

KAREN ZITA HAIGH

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Education

Carnegie Mellon University, Pittsburgh, Pennsylvania, USA.

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

Thesis title: Situation-Dependent Learning for Interleaved Planning and Robot Execution

University of Ottawa, Ottawa, Ontario, Canada.

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

Work Experience

BBN Technologies, Cambridge, Massachusetts, USA.

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

Supervisor: Mark Burstein / Mark Berman.

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.

Projects:

Network Science Collaborative Technology Alliance. 2010-current. Trust Lead, Integrated Research Center. ARL.

POIROT. Plan Order Induction by Reasoning from One Trial. 2006-current. 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.

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.

ARMS. Adaptive and Reflective Middleware Systems. 2005-2006. Dynamic, distributed resource allocation. Developed rapid distributed feedback mechanism for utility measurements. DARPA's ARMS 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.

Supervisor: John Beane.

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.

Projects:

- LifeCare.** 2004-2005. Productization strategies for in-home monitoring of elderly clients, including sensing modalities, reasoning algorithms, strategic partnerships, and IP issues.
- Cortex.** 2005. 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.
- NetCon.** Universal Configurator for MANETs. 2004-2005. PI. Developed machine learning techniques to automatically configure network control parameters to achieve distributed, cross-layer optimization in mobile adhoc networks.
- VQL.** Visual Query Language. 2003-2005. PI. An interactive tool for searching for patterns in time series data. Patents pending.
- Enterprise Cockpit.** 2003-2005. Datamining over distributed, heterogeneous sales and marketing databases.
- 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 Colombia 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.
- CRYSTAL.** Control System for Teams of Autonomous Agents. 2002-2003. Command and control of semiautonomous systems in military applications. Extended MACBeth (below) to support CRYSTAL's wider capabilities: probabilistic model-predictive risk control, constraint-based planning, hard real-time intra-team negotiations, and distributed map building and trajectory optimization.
- KIRM.** Knowledge Integration and Resource Management. 2000. coPM/PI. Converting raw data collected from many diverse sources into exploitable knowledge. KIRM uses machine learning techniques to extract data from sources, a structured knowledge representation to create links between otherwise unconnected data, and mixed-initiative decision-support to query the knowledge base. Patent pending and patent granted.
- DETER.** Detection of Events for Threat Evaluation and Recognition. 1999-2000. Automatic detection of suspicious behaviour for high-end security applications. DETER uses image understanding to identify and track moving objects, and machine learning to build models of suspicious and innocuous behaviours, which can be used to raise alarms for security personnel. Honeywell Technical Achievement Award. Patent pending.
- LAMP.** Learning Alarm Management Project. 1999-2000. PM/PI. Machine learning to correlate and filter alarm showers from oil refineries. LAMP examines the plant history and logical configuration to dynamically consolidate alarms into groups, improving operator performance by effectively communicating plant states implied by alarms.
- D2K.** Documents To Knowledge. 1999-2000. PM/PI. Machine learning to extract patterns in natural language for use in categorizing statements in legacy documents. Developed a knowledge-based distance metric, based on natural language processing techniques, which compares the similarity of English sentences. Patent pending.
- RT-MLab.** Real-Time MissionLab. 1998-2000. PM/PI. Analysis of the hard real-time performance of composable robot behaviours for Georgia Tech's MissionLab system under. RT-MLab allows users to dynamically build configurations of robot behaviours, and then provides an analysis of the feasibility of the configuration in terms of hardware capabilities and real-time schedulability. DARPA's Tactical Mobile Robots (TMR) program.
- MACBeth.** MultiAgent Constraint-Based Planner. 1998-1999. Constraint-based planner for teams of cooperating agents in the domain of tactical robotic urban reconnaissance. MACBeth evaluates user instructions for feasibility and correctness, and expands and refines them to produce fully executable plans that intelligently manage limited resources and coordinate multiple agents. DARPA's Tactical Mobile Robots (TMR) program.

Carnegie Mellon University, Pittsburgh, PA, USA.

Graduate Research Assistant. Computer Science Department.

September 1992 - May 1998.

Thesis Committee: Manuela M. Veloso (chair), Tom M. Mitchell, Reid Simmons, R. James Firby (Neodesic Corporation)

Designed and built a robot learning system that uses feedback from execution experience to improve efficiency of generated plans. Created situation-dependent costs so that plans are tailored to particular circumstances. Created symbolic task planner, based on PRODIGY4.0, that handles interacting asynchronous requests for the indoor mobile robot Xavier. Built analogical/case-based reasoning system to automatically generate high-quality routes in a city map.

National Research Council of Canada, Ottawa, Ontario, Canada.

CO-SEP Summer Student. Flight Research Laboratory.

May 1992 - July 1992.

Supervisor: Dr. Elias Politis.

Designed and implemented software to analyse flight data recorders used to investigate airline crashes (written in C, using interprocess communication, AD/DA conversion and X Windows).

Hired by: Department of National Defense, DCP/MAT, 101 Colonel By Drive, Ottawa, Ontario, Canada K1A 0K2

University of Ottawa, Ottawa, Ontario, Canada.

Teaching Assistant and Coordinator, Computer Science Department

September 1991 - December 1991, and September 1989 - April 1990.

Supervisor: Mr. D. Farmar and Dr. Sylvia Boyd.

Taught Pascal and business applications to first year computer science students. Corrected assignments and exams, collated marks. Directed other TAs, organized teaching sessions, and assisted professors.

Northeast Agricultural College, Harbin, Heilongjiang, P. R. China.

English Teacher.

September 1990 - August 1991

Supervisor: Mr. Guo Tao.

Taught English as a second language to second year university students preparing for national exams. Designed curriculum, exams and assignments for students. Responsible for English club and various other extra-curricular activities.

University of Ottawa, Ottawa, Ontario, Canada.

Research Assistant, Computer Science Department.

May 1989 - August 1989

Supervisor: Dr. Stan Matwin.

Developed and tested a machine learning package for negotiation support based on genetic algorithms.

Renishaw Transducer Systems, Wotton-Under-Edge, Gloucester, United Kingdom.

Software Engineering Assistant.

May - July 1988

Designed and implemented a C program to analyze laser beams, facilitating accurate calibration of lasers. Translated and upgraded programs from Basic and Dbase III to C.

Patents

1. David Mankins, Gregory D. Troxel and Karen Zita Haigh. *System, device and method for unifying differently routed networks using virtual topology representations*. U.S. Patent Application 12/419,543, filed 7 April 2009.
2. Karen Zita Haigh and Steven A. Harp, *Modelling Cyber Security Attacks by Learning and Experimentation*. Patent docket H0010810, disclosed to Honeywell June 2005.
3. Karen Zita Haigh, Wendy Foslien, Valerie Guralnik, *Method and Apparatus for Identifying Data of Interest in a Database*, 19 April 2004, patent docket number H0007896. U.S. Patent Application Serial No. [20070112754](#), filed 15 November 2005. European patent [WO2007059034 \(A1\)](#).
4. Karen Zita Haigh, Wendy Foslien, Valerie Guralnik, *Method and Apparatus for Identifying Data of Interest in a Database*, 19 April 2004, patent docket number H0007896. U.S. Patent Application Serial No. [11/274,110](#), filed 15 November 2005. European patent [WO2007059034 \(A1\)](#).
5. Yunqian Ma and Karen Zita Haigh, *Multiple Model Estimation on Wireless Networks*. H0009803, disclosed to Honeywell May 2005. U.S. Patent Application Serial No. [11/163,806](#), filed 31 October 2005. European patent [US2007097873 \(A1\)](#).
6. Karen Zita Haigh, Valerie Guralnik, Wendy Foslien, *Identifying Data Patterns*, 19 April 2004, patent docket number H0007742. U.S. Patent Application Serial No. [11/032,588](#), filed 10 January 2005. European patent [EP1836647 \(A1\)](#).
7. Karen Zita Haigh, Wende L. Dewing, and Stephen V. Metz, *System & Method for Automatically Including Supplemental Information in Reminder Messages*, Patent docket H0003385. U.S. Patent Application Serial No. [10/978,689](#), filed November 1, 2004. European Patent [EP1807816 \(A1\)](#).
8. Karen Zita Haigh, *System and Method for Identification of Drug Interactions*, 14 April 2004, Honeywell patent docket number 7700.
9. Karen Zita Haigh, Liana M. Kiff, Vassilios Morellas, *Monitoring Devices*. Patent docket number H0006118, disclosed to Honeywell July 2003. U.S. Patent Application Serial No. [10/878,952](#), filed 28 June 2004. European patent number [EP1916639 \(A2\)](#) or [KR20070029760 \(A\)](#).
10. Valerie Guralnik, Karen Zita Haigh and Steven A. Harp, *Methods for learning the patterns of behaviour of an actor or environment*. Patent docket number H0003384, disclosed to Honeywell November 2001. U.S. Provisional Application Serial No. 60/384,899, filed 30 May 2002. U.S. Patent Application Serial No. [10/339,941](#), filed January 10, 2003. European patent [WO03102865 \(A1\)](#) or [US2003229471 \(A1\)](#).
11. Rose Mae R. Richardson, Wende L. Dewing, Karen Zita Haigh, Christopher A. Miller and Rand P. Whillock, *Mechanisms for supporting the coordination and collaboration of multiple actors*. Patent docket number H0003361, disclosed to Honeywell November 2001.
12. Karen Zita Haigh, Christopher W. Geib and Wende L. Dewing, *System and method for automatically gathering information relating to an actor in an environment*. Patent docket number H0004105, disclosed to Honeywell June 2002. U.S. Patent Application Serial No. [10/830,539](#), filed 23 April 2004. European Patent [US2005240571 \(A1\)](#) or [US2005240571 \(A1\)](#).
13. Karen Zita Haigh, Wende L. Dewing, and Stephen V. Metz, *A method for effective reminding of people with dementia or confusion*. Patent docket number H0003385, disclosed to Honeywell November 2001.
14. Wende L. Dewing, Larry Stickler, Christopher A. Miller, Karen Zita Haigh, Rose Mae R. Richardson, Rand P. Whillock and Stephen Whitlow, *System and method for assessing the functional ability or medical condition of an actor*. Patent docket number H0003356, disclosed to Honeywell November 2001. U.S. Provisional Application Serial No. 60/424,527, filed November 6, 2002. U.S. Patent application [10/703,097](#), filed November 6, 2003. U.S. patent [7,244,231](#), awarded 17 July 2007. European patent [WO2004044817 \(A2\)](#).

15. Karen Zita Haigh, Christopher W. Geib, Wende L. Dewing, Christopher A. Miller and Stephen Whitlow, *System and method for generating condition-based activity prompts*. Patent docket number H0003389, disclosed to Honeywell November 2001. U.S. Provisional Application Serial No. 60/384,519, filed 29 May 2002. U.S. Patent Application Serial No. [10/444,515](#), filed 23 May 2003. European patent [WO03102866 \(A1\)](#).
16. Christopher A. Miller, Wende L. Dewing, Karen Zita Haigh, David C. Toms, Rand P. Whillock, Christopher W. Geib, Stephen V. Metz, Rose Mae R. Richardson, Stephen D. Whitlow, John A. Allen, Lawrence A. King, John Phelps, Victor A. Riley and Peggy Wu. *A method for monitoring, recognizing, supporting and responding to the behaviour of an actor*. Patent docket number H0003359. U.S. Provisional Application Serial No. 60/368,307, filed 28 March 2002. U.S. Patent Application Serial No. [10/341,335](#), filed January 10, 2003. European patent [WO03083800 \(A1\)](#).
17. Karen Zita Haigh, David C. Toms, Rand P. Whillock, Rose Mae R. Richardson and Lawrence A. King, *Retroactive Security Systems*. Patent docket number H0003397, disclosed November 2001. U.S. Provisional Application Serial No. 60/366,937, filed 22 March 2002. (Application abandoned due to lack of business interest.)
18. Ioannis Pavlidis, Steve Harp, and Karen Haigh. *Moving Object Assessment System and Method*. Honeywell patent docket number H0002442. U.S. Provisional Application Serial No. [60/302,020](#), filed 29 June 2001; full application filed 27 December 2001. European patent [WO03003310 \(A1\)](#).
19. Karen Zita Haigh and Kevin Matthew Kramer, *A Method and Apparatus for Determining a Measure of Similarity Between Natural Language Sentences*. Patent Docket 1100.1125101. U.S. patent pending 09/896,846, filed 29 June 2001. U.S. patent [7,295,965](#), awarded 13 November 2007. European patent [US2003004716 \(A1\)](#).
20. Anoop Mathur, Vipin Gopal, Jan Jelinek, Tariq Samad; Karen Zita Haigh, Chris Miller, Dal Vernon Reising. *Advanced recipe—a knowledge based information system for production processes* U.S. patent [6,947,917](#), awarded 20 September 2005. Authorship amended September 2005. European patent [WO0180055 \(A2\)](#).
21. Amaneh Tasooji, Karen Haigh and Dal Vernon Reising. *Adaptive Knowledge Management system for Vehicle Trend Monitoring, Health Management and Preventative Maintenance*. Honeywell patent docket H0001338. U.S. patent pending 09/874,074, filed 4 June 2001. U.S. patent [6,907,416](#), awarded 14 June 2005.

Invited Presentations

1. *Rethinking Network Architectures for Cognitive Support*. Keynote address, ACM/SigMetrics workshop on Learning for Networking, Seattle, June 2009.
2. *Technology for Eldercare*, invited presentation to University of Washington Institute on Aging, Seattle, October 2005.

Publications (Books and Edited Volumes)

1. Mehmet Göker and Karen Zita Haigh, editors. Special Issue of the AI Magazine on “Innovative Applications of Artificial Intelligence,” AI Magazine, Volume 30, Number 2, 2009, AAAI Press, Menlo Park, CA.
2. 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.
3. Dana Moore, M. Thome, Dr. Karen Zita Haigh, *Scripting Your World: The Official Guide to Scripting in Second Life*. Wiley, 2008.
4. Mehmet Göker and Karen Zita Haigh, editors, *Proceedings of the Twentieth Innovative Applications of Artificial Intelligence Conference*, July 2008, AAAI Press, Menlo Park, CA.

5. Karen Zita Haigh, editor, *Proceedings of the AAAI Workshop on Automation as Caregiver: The Role of Intelligent Technology in Elder Care*, July 2002, AAAI Press, Menlo Park, CA.

Publications (Theses, Journals, Magazines, Invited)

1. Karen Zita Haigh, Talib S. Hussain, Craig Partridge, Gregory D. Troxel, "Rethinking Networking Architectures for Cognitive Control." *Microsoft Research Cognitive Wireless Networking Summit 2008*, 5-6 June 2008. Snoqualmie, WA.
2. Gregory D. Troxel, Eric Blossom, Steve Boswell, Armando Caro, Isidro Castineyra, Alex Colvin, Tad Dreier, Joseph B. Evans, Nick Goffee, Karen Zita Haigh, Talib Hussain, Vikas Kawadia, David Lapsley, Carl Livadas, Alberto Medina, Joanne Mikkelsen, Gary J. Minden, Robert Morris, Craig Partridge, Vivek Raghunathan, Ram Ramanathan, Paul G. Rubel, Cesar Santivanez, Thomas Schmid, Dan Sumorok, Mani Srivastava, Robert S. Vincent, David Wiggins, Alexander M. Wyglinski and Sadaf Zahedi. "[Enabling open-source cognitively-controlled collaboration among software-defined radio nodes.](#)" *Computer Networks*, 52(4):898-911, March 2008.
3. Gregory D. Troxel, Armando Caro, Isidro Castineyra, Nick Goffee, Karen Zita Haigh, Talib Hussain, Vikas Kawadia, Paul G. Rubel, David Wiggins, "Cognitive Adaptation for Teams in ADROIT," in *IEEE Global Communications Conference*, Nov 2007, Washington, DC. **Invited.**
4. Karen Zita Haigh, Liana M. Kiff, Geoffrey Ho. "[The Independent LifeStyle Assistant™ \(I.L.S.A.\): Lessons Learned.](#)" *Assistive Technology*, 18:87-106. 2006.
5. Lisa Meeden, Alan Schultz, Tucker Balch, Rahul Bhargava, Karen Zita Haigh, Marc Böhlen, Cathryne Stein, David Miller, "The AAAI 1999 Robot Events," *AI Magazine*, 21(3):69-77, Fall 2000.
6. Karen Zita Haigh and Tucker Balch, "AAAI-98 Robot Exhibition," *AI Magazine*, 21(1):67-76, Spring 2000.
7. Karen Zita Haigh and Manuela M. Veloso, "[Learning Situation-Dependent Costs: Improving Planning from Probabilistic Robot Execution.](#)" *Robotics and Autonomous Systems*, 29: 145-174, 1999. **Invited.**
8. Karen Zita Haigh, "[Situation-Dependent Learning for Interleaved Planning and Robot Execution.](#)" Ph.D. Thesis, School of Computer Science, Carnegie Mellon University, Pittsburgh, PA 15213-3891, February 1998.
9. Karen Zita Haigh and Manuela M. Veloso, "[Interleaving Planning and Robot Execution for Asynchronous User Requests.](#)" *Autonomous Robots*, 5(1):79-95, March 1998. **Invited.**
10. Karen Zita Haigh, Jonathan Richard Shewchuk and Manuela M. Veloso, "[Exploiting Domain Geometry in Analogical Route Planning.](#)" *Journal of Experimental and Theoretical Artificial Intelligence*. 9(1997):509-541.
11. Reid G. Simmons, Richard Goodwin, Karen Zita Haigh, Sven Koenig, Joseph O'Sullivan, Manuela M. Veloso. "[Xavier: Experience with a Layered Robot Architecture.](#)" *ACM Sigart Bulletin*, 8(1-4):22-33, 1997.
12. Stan Matwin, Tom Szapiro and Karen Haigh, "Genetic Algorithms Approach to a Negotiation Support System," *IEEE Transactions on Systems, Man and Cybernetics*, 21(1):102-114, 1991.

Publications (Refereed Conferences)

1. Karen Zita Haigh, Olu Olofinboba, Choon Yik Tang, "[Designing an Implementable User-Oriented Objective Function for MANETs.](#)" in *IEEE International Conference On Networking, Sensing and Control*, London, U.K. April 15-17, 2007.

2. Karen Zita Haigh, Liana M. Kiff, Janet Myers, Valerie Guralnik, Christopher W. Geib, John Phelps, Tom Wagner, "[The Independent LifeStyle Assistant™ \(I.L.S.A.\): AI Lessons Learned](#)," in *Innovative Applications of Artificial Intelligence (IAAI)*, San Jose, CA, USA. 25-29 July 2004. Pages 852-857.
3. Wendy Foslien, Valerie Guralnik, Karen Zita Haigh, "[Data Mining for Space Applications](#)," in *Space Operations*, Montréal, Québec, Canada. 17-21 May 2004.
4. Liana Kiff, Karen Zita Haigh and Xianghong Sun, "[Mobility Monitoring with the Independent LifeStyle Assistant™ \(I.L.S.A.\)](#)," *International Conference on Aging, Disability and Independence (ICADI)*, Washington, D.C., USA. 4-6 December 2003.
5. Robert P. Goldman, Karen Zita Haigh, David J. Musliner, and Michael Pelican, "MACBeth: A Multi-Agent Constraint-Based Planner," In *Proceedings of Distributed Avionics Systems Conference (DASC)*, Irvine, CA, October 2002. Electronic proceedings, paper number 7e3.
6. Karen Zita Haigh, John Phelps and Christopher W. Geib. "[An Open Agent Architecture for Assisting Elder Independence](#)." In *Proceedings of the First International Joint Conference on Autonomous Agents and MultiAgent Systems (AAMAS)*, Bologna, Italy, July 2002. Pages 578-586.
7. Reid Simmons, David Apfelbaum, Dieter Fox, Robert P. Goldman, Karen Zita Haigh, David J. Musliner, Michael Pelican, and Sebastian Thrun. "Coordinated Deployment of Multiple, Heterogeneous Robots," In *Proceedings of the Conference on Intelligent Robots and Systems (IROS)*, Takamatsu, Japan, October 2000. Pages 2254-2260.
8. Karen Zita Haigh and Manuela M. Veloso, "[Planning, Execution and Learning in a Robotic Agent](#)," in R. Simmons, M. Veloso and S. Smith, *Proceedings of Artificial Intelligence Planning Systems (AIPS)*, Pittsburgh, PA, June 1998. Pages 120-127.
9. Karen Zita Haigh and Manuela M. Veloso, "[Learning Situation-Dependent Costs: Improving Planning from Probabilistic Robot Execution](#)," in K. Sycara, *Proceedings of the Second International Conference on Autonomous Agents*, Minneapolis, MN, May 1998. Pages 231-238.
10. Karen Zita Haigh and Manuela M. Veloso, "[High-Level Planning and Low-Level Execution: Towards a Complete Robotic Agent](#)," in W. L. Johnson, *Proceedings of the First International Conference on Autonomous Agents*, Marina del Rey, CA, February 1997. Pages 363-370.
11. Reid Simmons, Richard Goodwin, Karen Zita Haigh, Sven Koenig, Joseph O'Sullivan. "[A Layered Architecture for Office Delivery Robots](#)," in W. L. Johnson, *Proceedings of the First International Conference on Autonomous Agents*, Marina del Rey, CA, February 1997. Pages 245-252.
12. Karen Zita Haigh and Manuela Veloso, "[Interleaving Planning and Robot Execution for Asynchronous User Requests](#)," in the *Proceedings of the International Conference on Intelligent Robots and Systems (IROS)*, Osaka, Japan, November 1996. Pages 148-155.
13. Karen Zita Haigh and Manuela Veloso, "[Route Planning by Analogy](#)," in M. Veloso and A. Aamodt, *Case-Based Reasoning Research and Development, First International Conference (ICCBR)*, Sisembra, Portugal, October 1995. Pages 169-180.

Publications (Refereed Workshops)

1. 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.
2. Anna Lee, Muriel Médard, Karen Zita Haigh, Sharon Gowan and Paul Rubel, "[Minimum-Cost Subgraphs for Joint Distributed Source and Network Coding](#)," in *Third Workshop on Network Coding, Theory and Applications*, San Diego, CA, USA. January 2007.

3. Gregory D. Troxel, Eric Blossom, Steve Boswell, Micah Brodsky, Armando Caro, Isidro Castineyra, Alex Colvin, Tad Dreier, Joseph B. Evans, Nick Goffee, Karen Zita Haigh, Talib Hussain, Vikas Kawadia, David Lapsley, Carl Livadas, Alberto Medina, Joanne Mikkelson, Gary J. Minden, Robert Morris, Craig Partridge, Vivek Raghunathan, Ram Ramanathan, Cesar Santivanez, Thomas Schmid, Dan Sumorok, Mani Srivastava, Bob Vincent, David Wiggins, Alexander M. Wyglinski, and Sadaf Zahedi, "[Adaptive Dynamic Radio Open-source Intelligent Team \(ADROIT\): Cognitively-controlled Collaboration among SDR Nodes.](#)" *First IEEE Workshop on Networking Technologies for Software Defined Radio (SDR) Networks*, Reston, VA, USA. September 2006. **Invited.**
4. Karen Zita Haigh, Srivatsan Varadarajan, Choon Yik Tang, "[Automatic Learning-based MANET Cross-Layer Parameter Configuration.](#)" in *IEEE Workshop on Wireless Ad hoc and Sensor Networks (WWASN)*, Lisbon, Portugal 2006.
5. 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.
6. Karen Zita Haigh, Liana Maria Kiff, Kathleen Krichbaum, Janet 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.
7. Karen Zita Haigh, Liana M. Kiff, Janet Myers, Kathleen Krichbaum, "[The Independent LifeStyle Assistant™ \(I.L.S.A.\): Deployment Lessons Learned.](#)" in *Proceedings of the AAAI-04 Workshop "Fielding Applications of Artificial Intelligence,"* 25 July 2004. San Jose, CA, USA. Pages 11-16.
8. Karen Zita Haigh, Wendy Foslien, Valerie Guralnik, "[Visual Query Language: Finding patterns in and relationships among time series data.](#)" in *Seventh Workshop on Mining Scientific and Engineering Datasets (MSD)*, 24 April 2004, Lake Buena Vista, Florida, USA.
9. Karen Zita Haigh and Holly Yanco, "[Automation as Caregiver: A Survey of Issues and Technologies.](#)" In *Proceedings of the AAAI-02 Workshop "Automation as Caregiver,"* Edmonton, Alberta, Canada, July 2002. Pages 39-53.
10. Karen Zita Haigh, Christopher W. Geib, Christopher Miller, John Phelps and Thomas Wagner, "[Agents for Recognizing and Responding to the Behaviour of an Elder.](#)" In *Proceedings of the AAAI-02 Workshop "Automation as Caregiver,"* Edmonton, Canada, July 2002. Pages 31-38.
11. Valerie Guralnik and Karen Zita Haigh. "[Learning Models of Human Behaviour with Sequential Patterns.](#)" In *Proceedings of the AAAI-02 Workshop "Automation as Caregiver,"* Edmonton, Canada, July 2002. Pages 24-30.
12. Christopher A. Miller, Karen Zita Haigh and Wende L. Dewing. "[First Cause No Harm: Issues in Building Safe, Reliable and Trustworthy Elder Care Systems.](#)" in *Proceedings of the AAAI-02 Workshop "Automation as Caregiver,"* Edmonton, Canada, July 2002. Pages 80-84.
13. 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.
14. Robert P. Goldman, Karen Zita Haigh, David J. Musliner, and Michael Pelican, "[MACBeth: A Multi-Agent Constraint-Based Planner.](#)" In *Proceedings of the AAAI workshop 'Constraints and AI Planning'*, Austin, TX, July 2000. Pages 11-17.
15. Karen Zita Haigh, David J. Musliner, and Sunondo Ghosh, "[RT-MLab: Really Real-Time Robotics.](#)" In *Proceedings of the AAAI Spring Symposium "Real-Time Autonomous Systems,"* Stanford, CA, March 2000. Pages 24-31.

16. Karen Zita Haigh and Manuela M. Veloso, "[Learning Situation-Dependent Rules: Improving Task Planning for an Incompletely Modelled Domain](#)," In *Proceedings of the AAAI Spring Symposium 'Search Techniques for Problem Solving under Uncertainty and Incomplete Information'*, Stanford, CA, March 1999. Pages 30-35.
17. Karen Zita Haigh and Manuela M. Veloso, "[Learning Situation-Dependent Costs: Using Execution to Refine Planning Models](#)," In *Proceedings of the Ninth International Workshop on the Principles of Diagnosis (DX98)*, Cape Cod, MA, May 1998. Pages 55-62.
18. Karen Zita Haigh and Manuela M. Veloso, "[Planning with Multiple Goals for Robot Execution](#)," In *Proceedings of the AAAI Fall Symposium "Plan Execution: Problems and Issues"*, Boston, MA, November 1996. Pages 61-71.
19. Karen Zita Haigh and Manuela Veloso, "[Using Perception Information for Robot Planning and Execution](#)," in the *Proceedings of the AAAI-96 Workshop "Intelligent Adaptive Agents"*, Portland, Oregon, August 1996. Pages 23-32.
20. Karen Zita Haigh and Manuela Veloso, "[Interleaving Planning and Robot Execution for Asynchronous User Requests](#)," in the *Proceedings of the AAAI-96 Spring symposium "Planning with Incomplete Information for Robot Problems"*, Stanford, CA, March 1996. Pages 148-155.
21. Karen Zita Haigh and Jonathan Richard Shewchuk and Manuela M. Veloso, "[Route Planning and Learning from Execution](#)," In *Working notes from the AAAI Fall Symposium "Planning and Learning: On to Real Applications"*, New Orleans, LA, November 1994. Pages 58-64.
22. Karen Zita Haigh and Jonathan Richard Shewchuk, "[Geometric Similarity Metrics for Case-Based Reasoning](#)," In *Case-Based Reasoning: Working Notes from the AAAI-94 Workshop*, Seattle, WA, August 1994. Pages 182-187.
23. Karen Haigh and Manuela Veloso, "[Combining Search and Analogical Reasoning in Path Planning from Road Maps](#)," In *Case-Based Reasoning: Papers from the 1993 Workshop*, Washington, D.C., July 1993. Pages 79-85.

Publications (Unrefereed)

1. Karen Zita Haigh, Jim Freebersyser, Dave Mankins, Gregory D. Troxel, Jerry Burchfiel, Tony Michel, and Cesar Santivanez, "Ad hoc Network Interoperability," Final Report for OSD/NII, February 2009, BBN Technical Report MAN-TR-01-02.
2. Greg D. Troxel, Steve Boswell, Armando Caro, Isidro Castineyra and Alex Colvin, Yarom Gabay, Nick Goffee, Karen Zita Haigh, Talib Hussain, Vikas Kawadia, David Lapsley, Carl Livadas, Alberto Medina, Joanne Mikkelson, Craig Partridge, Vivek Raghunathan, Ram Ramanathan, Paul Rubel, Cesar Santivanes, Dan Sumorok, Bob Vincent and David Wiggins, *Adaptive Dynamic Radio Open-source Intelligent Team {(ADROIT)}: Architecture and Design*, BBN Technologies, BBN-TR-TBD, 2007.
3. Karen Zita Haigh, Liana M. Kiff, Janet Myers, Valerie Guralnik, Kathleen Krichbaum, John Phelps, Tom Plocher and David Toms, 2003. [The Independent LifeStyle Assistant™ \(I.L.S.A.\): Lessons Learned](#). Honeywell Laboratories Technical Report number ACS-P03-023, 3660 Technology Drive, Minneapolis, MN 55418. December 2003.
4. Joseph O'Sullivan, Karen Zita Haigh and G. D. Armstrong. "[Xavier - the Manual v0.3](#)". Learning Robot Laboratory Internal Document. April 1997.
5. Reid Simmons, Sebastian Thrun, Greg Armstrong, Richard Goodwin, Karen Haigh, Sven Koenig, Shyjan Mahamud, Daniel Nikovski and Joseph O'Sullivan, "Amelia," in the *Proceedings of the Thirteenth National Conference on Artificial Intelligence (AAAI-96)*, Portland, Oregon, August 1996. Page 1358.

6. S. Matwin and T. Szapiro and K. Haigh, "Genetic Algorithms Approach to a Negotiation Support System," Technical Report TR-89-30, Computer Science Department, University of Ottawa, Ottawa, Ontario, Canada.

Awards

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| 2007,2008,2009: | BBN Publication Award |
| 2007,2008,2009: | BBN Business Development Award |
| 2001: | Honeywell Technical Achievement Award |
| 1992-1998: | Graduate Fellowship, Carnegie Mellon University. |
| 1994-1996: | Postgraduate Scholarship, Canadian Space Agency. |
| 1992-1996: | Postgraduate Scholarship, Natural Sciences and Engineering Research Council of Canada. |
| 1987,1988,1989,1991: | Merit Scholarships (annual), University of Ottawa. |
| 1988,1989,1990,1992: | Member of Dean's Honour List, University of Ottawa. |
| 1989: | Undergraduate Research Scholarship, Natural Sciences and Engineering Research Council of Canada. |

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*
- 2009: Reviewing: *Autonomous Agents and Multi-Agent Systems*
- 2008: Co-chair, Innovative Applications of Artificial Intelligence
- 2008: Reviewing: *ACM Transactions on Autonomous and Adaptive Systems*, *IEEE Systems, Man and Cybernetics*, *Autonomous Agents and Multi-Agent Systems*
- 2007: Chair, Information Science & Technology study on “*Engineering Ensemble Effects*”
- 2007: Panel member, National Science Foundation
- 2007: Committee member: Innovative Applications of Artificial Intelligence, American Association of Artificial Intelligence, Agents and Autonomous Systems
- 2007: Reviewing: Data & Knowledge Engineering journal
- 2006: Member of the Advisory Board, *Nestling Technology Initiative*, University of Ulster, Ireland.
- 2006: Committee member, Innovative Applications of Artificial Intelligence.
- 2005: October – invited presentation to University of Washington Institute on Aging
- 2005: Panel member, National Science Foundation Robust Intelligence (focus Machine Learning)
- 2005: Committee member, Innovative Applications of Artificial Intelligence, ICAPS workshop on “Planning under Uncertainty”, AAAI Fall Symposium on “Caring Machines”
- 2005: Reviewing, Alzheimer’s Organization, *AI Magazine*
- 2003: Panel member, National Science Foundation CAREER awards in Machine Learning
- 2000-2003: Senior Member of the Society of Women Engineers (SWE)
- 2002: Committee member, UbiComp-02 workshop “UbiCog ’02: First International Workshop on Ubiquitous Computing for Cognitive Aids”
- 2002: Chair, AAAI-02 workshop “Automation as Caregiver: The Role of Intelligent Technology in Elder Care”
- 2002: Reviewing: *AI Journal*
- 2001: Six Sigma Greenbelt Certification
- 2000-2001: Member of the AAAI membership committee
- 2001: Paper reviewing: AI Journal, Agents 2001, IEEE conference on Multi-agent systems, Second workshop on Infrastructure for Agents, MAS, and Scalable MAS, Special session on Learning and Adapting in AI Planning at the International Conference on AI
- 2000: Paper reviewing: *IEEE Trans. on Knowledge and Data Engineering*, *IEEE Control Systems Magazine*, Agents 2000, AAAI 2000
- 1999: Paper reviewing: AAAI 99, AAAI 99-student abstracts
- 1999: Co-chair of the Robot Exhibition, AAAI 99
- 1998: Co-chair of the Robot Exhibition, AAAI 98
- 1995-1998: Maintainer of Dinner Co-op WWW site, <http://dinnercoop.cs.cmu.edu/dinnercoop/>
- 1994-1995: Student member of the Qualifier Review Committee; reviewed graduate student satisfaction with the qualifier system in School of Computer Science, Carnegie Mellon University
- 1992-1993: Chairman, Dec/5, Inc.; Organized School of Computer Science social events, Carnegie Mellon University
- 1989-1992: Student Representative to the Department of Computer Science, University of Ottawa

Activities Outside Computer Science

- Cooking: Organized and cooked for the Dinner Co-op, a co-operative cooking group of about 15 people in Pittsburgh.

- Travel: Sixteen months in China, total two+ years in Europe, six months in New Zealand, five years in Kenya (as a child), and numerous short visits to other countries.
- Pottery: Had two pieces displayed at the Carnegie Museum of Art, Pittsburgh. June 1997, January 1998.
- Photography: Travel photography; also yearbook photographer in high school and special events photographer, International Students Association, University of Ottawa.
- Outdoor: Cycling, Canoeing, Camping, Hiking, Swimming, Cross Country Skiing.
- Other: Learning languages, Book collecting, Piano, Harp, Quilting, Sewing, Winemaking, Orchid growing.

Personal

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