey and K. Decker. Planning Alternatives for an Intelligent Scheduler, IJCAI-2001 Workshop on AI and Manufacturing, August 2001.

C.J. Schmidt, B.F. Kingham, E. Ney, V. Zelnik, J.Kopek, V. Majerciak, X. Zheng and K. Decker. Nucleotide sequence of herpesvirus of turkeys and integration of a herpesvirus database. In K.A. Schat, R.M. Morgan, M.S. Parcells and J.L. Spencer, Eds., *Current Progress on Marek's Disease Research*, pp. 303-304, American Association of Avian Pathologists, 2001.

D. Michaud, K. Decker, P. Dhurjati. A Bioinformatics Framework to Integrate Biological Knowledge with Methods for Analyzing Gene Expression Data. Session on Biochemical reaction engineering, NASCRE 1, Houston, Jan. 2001.

J. Graham, D. McHugh, F. McGeary, M. Windley, D. Cleaver, and K. Decker. A Programming and Execution Environment for Distributed Multi-Agent Systems. Workshop on Agents in Industry, 4th International Conference on Autonomous Agents, June 2000.

F. McGeary and K. Decker. Producer Behavior in a Virtual Food Court. Proceedings of Computational Analysis of Social and Organizational Systems Conference (CASOS), July 2000.

D. Michaud, P. Dhurjati, and K. Decker. Intelligent Multi-Agent System for Information Management and Interpretation in Biotechnology Applications (full paper). American Institute of Chemical Engineers (AIChE) Annual Meeting, 2000

D. Michaud, V. Agrawal, P. Dhurjati, and K. Decker. Intelligent Multi-Agent System for Information Management and Interpretation in Biotechnology Applications (Poster), 13th Annual Mid-Atlantic Bio-engineering Consortium, 2000.

Terrence Harvey, Keith Decker, and Owen Rambow. Integrating the Communicative Plans of Multiple, Independent Agents. Workshop on Communicative Agents: The use of natural language in embodied systems, Third International Conference on Autonomous Agents, May 1999.

J. Barbour and K. Decker. Coordinated Planning for Distributed Agents. AAAI Fall Symposium on Distributed Continual Planning, October, 1998.

K. Decker, T. Finin, C. Manning, M. Singh, and J. Treur. Implementing multi-agent systems: languages, frameworks, and standards (a report from the 1997 IWMAS workshop). AAAI-98 Workshop on Software Tools for Developing Agents, AAAI-TR WS-98-10, August 1998.

L. Obrst, M. Woytowitz, D. Rock, S. Lander, K. Gallagher, K. Decker. Agent-Based Integrated product Teams. Proc. Engineering Information and Management Symposium (EIM97) of the ASME Design Engineering Technical Conferences, September, 1997.

Keith S. Decker. Task Environment Centered Design of Organizations. *Proceedings of the 19th Annual Conference of the Cognitive Science Society*, pp. 173–178, 1997.

Keith Decker, Mike Williamson, and Katia Sycara. Matchmaking and Brokering. Poster, Second International Conference on Multi-Agent Systems (ICMAS-96), December, 1996.

Mike Williamson, Keith Decker, and Katia Sycara. Executing Decision-theoretic Plans in Multi-agent Environments. AAAI Fall Symposium on Plan Execution, AAAI Report FS-96-01. November 1996.

Mike Williamson, Keith Decker, and Katia Sycara. Unified Information and Control Flow in Hierarchical Task Networks. Working Notes of the AAAI-96 workshop on "Theories of Action, Planning, and Control". August 1996.

Keith Decker, Katia Sycara, and Mike Williamson. Modeling Information Agents: Advertisements, Organizational Roles, and Dynamic Behavior. Working Notes of the AAAI-96 workshop on "Agent Modeling". AAAI Report WS-96-02. August 1996.

Keith Decker, Mike Williamson, and Katia Sycara. Intelligent Adaptive Information Agents. Working Notes of the AAAI-96 workshop on "Intelligent Adaptive Agents". AAAI tech report "Intelligent Adaptive Agents". WS-96-04 August 1996.

Keith Decker, Victor Lesser, M.V. Nagendra Prasad, and Thomas Wagner. MACRON: An Architecture for Multi-agent Cooperative Information Gathering. In *Proceedings of the CIKM Workshop on Intelligent Information Agents*, Baltimore, Maryland, December, 1995

Keith Decker and Victor Lesser. Coordination Assistance for Mixed Human and Computational Agents. In *Proceedings of the Second International Conference on Concurrent Engineering Research and Applications*, McLean, Virginia, August 1995. Also UMASS Computer Science TR-95-31.

Tim Oates, M.V. Nagendra Prasad, Victor Lesser, and Keith Decker. A Distributed Problem Solving Approach to Cooperative Information Gathering. *AAAI Spring Symposium on Information Gathering in Distributed Environments*, Stanford University, March 1995.

Keith S. Decker and Victor R. Lesser. Communication in the Service of Coordination. *AAAI Workshop on Planning for Interagent Communication*, Seattle, July 1994.

Alan J. Garvey, Keith S. Decker, and Victor R. Lesser. A Negotiation-based Interface Between a Real-time Scheduler and a Decision-maker.*AAAI Workshop on Models of Conflict Management*, Seattle, July 1994. Also UMASS Computer Science TR-94-8, January 1994.

Keith S. Decker, Alan J. Garvey, Victor R. Lesser, and Marty A. Humphrey. A blackboard system for real-time control of approximate processing. In *Proceedings of the 25th Hawaii International Conference on System Sciences*, January 1992.

Keith S. Decker, Alan J. Garvey, Victor R. Lesser, and Marty A. Humphrey. An approach to modeling environment and task characteristics for coordination. In Charles J. Petrie, Jr., editor, *Enterprise Integration Modeling: Proceedings of the First International Conference*, pages 379–388. MIT Press, 1992.

Keith S. Decker, Alan J. Garvey, Victor R. Lesser, and Marty A. Humphrey. Real-Time Control of Approximate Processing. In *Proceedings of the Fifth Annual AAAI Workshop on Blackboard Systems*, Anaheim, July 1991.

Keith S. Decker and Victor R. Lesser. Extending the partial global planning framework for cooperative distributed problem solving network control. In *Proceedings of the Workshop on Innovative Approaches to Planning, Scheduling and Control*, pages 396–408, San Diego, November 1990. Morgan Kaufmann.

Keith S. Decker and Victor R. Lesser. A scenario for cooperative distributed problem solving. In *Proceedings of the Tenth International Workshop on Distributed AI*, Texas, October 1990.

Keith S. Decker, Marty A. Humphrey, and Victor R. Lesser. Effects of Parallelism in Blackboard System Scheduling. In *Proceedings of the Fourth Annual AAAI Workshop on Blackboard Systems*, Boston, July 1990.

Keith S. Decker and Victor R. Lesser. Some initial thoughts on a generic architecture for CDPS network control. In *Proceedings of the Ninth Workshop on Distributed AI*, September 1989. Also in COINS TR-90-81.

Keith S. Decker, Marty A. Humphrey, and Victor R. Lesser. Experimenting with control in the DVMT. In *Proceedings of the Third Annual AAAI Workshop on Blackboard Systems*, Detroit, August 1989. Also COINS TR-89-85.

Other Publications

*B. Boman, **TN Dihn**[u], *K. Decker*, B. Emerick, S.Modari, L Opdenaker, J. Fields, C. Raymond, G. Schleiniger. Beyond the Genetic Code: A Tissue Code? bioRxiv 2023.03.05.531161, 2023.

Keith S. Decker and Paul Utgoff. Artificial Intelligence. Grolier Encyclopedia, 1998.

Keith S. Decker. DESCANT: A distributed expert system control architecture for non-independent tasks. Master's thesis, Rensselaer Polytechnic Institute, May 1987. Also GE Corporate R&D Tech Report 87-CRD-030.

Invited Talks

"Personal Health Apps: When is enough enough?" Panel Discussion, Conversations in Healthcare, Prevention, and Wellbeing, November 2019.

"Multi-Agent Systems: Cooperative and Self-interested Approaches to Coordination," Delaware Rotary, August 2019

"Multi-Agent Systems: Cooperative and Self-interested Approaches to Coordination," AI in Business Group, Penn Innovation Center, April 2018.

"Multi-Agent Systems: Cooperative and Self-interested Approaches to Coordination," Seminar, Institute for Financial Services Analytics (IFSA), UD, March 2017.

"V2G: Electric Vehicle Coalitions for Vehicle-To-Grid Power Regulation," Invited speaker, 4th International Workshop on Multi-Agent Systems and Collaborative Technologies (I-MASC 2013), May 2013.

"V2G: Electric Vehicle Coalitions for Vehicle-To-Grid Power Regulation," Invited speaker, 2nd International Conference on Computational Sustainability, MIT, June 2010.

"Exploring the Formation of Electric Vehicle Coalitions for Vehicle-To-Grid Power Regulation", Invited Speaker, First Intl. Wrkshp. on Agent Tech for Energy Systems, held at AAMAS-2010, Toronto, May 2010.

"Computational Thinking", Invited class speaker, Wilmington Charter School Discrete Math Class, Wilmington, DE, March 2010.

"Agent Oriented Methodologies and Programming Languages: Towards Practical Systems," Panel Chair, AAMAS-09, May 2009.

"Coordinating Intelligent Agents," Invited Speaker, Intelligent Automation, Incorporated, February 2009.

"Three Stories [about Computational Thinking]," Panel presentation, CS Research Day, University of Delaware, November 2008.

"Advanced Topics in Planning and Scheduling: Coordinating Distributed Planning and Scheduling Agents", Tutorial, with Brad Clement and Stephen F. Smith, AAAI-07.

"A Retrospective on Coordination", Invited Dinner Speaker, DARPA COORDINATORS PI Meeting, May 2006.

"Agent-based Support for Genomic Annotation", Invited Speaker, Knowledge-Based Bioinformatics Workshop, Montréal, September 2005.

"Multiagent Planning: A Survey of Research and Applications", Tutorial, with Bradley Clement, IJCAI-05, Edinburgh, 2005.

"Multiagent Planning: A Survey of Research and Applications", Tutorial, with Bradley Clement, AAMAS-05, Utrecht, July 2005.

"Multiagent Planning: A Survey of Research and Applications", Tutorial, with Bradley Clement, AAAI-05, Pittsburgh, July 2005.

Invited participant, International Working Retreat on Research Directions in Multiagent Systems, Kiawah Island SC, May 2005.

"Challenge Problem Scenarios in TÆMS", Invited Speaker, DARPA COORDINATORS Kickoff PI Meeting, Alexandria, VA, April 2005.

"Coordinating Intelligent Agents", Invited speaker, DuPont Experimental Station, March 2004.

"Coordinating Intelligent Agents", Invited speaker, Illinois Institute of Technology, Chicago, November 2003.

"Where the computing and life sciences meet", a workshop by Keith Decker with help from Jeff Ning, part of the 2003 Explorations in Biotechnology and Bioengineering program, Johns Hopkins University Center for Talented Youth, October 2003.

"Research Objectives for Coordination", invited speaker, DARPA/IPTO Program Development Meeting, Chicago, August 2003.

"Coordination", Invited Lecturer, European Agent Systems Summer School, Barcelona, Spain, February 2003.

"Agent Architectures and Applications: DECAF and BioMAS", Invited Speaker, Intelligent Agents and Multimedia, Department of Electronics and Computer Science, University of Southampton, October 2002.

"DECAF: A multi-agent system for automated genomic annotation", Invited speaker, Agents in Bioinformatics, Network Tools and Applications in Biology (NETTAB), July 2002.

"Coordinating Intelligent Agents", Invited Speaker, Lockeed-Martin Advanced Technology Laboratories, September 2001.

"A Multi-Agent System for Automated Genetic Annotation", Invited speaker, Battelle, Pacific Northwest National Laboratory, August 2001.

"Software Agents: An Introduction and Examples", Invited speaker, Battelle, Pacific Northwest National Laboratory, August 2001.

J. Bryson, *K. Decker*, S. DeLoach, M. Huhns, M. Wooldridge. Panel Summary: Agent Development Tools. In C. Castelfranchi and Y. Lesperance, eds., Intelligent Agents VII. LNAI, Springer-Verlag, 2001.

S. Bussman, P. Ciancarini, *K. Decker*, M. Huhns, and M. Wooldridge. Panel Summary: Agent-Oriented Software Engineering. In N. Jennings and Y. Lesperance, editors, Intelligent Agents VI: Agent Theories, Architectures, and Languages. LNAI #1757, pp 248–250, Springer 2000.

"Individuals vs. Collectives: From Viewpoints to Computation", German DFG (German National Science Foundation equivalent) Workshop on Socionics, Kloster-Seeon, Germany, June 2000.

"Designing Behaviors for Intelligent Agents," Invited Speaker, University of Iowa, March 2000.

"Designing Behaviors for Intelligent Agents," Invited Speaker, MITRE Knowledge and Agents Technical Exchange Meeting, November 1999.

"Artificial Intelligence," Invited lecturer, Science—the Cutting Edge, Academy of Lifelong Learning, October 1999.

"Coordination", Invited Lecturer, European Agent Systems Summer School, Utrect/Amsterdam, The Netherlands, July 1999.

"Coordinating Intelligent Agents," Invited Speaker, UK Workshop on Multi-Agent Systems, Manchester UK, December 1998.

Invited Participant, International Workshop on Multi-Agent Systems, MIT Endicott House, October 12-14, 1998

"Coordinating Intelligent Agents," Invited Speaker, NASA /UVA Workshop on Intelligent Agents and Their Potential for Future Design and Synthesis Environments, NASA Langley, September 1998.

Invited Participant, International Workshop on Multi-Agent Systems, MIT Endicott House, October 12-14, 1997

"Designing Behaviors for Information Agents," Presented at University of Maryland, Baltimore County, October 6, 1997

"Task Environment Centered Design of Organizations," Presented at the Symposium on Distributed Cognition, 1997 Cognitive Science Conference, Stanford University, August 1997.

"Distributed Coordination and Multi-Agent Organizations," Presented at the NSF Workshop on Intelligent Agents, Porto Alegre, Brazil, March 1997.

"Applying Organization Theory to the Analysis and Design of Multi-Agent Systems," Presented at the NSF Workshop on Coordination Theory and Collaboration Technology, University of Michigan, March 1995.

"Environment Centered Coordination in Multi-Agent Systems," Presented at Washington University, Rice University, Purdue University, and Columbia University, Spring 1995.

"Task Environment Centered Design of Organizations," Presented at the TIMS College on Organization Fourth Annual Workshop on Mathematical and Computational Organization Theory, April 23, 1994.

"Environment Centered Analysis and Design of Coordination Mechanisms," Presented at the University of Pennsylvania, February 22, 1994.

"Modeling Complex Computational Task Environments," Presented at BBN, Cambridge, MA., September 15, 1993.

M. Ardis, *K. Decker*, P. Fowler, J. Lavi, W. Lively, D. Politi. Panel Summary: Four Models of Industry/Academia Interfaces. In R. Fairley and P. Freeman, editors, *Issues in Software Engineering Education*, pages 527–563. Springer-Verlag, 1989.

Professional Activities, External

Program Committee Board (PCB) of IJCAI [2022–2024, 3 year term]

External Reviewer for Rowan's CS programs (summer 2015)

Editorial board, *International Journal of Agent-Oriented Software Engineering,* Inderscience Publishers.

Editorial board, *Autonomous Agents and Multi-Agent Systems*, Kluwer Academic Publishers, 1996-2019 (now 6 year terms starting in 2016).

Editorial board, *The Knowledge Engineering Review,* Cambridge University Press, 2005-2015 (10yr term).

Program Co-Chair, 13th International Conference on Practical Applications of Agents and Multi-agent Systems (PAAMS-15). *[73 submissions, 20 full papers accepted]*

Program Co-Chair, 8th International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-09). *[651 submissions, 132 full papers accepted]*

Treasurer, 7th International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-08).

Workshop Program co-Chair, AAAI, Boston, 2006.

Workshop Programme Chair, First International Joint Conference on Autonomous Agents and Multi-Agent Systems (First AAMAS merges ICMAS, Autonomous Agents, and ATAL), Bologna, 2002

Co-editor, *IEEE Internet Computing,* Special Issue "Agents on the Net", March/April 2000.

Workshop Programme Chair, International Conference on Autonomous Agents, Barcelona, 2000

Publicity Chair, Second International Conference on Autonomous Agents, Minneapolis, 1998

Co-chair, Workshop on Bioinformatics and Multi-Agent Systems, AAMAS-02, Bologna 2002.

Senior Program Committee, Intl. Joint Conf. on Autonomous Agents & Multi-Agent Systems [AAMAS; 2-year terms] 2005–2006, 2011–2012, 2014–2015.

Organizing Committee, Collaborative Online Organizations Workshop AAMAS 2014.

Organizing Committee, ECAI Workshop on Coordination in Emergent Agent Societies, 2004, 2006.

Organizing Committee, AAAI Spring Symposium on Semantic Web Services, 2003.

Organizing Committee, AAMAS-03 Workshop on Representations and Approaches for Time-Critical Decentralized Resource Allocation

Organizing Committee, AAMAS-02 Workshop Toward an Application Science: MAS Problem Spaces and Their Implications to Achieving Globally Coherent Behavior

Organizing Committee, Agents-2000 Wksp on Infrastructure for Scalable Multi-Agent Systems, 2000

Organizing Committee, ECAI-2000 Wksp on Modeling Artificial Societies & Hybrid Organizations, 2000

Organizing Committee, AAAI Fall Symposium on Distributed Continual Planning, 1998

Reviewer, International Conference on Machine Learning (ICML) 2022.

Reviewer, NeurIPS 2020, 2021, 2022.

Reviewer, IJCAI [Main Track] 95, 97, 99, 2003, 2005, 2015–2017, 2019–2022. Senior Program Committee IJCAI 2021. [additionally, IJCAI Computational Sustainability Track 2015]

Program Committee, AAAI [General Track] 96, 97, 2006, 2008, 2016–2018, 2020, 2021, 2022. [Computational Sustainability and AI Track] 2011–2014.

Program Committee, Intl. Joint Conf. on Autonomous Agents & Multi-Agent Systems [AAMAS] 2002–2004, 2007–2010, 2013, 2016, 2018–2022.

Program Committee, PAAMS 2011, 2012–2014, 2018–2022.

Program Committee, ACM SIGCAS Conference on Computing and Sustainable Societies (COM-PASS 2018)

Program Committee, E-Energy 2015, 2016.

Program Committee, IEEE International Conference on Bioinformatics and Biomedicine [BIBM], 2009, 2010, 2011, 2012, 2013, 2014, 2015.

Program Committee, First International Workshop on Demand Response [DR2014] 2014.

Program Committee, Agent Technology for Energy Systems [ATES] 2010, 2011, 2012, 2013.

Program Committee, ECAI 2000, 2012.

Program Committee, AAAI 2012 Spring Symposium on Game Theory for Security, Sustainability and Health, 2012.

Program Committee, International Workshop on Collaboration Technologies and Systems in Healthcare and Biomedical Fields [CoHeB], 2012.

Program Committee, Agent Oriented Software Engineering 2006, 2007.

Program Committee, Engineering Societies in the Agents World 2002, 2003, 2007.

Program Committee, First International Conference on Coordination and Control in Massively Multi-Agent Systems 2007

Program Committee, Fall AAAI Symposium Regarding the Intelligence in Distributed Intelligent Systems, 2007

Program Committee, ESAW Workshop (Engineering Societies in the Agents' World) 2007

Program Committee, Intl. Semantic Web Conference [ISWC] 2005.

Program Committee, Intl. Workshop on Coordinating Agents' Plans and Schedules (CAPS) 2007.

Program Committee, 17th SBIA (Brazilian Symposium on Artificial Intelligence) 2004

Program Committee, International Conference on Multi-Agent Systems[ICMAS], 96, 98, 00

Program Committee, Intl. Workshop on Agent Theories, Architectures, and Languages [ATAL], 97–01

Program Committee, International Workshop on Cooperative Information Agents [CIA], 98, 01

Program Committee, Australian DAI Workshop 95, 96, 97

Program Committee, AI Planning Systems (AIPS) 00

Program Committee, Multi-Agent Based Simulation (MABS) 2000

Program Committee, First ECAI Workshop on New Trends in Real-Time Artificial Intelligence (NTeRTAIn) 2006.

Program Committee, Workshop on Agents in Computer Games, 3rd International Conference on Computers and Games (CG'02).

Reviewer, Artificial Intelligence

Reviewer, IEEE Transactions on Systems, Man, and Cybernetics

Reviewer, IEEE Transactions on Knowledge and Data Engineering

Reviewer, IEEE Expert

Reviewer/Panelist, National Science Foundation

Reviewer, Annals of Mathematics and Artificial Intelligence

Reviewer, International Journal of Intelligent Systems

Reviewer, International Journal of Intelligent & Cooperative Information Systems

Reviewer, Computational and Mathematical Organization Theory

Reviewer, International Journal of Intelligent Systems in Accounting, Finance, and Management

Reviewer, Journal of Management Information Systems

Reviewer, The Computer Journal

Reviewer, ACM/Baltzer Journal on Special Topics in Mobile Networking and Applications (MONET)

Reviewer, In Silico Biology

Reviewer, ASME Design for Manufacturing Conference 98

Reviewer, AAAI Doctoral Consortium 99

Reviewer, AAAI Workshops 2000

Co-chair, Fifth AAAI Workshop on Blackboard Systems, Anahiem, CA 1991

Professional Activities, Internal

Chair, CoE CS Everywhere Task Force

CISC Exec Committee 2010–2012; Spring 2015–present

Undergraduate Committee member, CIS, University of Delaware, 98–99, 2003–04, 2020–2022.

Chair, CISC AI/ML/NLP/IR/HCI Senior Faculty Recruiting Committee, 2019–2020

Disaster Research Center Recruiting Committee, 2019–2020

Chair, CISC Senior Faculty HPC Recruiting Committee, 2018-2019.

CISC CT Recruiting Committee 2017–2018

Co-Chair, College of Engineering Academic Computing Committee (ECalc), 2011–present.

Chair, CISC Recruiting Committee 2015–2016

CISC Recruiting Committee 2014–2015

CISC Graduate Admissions Committee 2013–2014

CISC Publicity Committee 2012–2013.

Affiliated Faculty, Financial Analytics Program, University of Delaware 2014–present.

Affiliated Faculty, Qualitative Biology Program, University of Delaware 2009–present.

BUEC Ad hoc committee on Analytics, 2013.

Chair, Undergraduate Committee, Computer and Information Sciences, 2005–2011.

College of Engineering Educational Affairs Committee, 2009–2011.

UD Employer Advisory Board, 2009–present.

UD Disaster Research Center Director Search Committee, 2009–2010.

Secretary, College of Arts & Sciences Faculty Senate, 2007–2008.

Chair Selection Committee, Computer and Information Sciences, 2004–2005.

Chair Evaluation Committee, Computer and Information Sciences, 2003–2004.

Delaware Biotechnology Institute Bioinformatics Committee, 2000–2004.

University Bioinformatics Curriculum Committee, 2001–2008.

Recruiting Committee member, CIS, University of Delware, 2000–2002.

UD-UPE honor society chapter faculty coordinator, 97–2000

UD-ACM chapter faculty coordinator, 97–98

Site Director, U. Delaware, MidAtlantic Division, ACM Programming Contest 97

Graduate Committee member, CIS, University of Delaware, 96–97

Research Funding

Only Pending or Funded proposals shown outside the peer review timeframe.

NSF, "SCH: INT: Cooperative Learning for Individualized, Contextual, Just-in-time Natural Language Interventions to Motivate and Reinforce Hearth Health in Middle-aged Adults" $1,200,000 (about $1M to CISC) [6/1/2023 to 5/31/2027] Co-PIs McCoy, Dominick. Under Review.

State of Delaware, subcontract to A.I. Whoo, Inc., "Examining Feature Development and Communication to Determine Unique Trail Users" $20,000 [1/1/2022 to 6/30/2022].

Air Force Research Office STTR, "Intelligence, Surveillance, Reconnaissance (ISR) Using Machine Learning " subcontract PI, CISC $19,200 [10/1/2021–1/1/2022] (phase 1). Prime CyOne, Inc. rejected.

NSF, "SCH: INT: Cooperative Learning for Individualized, Contextual, Just-in-time Natural Language Interventions to Motivate and Reinforce Hearth Health in Middle-aged Adults" $1,200,000 (about $1M to CISC) [9/1/2021 to 8/31/2025] Co-PIs McCoy, Dominick. rejected (resubmitted).

CHIR (Center for Innovative Health Research) Interdisciplinary RHODIUM Research Grant, "Walking with JITAIs: Feasibility and impact of a pilot just-in-time adaptive intervention to promote heart health" $13,500 [5/1/2020 to 4/30/2021] Co-PI Dominick. [COVID no-cost Extension to 2022]

NIH-R21 "Integrating Mobile and Wearable Technology to Promote Physical Activity and Sleep among Midlife Adults: The Be SMART for Heart Health Trial" $95,141 to CISC. [7/1/2018 to 6/31/2020] PI Dominick. [COVID no-cost extension to 2022]

NIH-NLM, "Linking Text Mining and Data Mining for Biomedical Knowledge Discovery," $450,000. [04/01/2010 to 03/31/2014]. Co-PIs Wu, Carterette, Shanker.

USDA, "Knowledge Extraction and Annotation for the Chicken in a Grid Based Bioinformatics Environment", $1,000,000 [CIS: $381,646] [1/1/08 to 12/31/11]. Co-PIs Shanker, Schmidt.

DOE, "Vehicle to Grid Demonstration Project," $1,053,749 [CIS: $145,777] [8/1/2008 to 12/31/2010]. Co-PIs Kempton, Liao.

IAI Intelligent Automation, Inc. subcontract (US Army Aviation & Missile Command SBIR), "A Mixed Initiative Approach to Human-Robot Interaction for 'Through the Door' Operation", $65,000. [1/1/2009 to 4/30/2010].

UD, "CISC Capstone Experience", $8,658 [7/1/07 to 6/30/08].

DARPA (via subcontract to Global InfoTek), "Mixed Scale Coordination", $110,000 [9/1/05 to 1/31/07].

NSF, BDI-0092336, "A Knowledge Base for Storage and Analysis of Expressed Sequence Tags", $538,312 [2/1/01 to 1/31/04]. Co-PI with Carl Schmidt.

NIH, "Delaware Biomedical Research Instrumentation Network", $6,293,599 [10/01/01 to 9/30/04]. Co-Director, Bioinformatics Core (PI David Weir).

Dept. Health & Human Services, Public Health Services, "Tracking Urogenital Sinus Cell Progeny", $1,044,131 [04/01/02 to 03/31/05]. Co-PI with Robert Sikes.

DBI, "GeneAgent: Systems Analysis of Genomic Data using Intelligent Software Agents", $40,000 [9/1/00 to 8/31/01] (renewal). Co-PI with Prasad Dhurjati.

DBI, "GeneAgent: Systems Analysis of Genomic Data using Intelligent Software Agents", $40,000 [9/30/99 to 8/31/00]. Co-PI with Prasad Dhurjati, Bertrand Lemiuex, and Jean-Francois Tomb.

NSF, "REU Supplement to IIS-9733004", $10,000.

NSF, IIS-9812764, "Enhancing Robustness of Information Systems Through Distributed Adaptive Coordination". $193,424 [09/01/98 to 08/30/02].

NSF, IIS-9733004, "CAREER: Integrating Organizational Style with Environmental Characteristics". $440,621 [7/1/98 to 6/31/03].

UDRF, "A Distributed, Environment-Centered Agent Framework". $30,000 [6/1/97 to 5/31/98].

DARPA, F30602-97-1-0249, "Enhancing Survivability with Distributed Adaptive Coordination". $52,997 [09/01/97 to 08/31/00]. Subcontract to University of Massachusetts.

NSF, 9703088, "Parallel and Distributed Computing: Systems and Application Development Infrastructure". $816,320 [07/01/97 to 06/30/02]. Participant.

PhD Students

Ghazaleh Zehtab [FSAN], new Fall 2022.

Tanvir Rahman, new Fall 2021.

Sha Liu, new Fall 2020, Passed Prelim Spring 2021.

Ajith Vemuri, new Spring 2017 Passed Proposal. ABD.

Jared Sharpe [FSAN], new PhD Fall 2018, passed Proposal. ABD.

Kevin Corder, new Fall 2014. Passed Proposal. ABD.

Matt Saponaro, 2022 Thesis: "Adaptive Real-time Coaching in Free-Living Conditions" Topic: Transfer learning in situations with high cost of being wrong

Haoran Wei, PhD awarded 2020. Thesis: "Multi -model Based Reinforcement Learning and Application" Topic: Multi-agent speedup of single-agent reinforcement learning

Xinxin Qu, new Fall 2013. Passed Prelim. Leave of Absence.

Preeti Anday, new PhD student 2010. Left with MS Spring 2013.

Li Jin, PhD awarded 2012. Thesis: "Exploring Incomplete Planning Domain Knowledge through Hypothesis Generation and Diagnostic Execution". Topic: HTN Planning domain models (application to Biological Pathway Modeling)

James Atlas, PhD awarded 2009. Thesis: "Efficient Coordination Techniques for Non-deterministic Multi-agent Systems Using Distributed Constraint Optimization". Topic: Distributed Constraint Optimization.

Sachin Kamboj, PhD awarded 2009. Thesis: "The Use of Organizational Self-Design to Coordinate Multi-agent Systems": Topic: Multi-agent Organizational Design.

Paul Hientzelman, new PhD student 2009. Declined to take prelims and left 2010.

Terry Harvey, PhD awarded 2006. Thesis: "Integrating Multiple, Independent Communicative Plans". Topic: Planning for Agent Communication. Co-advisor with Carberry.

Wei Chen, PhD awarded 2006. Thesis:"Designing an Extended Set of Coordination Mechanisms for Multi-Agent Systems" Topic: Multi-Agent Coordination.

Foster McGeary, PhD Awarded 2005. Thesis: "Structures Supporting Organizations of Autonomous Agents" Topic: Multi-Agent Organizations.

Salim Khan. Six joint papers. Left for USC in 2003.

John Graham, PhD awarded 2001. Thesis: "Real-time scheduling in Distributed Multi-Agent Systems". Topic: Agent Architectures.

Other Students

PhD Committee member for: Rommy Hernandez, Ramin Ramazi, Megan Heintzelman, Eeshita Biswas, Pakeeza Akram, John Miller, Scott Sorensen, Josh Kirby, Giriprasad Sridhara, Roger Craig [yes, the *Jeopardy!* former one-day winnings record holder :-)], David Shepard, Sara Sprenkle, Michael Bloodgood, Emily Hill.

Samuel Herring, summer scholar on Apple WatchOS programming for Just In Time Adaptive Inverventions (JITAI) 2020–2022.

Matt ("the 8th") Benvenuto, summer scholar on colon crypt modeling Summer 2020

David Clendenning, summer scholar on physical activity classification (with Matt Saponaro) Summer 2020

Shane Muller, summer scholar on physical activity classification (with Matt Saponaro) Summer 2020

Yash Oulkar, summer scholar on colon crypt modeling Summer 2019

Matt ("the 7th") Zelinski, summer scholar on formal correctness of machine learning algorithms (with Steven Siegel) Summer 2018.

Yihan Ye, summer scholar on agent-based modeling of natural branching patterns based on p-Fibbonacci sequences. Summer 2018.

Michael Gonzalez, independent study on agent-based cell-level simulation of colon-crypt formation. Summer 2017.

Thien-Nam Dinn, independent study on agent-based cell-level simulation of colon-crypt formation. Spring 2016.

Matt ("the 6th") Schmittle and Nathanial Borders, uncredited work on agent-based cell-level simulation of colon-crypt formation. Spring 2015.

Ben Gotthold, independent study maintaining MAS Simulator. Spring 2015

Philip Tornquist and Bola Akinmeji, independent study on tool for generating problem instances with given statistical characteristics. Fall 2014.

Matt ("the 5th") Levin and Kahn Duong, uncredited work over Winter break on various agent simulators for the Spring class. *Could not convice Kahn to change name to Matt.* Winter 2014.

Matt ("the 4th") Hoffman, Science and Engineering Summer Scholar 2013.

Matt Saponaro, B.S. 2013 Senior Thesis director. Science and Engineering Summer Scholar 2011 and 2012. *Apparently I only work with guys named Matt??!!*

Matt Fendt, Science and Engineering Summer Scholar 2007

Matt Warner, Science and Engineering Summer Scholar 2006

Sherol Chen, B.S. 2005. Senior Thesis "Synthetic Agents in Interactive Media". 2nd Reader.

Kay Hliang, M.S. 2004. One joint paper.

Mathijs de Weerdt, PhD 2003, University of Delft. Thesis: "Plan Merging in Multi-Agent Systems". External Examiner.

Ravi Makkena, M.S. 2003. Two joint papers.

Julie Johnson, M.S. 2001.

Xiaojing Zheng, M.S. 2001. Two joint papers.

Ziying Shao, M.S. 1999.

Qingrui Liu, M.S. 1999.

R. Scott Cost, PhD 1998, UMBC. Thesis: "Conversations and Protocols for Software Agents". External Committee member.

Jinjiang Li, M.S. 1998. Two joint papers.