RESUME

CORE VALUES

- Honesty
- Trustworthiness
- Teamwork
- Respect
- Strategic Thinking
- Day-to-Day Diligence
- Results Orientation
- Excellence
- Efficiency
- Financial Stewardship

INTERNATIONAL EXPERIENCE

Worked in 36 countries, with significant time spent in France, Germany, Netherlands, UK, Italy, Poland, Czech Rep., China, HK, Taiwan, Japan, Middle East, and the DR Congo

INTERESTS

TEAMWORK ACCELERATED LEARNING SEMANTIC TECHNOLOGIES HUMAN-CENTERED DESIGN CYBERSECURITY DISTRIBUTED SENSEMAKING POLICY-BASED NETWORK MANAGEMENT SOFTWARE AGENTS ROBOTICS

QRCODE

JEFFREY M. BRADSHAW, PH.D.

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EXECUTIVE SUMMARY

- *Organizational Leadership Experience:* More than 30 years of experience in providing strategic vision and day-to-day leadership and direction to multi-disciplinary teams of information technology professionals serving major initiatives of government, industry, and academia
- *Managerial Accounting and Business Operations:* Managed portfolio of proposals, grants, and contracts; authored organizational policies; formulated and managed operational budgets for labor, travel, and equipment
- *Funding Initiatives:* Since 2000, led or co-led more than forty successful government and industry research proposals with awards in the tens of millions of dollars
- *Strategic Planning:* Provided strategic direction to major government, professional, and industry organizations through regular participation in external advisory boards; authored a score of major long-range technology forecasts for government and industry
- *Technology Leadership:* Sustained record of innovation in technologies and business processes in many subject matter areas; hundreds of publications and presentations made at venues worldwide
- *Widespread Impact:* Demonstrated high-impact through a track record of successful technology transfer and deployment in challenging real-world environments; technology patents; adoption of research innovations as federal government standards; and significant changes in direction of national technology programs and policies due to influence of research results
- *Organizational Development:* Attracted and retained world-class talent for long-standing organizational teams; rapidly assembled and stood up of dozens of successful ad hoc project-oriented teams; always fostered a culture of teamwork and excellence
- *Problem-Solving:* Frequently called upon to resolve inertia or gridlock on difficult technical or organizational problems requiring consensus from diverse stakeholders

SENIOR RESEARCH SCIENTIST
FLORIDA INSTITUTE FOR HUMAN AND MACHINE COGNITION (IHMC), 2000-PRESENT

Patents:

- *US Patent no. 10,591,912, Autonomous Vehicle Remote Support Mapping Interface, 17 March 2020.* In partnership with colleagues at Nissan North America, Jeff's team contributed vehicle display technology dependent on our Object Management Display technology for remote support of large-scale fleets of autonomous vehicles.
- *US Patent no. 10,627,832, Object Management Display, 21 April 2020.* Jeff's team developed an innovative series of displays for detection and resolution of problems involving complex real-time interactions for many thousands of entities. The invention leverages subtle properties of the human visual and cognitive system and is applicable to a wide variety of operations.
- *Patent Pending, Policy Governed Sofware Agent System and Method of Operation, 28 February 2019.* Jeff's team developed the Luna Agent Framework and coupled it with their KAoS Policy Services Framework to address problems ranging from cyber defense to health care.
- *US Patent no. 8,803,884, Event Data Visualization Tool, 12 August 2014.* Jeff's team developed a unique way of visualizing events that exploits subtle features of human perception and cognition. As a result, humans can make sense of large volumes of complex, high-tempo events unfolding over time to a degree not previously possible.

Highlights of Recent Achievements and Awards:

- *DARPA Context Reasoning for Automonomous Teaming (CREATE), 2019-2021.* The IHMC team is advancing theory and practice of context-sensitive modeling and decentralized, large-scale run-time execution of teaming strategies (Joint Activity Graph [JAG] services) combined with semantically rich constraints to safely govern emergent behavior (KAoS policy services).
- *DARPA Robotics Challenge, 2013-2015.* IHMC competed against an initial group of 126 teams worldwide. In the VRC phase, IHMC was the top-scoring team. In the DRC Finals, IHMC placed second overall, first among US teams, and first among teams using the Atlas robot, garnering a $1M prize. The Coactive Design approach to human-robot teamwork, developed as part of Matt Johnson's Ph.D. dissertation on which Jeff served as a supervisor, was a major differentiator.

- *Common Cyber Environment Representation (CCER) Specifications, 2013.* In collaboration with MIT Lincoln Lab, Jeff's team developed standards for ontology models and best practices guidelines intended to enable interoperability and experimental result sharing among cyber range testbed operators throughout the USA. IHMC technology featured on cover of special issue on Cyber Security for the *Massachusetts Institute of Technology Lincoln Laboratory Journal*, 22:1, 2016.
- *Human-Agent-Robot Teamwork Workshop Series.* In 2008, Jeff co-founded and organized the Human-Agent-Robot Teamwork Workshop series (HART), whose most recent meetings were held at the Lorentz Center in Leiden, The Netherlands (2011, 2015), and at the 2012 Human-Robot Interaction conference in Boston.
- *NSA Digital Policy Management (DPM) Initiative, 2012.* The DPM intiative selected the KAoS core ontology, developed by Jeff's team, as the basis for its future federal standards efforts.
- *Web Intelligence Consortium Outstanding Contributions Award, 2011.* Jeff received this award for his long-standing contributions to research in this field.

Selected Appointments:

- Member, United States Defense Science Board Summer Study on Autonomy, 2015
- Chair, Scientific Advisory Council, Nissan Research Center, Silicon Valley, 2013 to Present
- Scientific Advisor, ITADS (Intelligent Tutoring Authoring and Delivery System) for instruction throughout US Navy training centers, September 2013-2015
- Integrated Global C2 Campaign of Experimentation project, US Strategic Command, 2013-2014
- Invited Panelist, Alan Turing Year Panel on Top Ten Fundamental Questions and Challenges in Intelligent Informatics and Computing, 2012
- Expert Panel, Brain-Machine Interfaces, National Academy of Science, 2012
- Member, Graduate Faculty, Florida Institute of Technology, 2012 to Present
- Chair, Programme Committee, International Workshop on Intelligent Human-Machine Collaboration, National Academy of Science, 2012
- Member, AFRL Blue Sky Study Group, Improving Understanding of Complex Information, 2011
- Faculty Associate, University of West Florida, 2011 to Present
- Scientific Advisor, Accelerated Learning Study, Air Force Research Laboratory, tasked by the Defense Science and Technology Advisory Group (DSTAG), 2010
- Member, Board of Global Science and Technology, National Academy of Science, 2010 to 2015
- NASA Blue Sky Study Group, Human-Centered Vision of Mars Exploration, 2010
- Member, External Advisory Board, Cognitive Science and Technology, Sandia National Laboratories, 2008-2014
- NASA Blue Sky Study Group, Small Pressurized Rover, 2007-2008
- Member, National Research Council (NRC) Committee on Emerging Cognitive Neuroscience Research in the Next Two Decades, 2007-2008
- Scientific Advisor, Japanese NEC Technology Paradigm Shifts Initiative, 2007-2008
- Scientific Advisor, HCIV program, German National AI Research Center (DFKI), 2006-2010
- Member, Technical Committee for IEEE Systems, Man and Cybernetics, 2006-2010
- Visiting Professor, Institut Cognitique, University of Bordeaux, France, 2005-2006
- Board of Directors of the International Foundation for Autonomous Agents and Multiagent Systems, 2004-2010
- Member, External Advisory Board, Next-Generation Intelligent Systems Grand Challenge, Sandia National Laboratories, 2004-2006
- Honorary Visiting Researcher, University of Edinburgh, Scotland, 2002 to Present

- Technical lead for US participation in four-country, twenty-four member program, DARPA Coalition Agents Experiment (CoAX), 2002-2003
- Member, International Advisory Committee, Web Intelligence Consortium, 1999 to Present
- Provided research guidance on supervisory committees of eleven masters theses and doctoral dissertations in the United States, the Netherlands, France, and Switzerland

ASSOCIATE TECHNICAL FELLOW
THE BOEING COMPANY, 1985-2000

Selected Achievements and Awards:

- *Boeing Achievement Award for Outstanding Performance, 1999*. For participation in a project to define an architecture and technology roadmap for the National Intelligence Community.
- *Portable Maintenance Aids, 1994-1999.* As chair of emerging technologies for the Aviation Industry Computer-Based Training Committee (AICC), Jeff's team led a series of efforts to prototype the transition from paper to digital multimedia in aircraft maintenance and training. They showed how software agents could be designed to help streamline tedious tasks and adapt learning and performance to dynamic contexts. Products based on these ideas grew to become a significant commercial offering for Boeing and a huge benefit to its customers.
- *Certificate of Appreciation, Global Analysis and Information Network (GAIN), 1999*. "In recognition of outstanding contributions… demonstrating the feasibility and effectiveness of sharing aviation safety information" as part of Jeff's NASA-sponsored Aviation Extranet project.
- *Letter of Recognition, University of California Los Angeles Extension Division, 1998*. For consistent ranking in top ten percent of student ratings among 200 instructors.
- *eQuality Enterprise Modeling Tool, 1990-1994*. Jeff's team designed and developed an interactive visual framework with an underlying ontology-based model and analytic algorithms for streamlining strategic corporate business processes. It was selected as the principal enterprise modeling tool for design and production within the Boeing 777 airplane program. In 1994, *eQuality* was also chosen as the tool best suited to meet the needs of a major new strategic initiative of the Boeing Commercial Airplane Group, DCAC/MRM (Design and Control Airplane Configuration/Manufacturing Resource Management).
- *Axotl R&D Portfolio Analysis, 1988-1990.* Jeff's team created an innovative knowledge-based engine populated with activity graphs that could guide users through the process of constructing and evaluating their investment portfolio using decision-theoretic algorithms. Our collaborators at Stanford commercialized the application, which was used widely by Boeing and other major companies for high-stakes strategic investment decisions.
- *Employee of the Year, Boeing Computer Services, 1988*. For role in developing successful methodologies and tools for automated knowledge acquisition and for the simplification of complex modeling tasks. *Aquinas* became the most widely known and used toolset of its kind throughout the world.

Selected Appointments:

- Chair, ACM Special interest Group on Artificial Intelligence (SIGART), 1999-2001
- Chair and Member, Autonomous Agents Steering Committee, 1998-2004
- Chair and Member, RIACS Science Council, NASA Ames Research Center, 1998-2006
- Senior Fulbright Research Scholar, EURISCO, Toulouse, France, 1993-1994
- Chair and Founder, Emerging Technology and Concepts Subcommittee, Aviation Industry Computer-Based Training Committee, 1993-1999
- Co-Principal Investigator, Posttransplant Support Technology Project, Clinical Division, Fred Hutchinson Cancer Research Center, National Institutes of Health, 1993-1999
- Technical advisor and project sponsor to dozens of students over fifteen years in the Masters of Software Engineering Program, Seattle University

REPRESENTATIVE PUBLICATIONS
(for additional publications, see www.jeffreymbradshaw.net)

Cognition, Memory, and Language

Ning Zhong, J.M. Bradshaw, Jiming Liu, and John G. Taylor. Introduction. Special issue on Brain Informatics. *IEEE Intelligent Systems* 26:5 (2011): 16-21.

Green, C., D. Griffin, J. Blascovich, J.M. Bradshaw, et al. *Emerging Cognitive Neuroscience Technologies and Applications.* National Research Council. Washington, DC: The National Academies Press, 2008.

Knowledge Acquisition

Bradshaw, J. M. From knowledge science to symbiosis science. *International Journal of Human-Computer Studies* 71 (2013): 171-176.

Ford, K. M. and J. M. Bradshaw, eds. *Knowledge Acquisition as Modeling.* New York City, NY: John Wiley, 1993.

Multi-Agent Systems

Bunch, L., J. M. Bradshaw, *et al*. Supporting Co-Evolution of Tasks and Artifacts with Luna. Invited Paper in Ingo J. Timm and C. Guttmann (eds.), *Multiagent System Technologies* (MATES 2012), Berlin, Germany: Springer, LNAI 7598, 53-67.

Dignum, F., J. M. Bradshaw, B. Silverman, W. van Doesburg, eds. *Agents for Games and Simulations*. Heidelberg: Springer, 2010.

Bradshaw, J. M., ed. *Software Agents*. Cambridge: AAAI Press/MIT Press, 1997.

Semantically Rich Policy Services

Bradshaw, J. M., A. Uszok, and R. Montanari. Policy-Based Governance of Complex Distributed Systems. In N. Suri and G. Cabri, eds. *Engineering Adaptive and Resilient Computing.* NY: Taylor & Francis, 2014.

Bradshaw, J. M. A. Uszok, M. Breedy, L. Bunch, T. C. Eskridge, et al. The KAoS Policy Services Framework. *Eighth Cyber Security and Information Intelligence Research Workshop (CSIIRW 2012).* Oak Ridge, TN: Oak Ridge National Labs, January 2012.

Human-Centered Computing

Hoffman, R. R., J. M. Bradshaw, P. Hayes, and K. M. Ford. *Collected Essays on Human-Centered Computing, 2001-2011.* New York City, NY: IEEE Press, 2012.

Human-Agent-Robot Teamwork

Final Report of the Defense Science Board Summer Study on Autonomy. Publicly Releasable Version. Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, 2016.

Johnson, M., Bradshaw, J. M., Hoffman, R. R., Feltovich, P. J., and Woods, D. D. Seven Cardinal Virtues for Human-Machine Teamwork: Examples from the DARPA Robotic Challenge. *IEEE Intelligent Systems*, 29:6 (2014), pp. 74-80.

Bradshaw, J. M., R. R. Hoffman, M. Johnson, and David D. Woods. The Seven Deadly Myths of "Autonomous Systems." *IEEE Intelligent Systems*, 28:3 (2013): 54-61.

Chiang, M. and P. S. Wrightson (rapporteurs), J.M. Bradshaw (chair), D. Chong, G. Kaminka, G-J Kruijff, Brian Williams (committee). *Intelligent Human-Machine Collaboration*. Washington, DC: National Academies Press, 2012.

Bradshaw, J. M., V. Dignum, C. Jonker, and M. Sierhuis. Guest editor introduction: Human-Agent Robot Teamwork (HART), *IEEE Intelligent Systems*, 27:2 (2012): 8-13.

Bradshaw, J. M., P. J. Feltovich, and M. Johnson. Human-Agent Interaction. In *Handbook of Human-Machine Interaction*, edited by G. Boy. Ashgate, 2011, 283–302.

Klein, G., P. J. Feltovich, J. M. Bradshaw, and D. D. Woods. Common ground and coordination in joint activity. In *Organizational Simulation*, edited by W. B. Rouse and K. R. Boff, 139-84. New York, NY: Wiley, 2004.

Cybersecurity

Bunch, L. Bradshaw, J. M., et al. Principles for Human-Centered Interaction Design: Can Humans and Machines Think Together? *IEEE Intelligent Systems*, 30:3 (2015), 68-75.

Forsythe, C., A. Silva, S. M. Stevens-Adams, and J. M. Bradshaw. *Human Dimensions in Cyber Operations: Research and Development Priorities.* Albuquerque, NM: Sandia National Laboratories, November 2012.

Bradshaw, J.M., et al. Sol: An Agent-Based Framework for Cyber Situation Awareness. *Künstliche Intelligenz*. 26:2 (2012): 127-140.