

Robert St. Amant

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Box 8206
North Carolina State University
Raleigh, NC 27695

EMPLOYMENT

- 2017- Professor, Department of Computer Science,
 North Carolina State University
- 2001-2017 Associate Professor, Department of Computer Science,
 North Carolina State University
- 2004-2005 Visiting Research Scholar, Information Sciences Institute,
 University of Southern California
- 1996-2001 Assistant Professor, Department of Computer Science,
 North Carolina State University
- 1985-1991 Software Engineer, Texas Instruments, Inc., and Texas Instruments
 Deutschland, GmbH (Freising, Germany)

EDUCATION

- 1991-1996 Ph.D., Computer Science, University of Massachusetts, Amherst, MA
- 1981-1985 B.S., EECS, The Johns Hopkins University, Baltimore, MD

AWARDS

- 2013 Outstanding Teacher, North Carolina State University (Member, Academy of
 Outstanding Teachers; Outstanding Teacher Award, College of Engineering).
- 2010 Best Paper (as co-author, with Reuben Cornel and Jeff Shrager), *19th Behavior
 Representation in Modeling & Simulation (BRIMS) Conference*, Charleston, SC.
- 2007 Best Paper (as co-author, with Lucas Layman and Laurie Williams), *First
 International Symposium on Empirical Software Engineering and Measurement
 (ESEM)*, Madrid, Spain.
- 2004 Best Applied Paper (as first author, with Frank Ritter), *Sixth International
 Conference on Cognitive Modeling (ICCM)*, Pittsburgh, PA, 2004.
- 1999 Outstanding New Teacher, Department of Computer Science.

PUBLICATIONS

Books

- 2012 Robert St. Amant. *Computing for Ordinary Mortals*. Oxford University Press,
 New York, 2012.

Journal issues as guest editor

- 2016 William G. Kennedy, Robert St. Amant, and David Reitter (eds). Behavioral
 Representation in Modeling and Simulation: CMOT special issue: BRiMS 2013,
 Computational and Mathematical Organization Theory, 22(1), 2016.
- 2015 Bradley J. Best, William G. Kennedy, and Robert St. Amant (eds). Behavioral
 Representation in Modeling and Simulation: CMOT special issue: BRiMS 2012,
 Computational and Mathematical Organization Theory, 21(3), 2015.

Journal and periodical articles

- 2017 Thomas Horton and Robert St. Amant. A partial contour similarity-based approach to visual affordances in habile agents. *IEEE Transactions on Cognitive and Developmental Systems*.
- 2016 Ignacio X. Dominguez, Prairie Rose Goodwin, David L. Roberts, and Robert St. Amant. Human Subtlety Proofs: Using computer games to model cognitive processes for cybersecurity, *International Journal of Human-Computer Interaction, special issue on Cognitive Foundations for Human-Computer Interaction*, 33(1): 44-54.
- 2016 Robert St. Amant and David L. Roberts. Natural interaction for bot detection. *IEEE Internet Computing*, 20(4): 69-73, August, 2016.
- 2015 Robert St. Amant. Natural interaction with visualization systems. *IEEE Internet Computing*, 19(6):60-64, December, 2015.
- 2015 Bradley J. Best, William G. Kennedy, and Robert St. Amant (eds). Behavioral Representation in Modeling and Simulation: Introduction to CMOT special issue: BRiMS 2012. *Computational and Mathematical Organization Theory*, 21(3):243-246, April, 2015.
- 2012 Thomas E. Horton, Arpan Chakraborty, and Robert St. Amant. Affordances for robots: a brief survey. *Avant: Trends in Interdisciplinary Studies and Philosophy of Science*, 3(2):70-84, 2012.
- 2008 Robert St. Amant and Thomas E. Horton. Revisiting the definition of tool use. *Animal Behaviour*, 74(4):1199-1208, 2008.
- 2008 Christopher G. Healey, Sarat Kocherlakota, Vivek Rao, Reshma Mehta, and Robert St. Amant. Visual perception and mixed-initiative interaction for assisted visualization design. *IEEE Transactions on Visualization and Computer Graphics*, 14(2):396-411, 2008.
- 2007 Frank E. Ritter, Urmila Kukreja, and Robert St. Amant. Including a model of visual processing with a cognitive architecture to model a simple teleoperation task. *Journal of Cognitive Ergonomics and Decision-Making*, 1(2):121-147, 2007.
- 2007 Robert St. Amant, Thomas E. Horton, and Frank E. Ritter. Model-based evaluation of expert cell phone menu interaction. *ACM Transactions on Computer-Human Interaction*, 14(1):1-24, 2007.
- 2006 Frank E. Ritter, Dirk Van Rooy, Robert St. Amant, and Kate Simpson. Providing user models with direct access to computer interfaces: An exploratory study of a simple human-robot interface. *IEEE Transactions on Systems, Man, and Cybernetics (Part A)*, 36(3):592-601, 2006.
- 2004 Robert St. Amant, Andrew Freed, and Frank E. Ritter. Specifying ACT-R models of user interaction with a GOMS language. *Journal of Cognitive Systems Research*, 6(1):71-88, 2004.
- 2004 Robert St. Amant. Environment modification in simulated navigation tasks for human-robot interaction (invited). *International Journal of Computational Cognition*, 3(3):65-73, 2004.
- 2001 Robert St. Amant and R. Michael Young. Interface agents in a model world environment. *AI Magazine*, 22(4):95-107, 2001.
- 2001 Robert St. Amant and Mark O. Riedl. A perception/action substrate for cognitive modeling in HCI. *International Journal of Human-Computer Studies*, 55(1):15-39, 2001.
- 2000 Robert St. Amant, Henry Lieberman, Richard Potter, and Luke S. Zettlemoyer. Visual generalization in programming by example. *Communications of the ACM*,

- 43(3):107–114, March 2000.
- 2000 Robert St. Amant. Interface agents as surrogate users. *Intelligence Magazine*, 11(2):29–38, 2000.
- 1999 Robert St. Amant. User interface affordances in a planning representation. *Human Computer Interaction*, 14 (3):317–354, 1999.
- 1998 Robert St. Amant and Paul R. Cohen. Interaction with a mixed-initiative system for exploratory data analysis. *Knowledge-Based Systems*, 10(5):265–273, 1998.
- 1998 Robert St. Amant and Paul R. Cohen. Intelligent support for exploratory data analysis. *Journal of Computational and Graphical Statistics*, 7(4):545–558, 1998.
- 1998 Robert St. Amant, Ted Long, and Martin S. Dulberg. Evaluation in a navigation testbed. *Knowledge-Based Systems*, 11(1):61–70, 1998.
- 1996 Robert St. Amant, Yoshitaka Kuwata, and Paul R. Cohen. Monitoring progress with dynamic programming envelopes. *International Journal of Artificial Intelligence Tools*, 5(1/2):143–153, 1996.

Conference proceedings

- 2013 William G. Kennedy, Robert St. Amant, and David Reitter, editors. *Proceedings of the Annual Conference on Behavior Representation in Modeling and Simulation*. BRIMS Society, 2013.
- 2012 Bradley J. Best, William G. Kennedy, and Robert St. Amant, editors. *Proceedings of the Annual Conference on Behavior Representation in Modeling and Simulation*. BRIMS Society, 2012.
- 2007 Bo Begole, Stephen Payne, Elizabeth Churchill, Robert St. Amant, David Gilmore, and Mary Beth Rosson, editors. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM, 2007.

Conference papers

- 2017 James Ward, Robert St. Amant, and MaryAnne Fields. Spatial relationships and fuzzy methods: Experimentation and modeling. In *Proceedings of the International Conference on Cognitive Modeling (ICCM)*, 2017.
- 2017 Zeyuan Chen, Christopher G. Healey, and Robert St. Amant. Performance characteristics of a camera-based tangible input device for manipulation of 3d information. In *Proceedings of Graphics Interface (GI)*, 2017.
- 2016 Ignacio X. Dominguez, Jayant Dhawan, Robert St. Amant, and David L. Roberts JIVUI: JavaScript Interface for Visualization of User Interaction In *Proceedings of the International Conference on Cognitive Modeling (ICCM)*, 2016.
- 2016 Ignacio X. Dominguez, Jayant Dhawan, Robert St. Amant, and David L. Roberts Exploring the effects of different text stimuli on typing behavior. In *Proceedings of the International Conference on Cognitive Modeling (ICCM)*, 2016.
- 2016 Prairie Rose Goodwin and Robert St. Amant. Towards error recovery microstrategies in touch screen environments (poster and 2-page paper). In *Proceedings of the International Conference on Cognitive Modeling (ICCM)*, 2016.
- 2016 Liang Dong and Robert St. Amant. Answering questions with bar and line charts. In *Proceedings of the Behavior Representation in Modeling & Simulation (BRIMS) Conference*, 2016.
- 2015 Ignacio X. Dominguez, Alok Goel, David L. Roberts, and Robert St. Amant. Detecting abnormal user behavior through pattern-mining input device analytics. In *Proceedings of the Symposium and Bootcamp on the Science of Security (HotSoS)*, 2015.
- 2015 Robert St. Amant, Prairie Rose Goodwin, Ignacio Dominguez, and David L.

- Roberts. Toward expert typing in ACT-R. In *Proceedings of the International Conference on Cognitive Modeling (ICCM)*, pp. 232–237, 2015.
- 2014 Kyung Wha Hong and Robert St. Amant. Novice use of a predictive human performance modeling tool to produce UI recommendations. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, pp. 2251–2254, 2014.
- 2014 Arpan Chakraborty, Ryan Gross, Shea McIntee, Kyung Wha Hong, Jae Yeol Lee, and Robert St. Amant. CAPTIVE: A cube with augmented physical tools. In *Extended Abstracts of the ACM Conference on Human Factors in Computing Systems (CHI EA)*, pp. 1315–1320, 2014.
- 2013 Arpan Chakraborty and Robert St. Amant. Towards a neurocognitive model of visual perception. In *AAAI Fall Symposium on Integrated Cognition*, 2013.
- 2013 Titus Barik, Arpan Chakraborty, Brent Harrison, David Roberts, and Robert St. Amant. Speed/accuracy tradeoff in ACT-R models of the concentration game. In *Proceedings of the International Conference on Cognitive Modeling (ICCM)*, pp. 281–286, 2013.
- 2012 Sam A. Miller, Andy Smith, Sina Bahram, and Robert St. Amant. A glove for tapping and discrete 1D/2D input. In *Proceedings of the International Conference on Intelligent User Interfaces (IUI)*, pp. 101–104, 2012.
- 2012 Sina Bahram, Arpan Chakraborty, and Robert St. Amant. Caviar: A vibrotactile device for accessible reaching. In *Proceedings of the International Conference on Intelligent User Interfaces (IUI)*, pp. 245–248, 2012.
- 2012 Yang-Lei Zhao, Arpan Chakraborty, Kyung Wha Hong, Shishir Kakkaradi, and Robert St. Amant. Pointing at responsive objects outdoors. In *Proceedings of the International Conference on Intelligent User Interfaces (IUI)*, pp. 281–284, 2012.
- 2011 Sina Bahram, Debadeep Sen, and Robert St. Amant. Prediction of Web page accessibility based on structural and textual features. In *Proceedings of the International Cross-Disciplinary Conference on Web Accessibility*, 2011.
- 2010 Reuben Cornel, Robert St. Amant, and Jeff Shrager. Collaboration and modeling in CogLaborate. In *Proceedings of the Behavior Representation in Modeling & Simulation (BRIMS) Conference*, 2010.
- 2009 Maria Vicente Bonto-Kane and Robert St. Amant. Computational modeling approaches help guide early design efforts for usability (poster). In *TAPIA '09: The Richard Tapia Celebration of Diversity in Computing Conference: Intellect, Initiatives, Insight, and Innovations*, 2009.
- 2008 Thomas E. Horton, Lloyd Williams, Wei Mu, and Robert St. Amant. Visual affordances and symmetries in *Canis habilis*: A progress report. *AAAI Fall Symposium Technical Report*, 2008.
- 2008 Lucas Layman, Laurie Williams, and Robert St. Amant. MimEc: Intelligent User Notification of Faults in the Eclipse IDE. In *Proceedings of the Cooperative and Human Aspects of Software Engineering (CHASE) Workshop, International Conference on Software Engineering (ICSE)*, 2008.
- 2007 Lucas Layman, Laurie Williams, and Robert St. Amant. Toward reducing fault fix time: Understanding developer behavior for the design of automated fault detection tools. In *Proceedings of the First International Symposium on Empirical Software Engineering and Measurement (ESEM)*, 2007.
- 2007 Shawn Nicholson, Michael Byrne, Michael Fotta, and Robert St. Amant. Visual systems interface. In *Proceedings of the Behavior Representation in Modeling and Simulation (BRIMS) Conference*, 2007.
- 2006 Robert St. Amant, Sean P. McBride, and Frank E. Ritter. AI support for building

- cognitive models. In *Proceedings of the AAAI Conference on Artificial Intelligence, Nectar Track*, pp. 1663–1666. AAAI Press, 2006.
- 2006 Yu-Han Chang, Paul R. Cohen, Clayton T. Morrison, and Robert St. Amant. Piagetian adaptation meets image schemas: The Jean system. In *From Animals to Animats 9: Proceedings of the International Conference on Simulation of Adaptive Behaviour*, pp. 359–370, 2006.
- 2006 Yu-Han Chang, Clayton T. Morrison, Wesley Kerr, Paul R. Cohen, and Robert St. Amant. The Jean system. In *Proceedings of the International Conference on Development and Learning*, 2006.
- 2006 Robert St. Amant, Clayton T. Morrison, Y-Han Chang, Wei Mu, Paul R. Cohen, and Carole Beal. An image schema language. In *Proceedings of the International Conference on Cognitive Modeling (ICCM)*, pp. 292–297. LEA, 2006.
- 2006 Frank E. Ritter, Steven R. Haynes, Mark Cohen, Andrew Howes, Bonnie John, Brad Best, Christian Lebiere, Randolph M. Jones, Jacob Crossman, Richard L. Lewis, Robert St. Amant, Sean P. McBride, Leon Urbas, and Alonso Vera. High-level behavior representation languages revisited (group symposium). In D. Fum, F. del Missier, and A. Stocco, editors, *Proceedings of the International Conference on Cognitive Modeling (ICCM)*, pp. 404–407. Trieste, Italy, 2006.
- 2005 Robert St. Amant and Alexander B. Wood. Tool use for autonomous agents. In *Proceedings of the AAAI Conference on Artificial Intelligence*, pp. 184–189. AAAI Press, Menlo Park, CA, 2005.
- 2005 Jack D. Zaiantz, Lisa Scott Holt, Scott D. Wood, Christopher G. Healey, Robert St. Amant, Laura Strater, and John Hyatt. Enhancing decision-making by explicitly training battlefield visualization skills. In *Interservice/Industry Training, Simulation & Education Conference*, 2005.
- 2005 Alexander B. Wood, Thomas E. Horton, and Robert St. Amant. Effective tool use in a habile agent. In *Proceedings of the IEEE Systems and Information Engineering Design Symposium*, 2005.
- 2004 Robert St. Amant, Thomas E. Horton, and Frank E. Ritter. Model-based evaluation of cell phone menu interaction. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, pp. 343–350. ACM, 2004.
- 2004 Colin G. Butler and Robert St. Amant. HabilisDraw DT: A bimanual tool-based direct manipulation drawing environment. In *Extended Abstracts of the ACM Conference on Human Factors in Computing Systems (CHI)*, pp. 1301–1304. ACM, 2004.
- 2004 Nathan Green, Jan Kruger, Chirag Faldu, and Robert St. Amant. A reduced QWERTY keyboard for mobile text entry. In *Extended Abstracts of the ACM Conference on Human Factors in Computing Systems (CHI)*, pp. 1429–1432. ACM, 2004.
- 2004 Robert St. Amant and Frank E. Ritter. Automated GOMS-to-ACT-R model generation. In *Proceedings of the International Conference on Cognitive Modeling (ICCM)*, pp. 28–34. LEA, 2004.
- 2004 Peng Ning, D. Xu, Christopher G. Healey, and Robert St. Amant. Building attack scenarios through integration of complementary alert correlation methods. In *Proceedings of the Annual Network and Distributed System Security Symposium (NDSS)*, 2004.
- 2003 Mark O. Riedl and Robert St. Amant. Social navigation: Modeling, simulation, and experimentation. In *Proceedings of the International Joint Conference on Autonomous Agents and MultiAgent Systems*, pp. 361–368, 2003.
- 2003 Robert St. Amant and David B. Christian. Environment modification in a

- simulated human-robot interaction task: experimentation and analysis. In *Proceedings of the International Conference on Intelligent User Interfaces (IUI)*, pp. 174–181, 2003.
- 2003 Robert St. Amant, Michael D. Dinardo, and Nickie Buckner. Balancing efficiency and interpretability in an interactive statistical assistant. In *Proceedings of the International Conference on Intelligent User Interfaces (IUI)*, pp. 181–188, 2003.
- 2003 Clarence Simpson and Robert St. Amant. Search for efficient device-dependent action sequences in the user interface. In *Proceedings of the International Conference on Intelligent User Interfaces (IUI)*, pp. 297–299, 2003.
- 2003 John M. Daughtry and Robert St. Amant. Power tools and composite tools: Integrating automation into direct manipulation interfaces. In *Proceedings of the International Conference on Intelligent User Interfaces (IUI)*, pp. 233–235, 2003.
- 2003 Kunal Shah, Sameer Rajyaguru, Robert St. Amant, and Frank E. Ritter. Connecting cognitive models to dynamic gaming environments: architectural and image processing issues. In *Proceedings of the International Conference on Cognitive Modeling (ICCM)*, pp. 189–194, 2003.
- 2002 Robert St. Amant and Thomas E. Horton. A tool-based interactive drawing environment. In *Extended Abstracts of the ACM Conference on Human Factors in Computing Systems (CHI)*, pp. 762–763, 2002.
- 2002 Mark O. Riedl and Robert St. Amant. Toward automated exploration of interactive systems. In *Proceedings of the International Conference on Intelligent User Interfaces (IUI)*, pp. 135–142, 2002.
- 2002 Robert St. Amant and Thomas E. Horton. Characterizing tool use in an interactive drawing environment. In *Proceedings of the International Symposium on Smart Graphics*, pp. 86–93, 2002.
- 2002 Robert St. Amant and Ajay Dudani. An environment for programming user interface softbots. In *Proceedings of the International Working Conference on Advanced Visual Interfaces (AVI)*, pp. 119–122, 2002.
- 2002 Robert St. Amant, James E. Blair, Patrick Barry, Yinon Bentor, and Christopher G. Healey. A visual interface to a music database. In *Proceedings of the International Working Conference on Advanced Visual Interfaces (AVI)*, pp. 85–88, 2002.
- 2002 Frank E. Ritter, Dirk Van Rooy, and Robert St. Amant. A user modeling design tool for comparing interfaces. In *Proceedings of the International Conference on Computer-Aided Design of User Interfaces (CADUI)*, pp. 111–118, 2002.
- 2001 Robert St. Amant and Christopher G. Healey. Usability guidelines for interactive search in direct manipulation systems. In *Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI)*, pp. 1179–1184, 2001.
- 2001 Robert St. Amant, Christopher G. Healey, Mark O. Riedl, David Pegram, Sarat Kocherlakota, and Mika Torhola. Intelligent visualization in a planning simulation. In *Proceedings of the International Conference on Intelligent User Interfaces (IUI)*, pp. 153–160, 2001.
- 2001 Christopher G. Healey, Robert St. Amant, and Jiae Chang. Assisted visualization of e-commerce auction agents. In *Proceedings of Graphics Interface*, pp. 201–208, 2001.
- 2000 Robert St. Amant and Luke S. Zettlemoyer. The user interface as an agent environment. In *Proceedings of the International Conference on Autonomous Agents*, pp. 483–490, 2000.
- 1999 Luke Zettlemoyer and Robert St. Amant. A visual medium for programmatic

- control of interactive applications. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, pp. 199–206, 1999.
- 1999 Martin S. Dulberg, Robert St. Amant, and Luke Zettlemoyer. An imprecise mouse gesture for the fast activation of controls. In *INTERACT '99*, pp. 375–382, 1999.
- 1999 Robert St. Amant. Planning and user interface affordances. In *Proceedings of the International Conference on Intelligent User Interfaces (IUI)*, pp. 135–142, 1999.
- 1999 Luke Zettlemoyer, Robert St. Amant, and Martin S. Dulberg. Ibots: Agent control through the user interface. In *Proceedings of the International Conference on Intelligent User Interfaces (IUI)*, pp. 31–37, 1999.
- 2000 Christopher Healey and Robert St. Amant. ViA: A perceptual visualization architecture. In William R. Oliver, editor, *Applied Imagery Pattern Recognition workshop: 3D Visualization for Data Exploration and Decision Making Proc. SPIE 3905*, pp. 2–11. SPIE, 2000.
- 1998 Robert St. Amant and Martin S. Dulberg. An experiment with navigation and intelligent assistance. In *Proceedings of the International Conference on Intelligent User Interfaces (IUI)*, pp. 171–178, 1998.
- 1997 Robert St. Amant and Paul R. Cohen. Evaluation of a semi-autonomous assistant for exploratory data analysis. In *Proceedings of the First International Conference on Autonomous Agents*, 1997.
- 1997 Robert St. Amant. Navigation and planning in a mixed-initiative user interface. In *Proceedings of the AAAI Conference on Artificial Intelligence*, pp. 64–69. AAAI Press, 1997.
- 1997 Robert St. Amant and Paul R. Cohen. Building an EDA assistant: A progress report. In *Proceedings of the International Workshop on Artificial Intelligence and Statistics*, 1997.
- 1997 Robert St. Amant and Paul R. Cohen. Interaction with a mixed-initiative system for exploratory data analysis. In *Proceedings of the International Conference on Intelligent User Interfaces (IUI)*, pp. 15–22, 1997.
- 1997 Robert St. Amant. Navigation for data analysis systems. In *Advances in Intelligent Data Analysis: Reasoning about Data*, pp. 101–110. Springer, 1997.
- 1996 Robert St. Amant and Paul R. Cohen. A planner for exploratory data analysis. In *Proceedings of the International Conference on Artificial Intelligence Planning Systems*, pp. 205–212. AAAI Press, 1996.
- 1996 Robert St. Amant and Paul R. Cohen. Control representation in an EDA assistant. In Douglas Fisher and Hans Lenz, editors, *Learning from Data: AI and Statistics*, pp. 353–362. Springer, 1996.
- 1996 Paul R. Cohen, Tim Oates, and Robert St. Amant. Plan steering and mixed-initiative planning. In Austin Tate, editor, *Advanced Planning Technology: Technological Achievements of the ARPA/Rome Laboratory Planning Initiative*, pp. 105–112. AAAI Press, 1996.
- 1995 Robert St. Amant and Paul R. Cohen. Preliminary system design for an EDA assistant. In *Proceedings of the International Workshop on Artificial Intelligence and Statistics*, pp. 502–511, 1995.
- 1995 Paul R. Cohen, Dawn E. Gregory, Lisa Ballesteros, and Robert St. Amant. Two algorithms for inducing structural equation models from data. In *Proceedings of the International Workshop on Artificial Intelligence and Statistics*, pp. 129–139, 1995.
- 1995 Robert St. Amant and Paul R. Cohen. A case study in planning for exploratory data analysis. In G. E. Lasker and X. Liu, editors, *Advances in Intelligent Data*

- Analysis*, pp. 1–5, 1995.
- 1995 Robert St. Amant, Yoshitaka Kuwata, and Paul R. Cohen. Monitoring progress with dynamic programming envelopes. In *Proceedings of the IEEE International Conference on Tools with AI*, pp. 426–433, 1995.
- 1995 Robert St. Amant and Paul R. Cohen. Issues in automating exploratory data analysis. In *AAAI Spring Symposium on Systematic Methods of Scientific Discovery*, AAAI Technical Report SS-95-03, pp. 81–86, 1995.
- 1994 Adele E. Howe, Robert St. Amant, and Paul R. Cohen. Integrating statistical methods for characterizing causal influences on planner behavior over time. In *Proceedings of the IEEE International Conference on Tools with AI*. New Orleans, LA, 1994.
- 1994 Robert St. Amant and Paul R. Cohen. A planning representation for automated exploratory data analysis. In D. H. Fisher and Wray Buntine, editors, *Knowledge-Based Artificial Intelligence Systems in Aerospace and Industry Proc. SPIE 2244*, pp. 44–52, 1994.
- 1994 Robert St. Amant and Paul R. Cohen. Automated analysis of complex data. In *Proceedings of the Ninth Annual Goddard Conference on Space Applications of Artificial Intelligence*, pp. 161–172. NASA Conference Publication 3268, 1994.
- 1994 Robert St. Amant and Paul R. Cohen. Toward the integration of exploration and modeling in a planning framework. In *Proceedings of the Workshop in Knowledge Discovery in Databases, National Conference on Artificial Intelligence (AAAI)*, pp. 49–50, 1994.
- 1993 Paul R. Cohen, Lisa Ballesteros, Adam Carlson, and Robert St. Amant. Automating path analysis for building causal models from data. In *Proceedings of the International Conference on Machine Learning (ICML)*, pp. 57–64, 1993.
- 1992 Paul R. Cohen, Robert St. Amant, and David M. Hart. Early warnings of plan failure, false positives and envelopes: Experiments and a model. In *Proceedings of the Annual Conference of the Cognitive Science Society*, pp. 773–778. Lawrence Erlbaum, 1992.

Book chapters

- Robert St. Amant and Thomas E. Horton. Information technology and society. In *Handbook of Science and Technology Convergence*. Springer Verlag. To appear.
- 2012 Sina Bahram, Arpan Chakraborty, and Robert St. Amant. Intelligent interaction in accessible applications. In Pradipta Biswas, editor, *Accessibility in 2020 – vision for an inclusive future*, Springer Verlag, 2012.
- 2006 Yu-Han Chang, Paul R. Cohen, Clayton T. Morrison, Robert St. Amant, and Carole Beal. Piagetian adaptation meets image schemas: The Jean system. In S. Nolfi, G. Baldassarre, R. Calabretta, J. Hallam, D. Marocco, J.-A. Meyer, and D. Parisi, editors, *From Animals to Animats 9*, volume 4095 of *Lecture Notes in Computer Science*, pp. 369–380. Springer Verlag, Berlin, Germany, 2006.
- 2006 Robert St. Amant. Information technology and cognitive systems. In William Bainbridge and Mihail Rocco, editors, *Managing Nano-Bio-Info-Cogno Innovations: Converging Technologies in Society*, pp. 193–202. Springer, 2006.
- 2004 Robert St. Amant. Artificial intelligence. In William Bainbridge, editor, *Encyclopedia of Human-Computer Interaction*, pp. 40–47. Berkshire Press, 2004.
- 2004 Robert St. Amant. Statistical analysis support. In William Bainbridge, editor, *Encyclopedia of Human-Computer Interaction*, pp. 696–699. Berkshire Press, 2004.
- 2001 Robert St. Amant, Henry Lieberman, Richard Potter, and Luke S. Zettlemoyer.

- Visual generalization in programming by example. In Henry Lieberman, editor, *Your Wish Is My Command*. Morgan Kaufmann, 2001.
- 1997 Robert St. Amant and Paul R. Cohen. A planner for exploratory data analysis. In Michael Huhns and Munindar Singh, editors, *Readings in Agents*, pp. 131–138. Morgan Kaufmann, 1997.
- 1996 Robert St. Amant and Paul R. Cohen. Control representation in an eda assistant. In Douglas H. Fisher and Hans Lenz, editors, *Learning from Data: AI and Statistics V*, pp. 353–362. Springer, 1996.
- 1996 Paul R. Cohen, Lisa A. Ballesteros, Dawn E. Gregory, and Robert St. Amant. Two algorithms for inducing structural equation models from data. In Douglas H. Fisher and Hans Lenz, editors, *Learning from Data: AI and Statistics V*, pp. 3–12. Springer, 1996.
- 1996 Paul R. Cohen, Robert St. Amant, and Tim Oates. Plan steering and mixed-initiative planning. In Austin Tate, editor, *Advanced Planning Technology: Technological Achievements of the ARPA/Rome Laboratory Planning Initiative*, pp. 105–112. AAAI Press, 1996.
- 1996 Paul R. Cohen, David M. Hart, Lisa A. Ballesteros, Adam Carlson, and Robert St. Amant. Path analysis models of an autonomous agent in a complex environment. In Peter Cheeseman and R. W. Oldford, editors, *Selecting Models from Data: AI and Statistics IV*, pp. 243–251. Springer, 1996.

RESEARCH FUNDING (by award date)

- 2015 *Cognitive Modeling for Sensemaking and Decision Making, DO 5 (Informatics)*. Laboratory for Analytic Sciences. March, 2015 - December, 2015. \$53,227.
- 2014 *CHS: SMALL: Direct Physical Grasping, Manipulation, and Tooling of Simulated Objects* (PI). National Science Foundation. August, 2014 - July, 2017. \$496,858.
- 2014 *EAGER: Cognitive Modeling of Strategies for Dealing with Errors in Mobile Touch Interfaces* (PI). National Science Foundation. September, 2014 - August, 2016. \$281,076.
- 2014 *Mixed-Initiative Visualization and UI Modeling for Cyber-Physical Data* (co-PI). Scientific Systems Company, Inc. (Prime: US Air Force). March 2014 - September 2014. \$36,834.
- 2014 *Cognitive Modeling for Sensemaking and Decision Making, DO 3 (Cognitive Processing)*. Laboratory for Analytic Sciences. May, 2014 - December, 2014. \$82,505.
- 2013 *Cognitive Modeling for Sensemaking and Decision Making, DO 2 (Cognitive Processing)*. Laboratory for Analytic Sciences. September, 2013 - September, 2014. \$49,493.
- 2013 *Interaction and Visualization With Framegraphs for Intelligent Text Query and Analysis* (co-PI). SBIR subcontract to Soar Technologies (Prime: US Army). February, 2013. \$38,000.
- 2012 *Proactive Cyber Defense Through Graph-Based Evidence Threads* (co-PI). Soar Technologies. August, 2012 - December, 2012. \$42,655.
- 2012 *Low-level Analytics Models of Cognition for Novel Security Proofs* (co-PI). Army Research Office. January, 2012 - December, 2015. \$713,293.
- 2010 *A Mobile Aid for Users with Disabilities*. Google. August, 2010. \$45,000.
- 2006 *Toward Cognitive Habile Agents*. National Science Foundation. January, 2006 - December, 2009. \$375,266.

- 2004 *Intelligent Human-Machine Interface and Control for Highly Automated Chemical Screening Processes* (co-PI). National Science Foundation. August, 2004 - August, 2007. \$748,132.
- 2004 *MAVEN: Model-based Automated Visualization for Enhanced Situation Awareness* (co-PI). Army STTR. August, 2004. \$30,000.
- 2004 *US Germany Workshop Towards an International Research Partnership Program on Human-Automation Interaction in the Life Sciences* (co-PI). National Science Foundation. September, 2004. \$58,699.
- 2004 *AAAI/SIGART Doctoral Consortium* (PI, American Association for Artificial Intelligence). National Science Foundation. July, 2004. \$14,000.
- 2002 *ITR: Integrating Intrusion Detection with Intelligent Visualization and Interaction Strategies* (co-PI). National Science Foundation. September, 2002 - July, 2005. \$415,099.
- 2001 *Using Cognitive Models to Examine Human-Robot Interfaces: An Exploratory Study*. Pennsylvania State University (Prime: Space and Naval Warfare Systems Center, SPAWAR), San Diego. May, 2001 - May, 2002. \$65,419.
- 2000 *Interactive Exploration of Complex Datasets Via the Effective Generation of Text and Graphics* (co-PI). National Science Foundation. September, 2000 - September, 2003. \$570,000.
- 2000 *User Interface Softbots* (PI). National Science Foundation. August, 2000 - August, 2003. \$497,384.
- 1999 *Online Financial Investment via Interactive Search and Visualization* (co-PI). AngelsStreet.com. August, 1999 - June, 2000. \$210,975.
- 1999 *o3c: intelligent support for online shopping* (co-PI). Centennial Venture Partners/Lichtin Corporation. June, 1999 - December, 1999. \$207,658.
- 1998 *IDIOM: An Intelligent, Dynamically Manipulable Simulation for High School Physics Education*. The William R. Kenan Institute for Engineering, Technology, and Science. September, 1998 - August, 2000. \$70,000.
- 1997 *MIPER: Mixed-Initiative Plan Evaluation and Repair*. University of Massachusetts (Prime: DARPA/Rome Laboratory). August, 1997 - June, 2001. \$234,869.

TEACHING AND MENTORING
Ph.D. and M.S. students graduated

- 2016 Shea McIntee, Ph.D. A task model of free-space movement-based gestures.
- 2016 Huseyin Sencan, Ph.D. (Dis)Similarity-based classification of cross domain multivariate spatiotemporal systems using dynamic network structures and graph edit distances.
- 2014 Kyung Wha Hong, Ph.D. Improving interface usability through model transformation using interaction design models.
- 2014 Arpan Chakraborty, Ph.D. A biologically inspired active vision framework for cognitive agents.
- 2012 Shishir Kakaraddi, M.S. A comparison of summarization techniques for small sets of micro blogs.
- 2011 Yanglei Zhao, M.S. Gibbon: A wearable device for pointing gesture recognition.
- 2011 Thomas E. Horton. Ph.D. A Partial Contour Similarity-Based Approach to Visual Affordances in Habile Agents.
- 2010 Marivic Bonto-Kane, Ph.D. Statistical modeling of human response times for task modeling in HCI.
- 2009 Reuben Cornel, M.S. Coglaborate - An environment for collaborative cognitive modeling.
- 2009 Lloyd Williams, Ph.D. Dynamic ontology-driven learning and control of robotic tool-using behavior.
- 2009 Wei Mu, Ph.D. A schematic representation for cognitive tool-using agents.
- 2009 Lucas Layman, Ph.D. (co-advisor). Information needs of developers for program comprehension during software maintenance tasks.
- 2008 James Ward, M.S. A comparison of fuzzy logic spatial relationship methods for human-robot interaction.
- 2008 Chaya Narayanan Kutty, M.S. Toward video games on video.
- 2008 Kevin Damm, M.S. Incorporating student note-taking into online intelligent computer-assisted instruction.
- 2007 Andrea Dawkins, M.S. Personalized hierarchical menu organization for mobile device users.
- 2006 Kenya Freeman, Ph.D. in Psychology (co-advisor). The effects of automated decision aid reliability and algorithm modality on reported trust and task performance.
- 2006 Curtis Boyce, M.S. Video-based augmented reality for robot navigation.
- 2005 Sean P. McBride, M.S. Data organization and abstraction for distributed intrusion detection.
- 2005 Lloyd Williams, M.S. Opening the black box on statistical modeling.
- 2005 Alexander Wood, M.S. Effective tool use in a habile agent.
- 2004 Thomas Horton, M.S. HabilisDraw: a tool-based direct manipulation software environment.
- 2004 Bradley Siegler, M.S. Supporting electronic CRC card sessions with natural interaction.
- 2004 Colin G. Butler, M.S. Exploring bimanual tool-based interaction in a drawing environment.
- 2004 Nihar Namjoshi, M.S. Web information retrieval using Web document structures.

- 2004 Martin Dulberg, Ph.D. A task-based evaluation framework for comparing input devices.
- 2003 Ajay Dudani, M.S. User interface softbots.
- 2003 Kunal Shah, M.S. Image processing for cognitive models in dynamic gaming environments.
- 2003 Sameer Rajyaguru, M.S. Image processing substrate to assist cognitive models interact with dynamic environments.
- 2001 Mark O. Riedl, M.S. A Computational model of navigation in social environments.
- 2000 Troy Tolle (Kenan Fellowship recipient) M.S. IDIOM: An Intelligent, Dynamically Manipulable Simulation for high school physics education.
- 1999 T. Edward Long, M.S. A navigation testbed.

Undergraduate mentoring

- 2013 Stephan Baulch, Nathan Fuchs, Brandon Walker: OculusKinect: A real-time augmented reality visual assistance system.
- 2012 Jim Creager and Kathleen Graves: The Kinect, Fitts' law, and line-of-sight, gesture-based robot control.
- 2011 Edward Anderson and Ben Berry: Freshtracks, a better college course registration system.
- 2011 Jim Creager: Multi-touch and gesture-based interaction.
- 2010 Thi Lynn Gallen: Gesture recognition study.
- 2009 Samantha Wen: Mobile interface experiments.
- 2008 Kate Lemanski: A testbed for mobile interface interaction.
- 2004 Nathan Green, Jan Kruger, and Chirag Faldu: A reduced QWERTY keyboard for text entry.
- 2003 Austin Waters and Yinon Bendor: Geometrical techniques for identifying symmetries for a robot grasper.
- 2003 Adam Mitchell: An agent for strategic gaming environments.
- 2002 John Daughtry: Power tools and composite tools for drawing.
- 2002 John Daughtry and Tyler Johnson: A privacy evaluation agent for the Web.
- 2002 Inki Brown: Automated assistance for presentation generation.
- 2001 Colin Butler: A pattern definition tool for interface softbots. *Funded by NSF.*
- 2001 Yinon Bendor, Patrick Barry, and Eric Pelkey: Visualization and selection in a music database.
- 2001 Jordan Liggitt and Breneria Travis (NSF Minority Undergraduate Research Grant): Redesign of the Web pages of ACM SIGART's Intelligence Magazine.
- 2000 Mike Daniels: Building a robot arm simulation.
- 2000 Saunak Chakrabarti: An interactive tool for perception in the user interface.
- 2000 James Blair, SunJun Park, Patrick Barry, and Duke Rogers: Lola: Visualization and selection in a music database.
- 1999 Luis Cepeda, Micah Colon, Naveen Malik, and Mark van Osdell: Intelligent support for online shopping. *Funded by o3c.com.*
- 1999 Joshua Christie and Keith Watts: Intelligent support for online financial decision-making. *Funded by angelsstreet.com.*
- 1999 William Culverhouse, Hayes Davis, Christopher Hardee, Thai-Hang La, and Julie Stash: Intelligent tutoring agents.
- 1999 Adam Price: Integration of multidimensional visualization techniques with mixed-initiative AI search algorithms.
- 1998 Mark Riedl: A Web-based intelligent assistant to help students with course

- scheduling; mixed-initiative planning. *Funded by DARPA.*
- 1998 Keri Smith and Troy Tulle: Mixed-initiative planning. *Funded by DARPA.*
- 1998 Luke Zettlemoyer, Derek Foley, Brendon Windmeyer: User interface agents. *In 1999 Luke was named one of the two Outstanding Undergraduates by the Computing Research Association, the single highest national honor given to undergraduate computer science students.*

Teaching

Aside from special topics courses, I have taught the following (with course catalog descriptions).

- CSC 200: Introduction to Computers and Their Uses.* Survey of basic principles of computer hardware, communications, operating systems, microcomputer issues, security, impact on society, system development, and use in organizations...
- CSC 411: Artificial Intelligence.* Overview and definitions of Artificial Intelligence (AI). Search, including depth-first and breadth-first techniques with backtracking. Knowledge representation with emphasis on logical methods, Horn databases, resolution, quantification, unification, skolemization and control issues; non-monotonic reasoning; frames; semantic nets. AI systems, including planning, learning, natural language and expert systems. An AI programming language may be taught at the instructor's discretion.
- CSC 454: Human-Computer Interaction.* A survey of concepts and techniques for user interface design and human computer interaction. Emphasizes user-centered design, interface development techniques, and usability evaluation.
- CSC 520: Artificial Intelligence.* Introduction to and overview of artificial intelligence. Study of AI programming language such as LISP or PROLOG. Elements of AI problem-solving technique. State spaces and search techniques. Logic, theorem proving and associative databases. Introduction to knowledge representation, expert systems and selected topics including natural language processing, vision and robotics.
- CSC 521: Artificial Intelligence Programming.* Introduction to techniques for developing AI systems and programming in a language for AI, Common Lisp. Implementation and extension of systems for problem solving, pattern matching, rule-based processing, machine learning, and related areas.
- CSC 554: Human-Computer Interaction.* Basic theory and concepts of human-computer interaction. Human and computational aspects. Cognitive engineering. Practical HCI skills. Significant historical case studies. Current technology and future directions in user interface development.

Instructional development

- Developed *CSC 791: Intelligent User Interfaces* in Spring 2011, a graduate seminar on the topic.
- Developed *CSC 521: Artificial Intelligence Programming* in Spring 2007, a combined upper-level undergraduate/graduate class focusing on programming techniques for AI systems.
- Assisted in the development of *CSC 295F: Collaborative Operating Systems Development* for Spring 2003, an apprentice programming course largely taught by upper-level undergraduates to lower-level undergraduates in computer science. Project activities in the course include building practical utilities for Linux, Windows, and other software systems.
- Developed *CSC 295H: Honors Special Topics in Computing*, with support from John Wall (Director, University Honors Council) and technical staff. Project activities in the course were geared toward the long-term goal of building a Linux-based open source environment tailored for NCSU students.
- Co-developed *CSC 600: Computer Science Graduate Orientation*, an introductory research seminar for new graduate students.

Taught *CSC 554: Human-Computer Interaction* as a course in the *Video-Based Engineering Education (VBEE) program*, to reach over 40 off-campus students in addition to about 40 on-campus students.

Developed *CSC 554: Human-Computer Interaction*, a graduate level course on user interface issues.

Coordinated the development of *CSC 454: Human-Computer Interaction*, an undergraduate level course on user interface issues.

SERVICE

Editorial appointments

Member, editorial board, *Oxford Series on Cognitive Models and Architectures*, 2010-present.

Member, editorial board, *AI Magazine*, 2008-2010. Co-editor, Links column, and area editor for planning, *Intelligence Magazine*, 2000-2002. Special reviewer, *User Modeling and User Adapted Interaction*, Kluwer. Associate editor, *Journal of Statistical Software*, 1995-1997.

Conference committees

Executive committee, *Behavior Representation in Modeling & Simulation (BRIMS) Conference*, 2011-2014. Steering board member, *Intelligent User Interfaces (IUI)*, 2006-2012. CHI Notes co-chair, *ACM Conference on Human Factors in Computing Systems (CHI)*, 2007. Conference chair, *Intelligent User Interfaces (IUI)*, 2005. Treasurer, *Intelligent User Interfaces (IUI)*, 2003, 2004. AAAI conference committee; chair/co-chair, *SIGART/AAAI Doctoral Consortium*, 2003, 2004. Associate papers chair, *ACM Conference on Human Factors in Computing Systems (CHI)*, 1999, 2002, 2003. Tutorials/workshops chair, *Intelligent User Interfaces (IUI)*, 2000, 2001. Organizing committee and registration chair, *Intelligent User Interfaces (IUI)*, 1998.

University and departmental service

Lead, Computer Science Department ABET Accreditation, 2011-2016. (Self-study report nominated for presentation at the 2017 ABET Symposium.) Member, Faculty Senate, 2010-2011. Member, Departmental Accreditation Committee, 2009-2010. Capstone project evaluation, Webmaster Certificate Program, Computer Training Unit, 2008-09. Member, Departmental Graduate Admissions Committee, 1997-98, 1998-99, 1999-2000, 2006-07, 2007-08. Member, Departmental Graduate Curriculum Committee, 1996-97, 2000-01, 2001-2002.