

# KAREN ZITA HAIGH

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USA

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## Work Experience

**BBN Technologies**, Cambridge, Massachusetts, USA.

November 2005 – present. Scientist, Intelligent Distributed Computing Group.

Performed research developing and embedding cognitive techniques in complex systems. Published technical papers and prepared patents. Managed projects with teams of other scientists. Conceived and wrote proposals to customers, predominantly DARPA. Led and participated in other strategic planning & business development activities including customer visits and opportunity tracking.

### Selected Projects:

**POIROT**. Plan Order Induction by Reasoning from One Trial. 2006-2010. Hypothesis former lead. Develop workflow models from one training example, using multistrategy learning to develop testable hypotheses about model structure. DARPA's Integrated Learning program.

**Tactical Edge Networking**. 2007-2009. PI. Prepared recommendations for military Policies regarding tactical edge networks for the Office of the Secretary of Defense, focusing on interoperability and distributed control. Patent pending.

**CSISM**. Cognitive Support for Intelligent Survivability Management. 2007-2008. Protection from zero-day cyber attacks. Developed machine learning techniques to generalize single attacks by exploring axes of vulnerability. DARPA's Self Regenerative Systems (SRS) program.

**ADROIT**. Adaptive Dynamic Radio Open-source Intelligent Team. 2005-2007. Cognitive Lead. Create an open-source composable network architecture suitable for cognitive control that adapts in real-time to changes in the environment and user needs. DARPA's ACERT program.

**Honeywell Laboratories**, Minneapolis, Minnesota, USA.

May 2001 – November 2005. Principal Research Scientist, Automated Reasoning Group.

June 1998 – May 2001. Senior Research Scientist, Automated Reasoning Group.

Performed research in machine learning, planning, knowledge management and other fields of artificial intelligence for automated systems such as robots, refineries, aircraft and intelligent homes. Published technical papers and prepared patents. Managed projects with small teams of other scientists. Conceived and wrote proposals to customers including DARPA, NASA and NIST. Led and participated in other strategic planning & business development activities including customer visits and opportunity tracking.

### Selected Projects:

**LifeCare**. 2004-2005. Productization strategies for in-home monitoring of elderly clients, including sensing modalities, reasoning algorithms, strategic partnerships, and IP issues.

**VQL**. Visual Query Language. 2003-2005. PI. An interactive tool for searching for patterns in time series data. Patents pending.

**PTM**. Predictive Trend Monitoring. 2003-2004. Analysis of aircraft engine data for early event detection.

**NASA-EED**. NASA Early Event Detection. 2002-2003. Analysis of data from International Space Station and Shuttle Columbia for early event detection.

**I.L.S.A.** Independent LifeStyle Assistant™. 2000-2003. Lead Architect. An intelligent, adaptive home automation system with a sophisticated situation awareness and decision-making capabilities that reason over a diverse set of sensors, medical devices and "smart" appliances to enable elderly and infirm users to live and function safely at home. \$5.2 M NIST Advanced Technology Program. Multiple patents pending.

## Education

**Carnegie Mellon University**, Pittsburgh, Pennsylvania, USA.

Ph. D. (Computer Science), February 1998.

Thesis title: [Situation-Dependent Learning for Interleaved Planning and Robot Execution](#)

Thesis Committee: M. Veloso (chair), T. Mitchell, R. Simmons, R. J. Firby (Neodesic Corporation)

Designed and built a robot learning system that uses feedback from execution experience to improve efficiency of generated plans.

**University of Ottawa**, Ottawa, Ontario, Canada.

B. Sc. (Honours Computer Science), April 1992, *summa cum laude*

## Selected Patents (of 17 total)

1. D. Mankins, G. D. Troxel and K. Z. Haigh. *System, device and method for unifying differently routed networks using virtual topology representations*. Filed March 2009.
2. K. Z. Haigh, W. Foslien, V. Guralnik, *Method and Apparatus for Identifying Data of Interest in a Database*, U.S. Patent Application Serial No. [20070112754](#), filed 15 November 2005.
3. K. Z. Haigh, L. M. Kiff, V. Morellas, *Monitoring Devices*, U.S. Patent Application Serial No. [10/878,952](#), filed 28 June 2004.
4. C. A. Miller, W. L. Dewing, K. Z. Haigh, D. C. Toms, R. P. Whillock, C. W. Geib, S. V. Metz, R. M. R. Richardson, S. D. Whitlow, J. A. Allen, L. A. King, J. Phelps, V. A. Riley and P. Wu. *A method for monitoring, recognizing, supporting and responding to the behaviour of an actor*, U.S. Patent Application Serial No. [10/341,335](#), filed January 10, 2003.
5. W. L. Dewing, L. Stickler, C. A. Miller, K. Z. Haigh, R. M. R. Richardson, R. P. Whillock and S. Whitlow, *System and method for assessing the functional ability or medical condition of an actor*. U.S. patent [7,244,231](#), awarded 17 July 2007.

## Selected Publications (of 59 total)

1. Karen Zita Haigh and Nestor Rychtyckyj, editors, *Proceedings of the Twenty-First Innovative Applications of Artificial Intelligence Conference*, July 2009, AAAI Press, Menlo Park, CA.
2. D. Moore, M. Thome, Dr. K. Z. Haigh, [Scripting Your World: The Official Guide to Scripting in Second Life](#). Wiley, 2008.
3. K. Z. Haigh, T. S. Hussain, C. Partridge, G. D. Troxel, "Rethinking Networking Architectures for Cognitive Control." *Microsoft Research Cognitive Wireless Networking Summit 2008*, 5-6 June 2008. Snoqualmie, WA.
4. Karen Zita Haigh and Steven A. Harp, "Improving Self Defense by Learning from Limited Experience," in *Proceedings of Cyber Security and Information Infrastructure Research Workshop*, Oak Ridge, TN, USA. May 2008.
5. K. Z. Haigh, L. M. Kiff, G. Ho. "[The Independent LifeStyle Assistant™ \(I.L.S.A.\): Lessons Learned](#)." *Assistive Technology*, 18:87-106. 2006.
6. Geoffrey Ho, Liana Maria Kiff, Tom Plocher, Karen Zita Haigh, "[A Model of Trust and Reliance of Automation Technology for Older Users](#)," *Proceedings of the AAAI Fall Symposium "Caring Machines: AI in Eldercare*," 3-5 Nov 2005, Washington, DC, USA.
7. K. Z. Haigh, L. M. Kiff, K. Krichbaum, J. Wuorenma, "[The Technologist's Guide to Setting up an Eldercare Field Study](#)," in *Proceedings of the AAAI Fall Symposium "Caring Machines: AI in Eldercare*," 3-5 Nov 2005, Washington, DC, USA.
8. Wendy Foslien, Valerie Guralnik, Karen Zita Haigh, "[Data Mining for Space Applications](#)," in *Space Operations*, Montréal, Québec, Canada. 17-21 May 2004.
9. Karen Zita Haigh, David J. Musliner, Sunondo Ghosh, "RT-MLab: Really Real-Time Robotics," In *Proceedings of Workshop on Life Cycle Software Engineering Technology for Modern Avionics, Missiles, and Smart Weapon Systems*, Huntsville, AL, August 2000.

**Awards**

2007,2008,2009: BBN Publication Award  
2007,2008,2009: BBN Business Development Award  
2001: Honeywell Technical Achievement Award

**Professional Activities**

1996-current: Member of AAAI (American Association of Artificial Intelligence)  
2009: Chair, Innovative Applications of Artificial Intelligence  
2009: Guest Editor, AI Magazine, *Special Issue on Innovative Applications of Artificial Intelligence*  
2008: Co-chair, Innovative Applications of Artificial Intelligence  
2007: Chair, DARPA Information Science & Technology study on “*Engineering Ensemble Effects*”  
2003, 2005, 2007: Panel member, National Science Foundation  
2005: October – Invited presentation to University of Washington Institute on Aging  
2002: Chair, AAAI-02 workshop “Automation as Caregiver: The Role of Intelligent Technology in Elder Care”  
2001: Six Sigma Greenbelt Certification

**Personal**

Languages: Native English. Good French and Mandarin Chinese.  
Citizenship: Canada, United Kingdom, United States.