Christian J. Lebiere

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EDUCATION

Ph.D. in Computer Science, *Carnegie Mellon University*, December 1998
Thesis: "The Dynamics of Cognition: An ACT-R Model of Cognitive Arithmetic".

M.S. in Computer Science, *Carnegie Mellon University*, June 1990
Major: Artificial Intelligence. Minor: Programming Systems.

B.S. in Computer Science, *Universite de Liege, Belgium*, June 1986
"Plus Grande Distinction. " (Summa cum Laude)

PROFESSIONAL EXPERIENCE

Research Faculty – Carnegie Mellon University, June 2006 - present
Research Scientist - Carnegie Mellon University, July 2000 – December 2002
Post-Doctoral Research Associate - Carnegie Mellon University, January 1999 – June 2000

Developed the ACT-R cognitive architecture and its applications to domains including intelligent agents, cognitive psychology, economics (game theory), decision theory (real-time systems), human-computer interaction (training simulations), cognitive robotics, and computational neuroscience. Supervised programming staff and postdoctoral researchers. Advised undergraduate and graduate students. Lectured courses including Principles of Human-Computer Interaction and Computational Models of Thought. Principal Investigator on ONR-, ARL-, AFRL- , DARPA-, IARPA-, DTRA- and NASA-funded projects.

Principal Research Scientist - Micro Analysis and Design, Inc., January 2003 – May 2006

Developed applications of computational cognitive modeling in complex systems such as commercial and military aviation, military systems such as robotic teleoperation and command and control systems, and agent-based systems such as training simulations. Developed scalable, high-usability, integrated cognitive architecture tools for high-performance information processing. Principal Investigator on DARPA-, ONR-, ARL- and DMSO-funded projects.

Research Programmer - Carnegie Mellon University, June 1991-December 1998

Developed, distributed, applied and maintained the ACT-R cognitive simulation. Developed variants and extensions of ACT-R including a connectionist implementation, a numerical parameter optimizer, a high-level scripting language and a multi-user web interface. Assisted hundreds of users in learning and using the ACT-R system. Organized the yearly ACT-R Summer School and Workshop from 1994 to 1998.

Research/Teaching Assistant – Carnegie Mellon University, August 1986 – December 1990

Co-developed the Cascade-Correlation neural network learning algorithm that has been used in hundreds of scientific and technical applications. Applied numerical optimization techniques to improve the back propagation algorithm. Developed various neural network simulators. Teaching assistant for courses on Operating Systems and Comparative Programming Languages.

Teaching Assistant – Universite de Liege, September 1984 – July 1986

Teaching assistant for courses on Probabilities and Statistics and Stochastic Processes.

PROFESSIONAL ACTIVITIES AND RECOGNITION

2015	Editorial Board, Journal of Cognitive Systems Research
2014	Co-Chair, AAAI Conference Cognitive Track
2013	Co-Chair, AAAI Fall Symposium on Integrated cognition
2011	Editorial Board, Journal of Biologically Inspired Cognitive Architectures
2010	Founding Member, Biologically Inspired Cognitive Architectures Society
2009	Best paper award at Eighteenth Conference on Behavior Representation in Modeling and Simulation.
2009	Editorial Board, Journal of Artificial General Intelligence
2008	Winner, Repeated Decision Condition of Technion Prediction Tournament
2008	Program committee, AAAI Fall Symposium on Biologically Inspired Cognitive Architectures.
2008	Program committee, First Conference on Artificial General Intelligence (AGI-08)
2007	Organizing committee, Frontiers of Engineering Symposium, National Academy of Engineering
2007	Program committee, National Conference on Artificial Intelligence (AAAI)
Ongoing	Ad hoc reviewer for Proceedings of the National Academy of Sciences, IEEE Transactions on Neural Networks; IEEE Transactions on Systems, Man and Cybernetics; Computational Intelligence; Neural Computation; Cognitive Science; Cognitive Psychology; Brain and Behavioral Sciences; Cognitive Systems Research; American Political Science Review; and ICCM, BRIMS, AAAI and Cognitive Science conferences
2006-present	Program Committee, Conference on Behavior Representation in Modeling and Simulation (BRIMS)
2006	Co-Chair, AAAI Spring Symposium on Cognitive Principles Meet AI Applications
2004	Organizing Committee, International Conference on Cognitive Modeling
2003	Local Advisory Committee, User Modeling Conference.
2003	Organizing Committee, IJCAI Workshop on Cognitive Modeling of Agents and Multi-Agent Interactions.
2002-2003	External Advisory Board to Augmented Cognition Grand Challenge, Sandia National Laboratories.
2002	Best paper award at Eleventh Conference on Computer-Generated Forces.
2001	Best paper award at Fourth International Conference on Cognitive Modeling.
2000-present	Program Committee, International Conference on Cognitive Modeling
1994-2002	Organizer, ACT-R Summer School and Workshop

PERSONAL: Naturalized U.S. citizen. Country of origin: Belgium.

RESEARCH SUPPORT

AFOSR contract FA865011C6161: Learning and Modeling for Human Performance and Readiness. 11/15/2010-11/14/2015. This project involves the development of cognitive models of all-source intelligence analysis, most specifically tasks involving probabilistic reasoning such as assessing risk likelihood or source reliability. Modeling involves the leveraging on ontological resources to constrain model development as well as the use of automated knowledge acquisition techniques to speed up model development. The model will be used in training environments to help alleviate cognitive biases in decision-making.

ARL contract W911NF-10-2-0016: Robotics Collaborative Technology Alliance (RCTA). Co-PI with Anthony Stentz and Martial Hebert. 6/1/2010-5/31/2015. This project involves the integration of cognitive architectures with perceptual algorithms and machine learning to develop more general and robust robotic control architectures that improve integration with human teammates by sharing high-level situation assessment and mental models. The goal is to design a system that combines the advantages of

algorithmic, machine learning and cognitive approaches while allowing them to overcome their shortcomings through mutual multi-level interactions.

IARPA contract D10PC20021: Integrated Cognitive Architectures for Understanding Sensemaking – Mirroring Intelligence in a Neural Description of Sensemaking (ICArUS-MINDS). 12/6/2010-6/5/2014. $1,400,000. This project involves the development of functional and neural cognitive models of integrated brain functions in the context of sensemaking tasks in geospatial intelligence analysis. The goal is to capture the emergence of cognitive biases as they arise from the interaction of neural mechanisms and complex information processing.

DTRA contract HDTRA1-09-1-0053: Understanding Conflict with a Socio-Cognitive Computational Approach. Co-PI with Cleotilde Gonzalez. 8/31/2009 to 12/31/2013. $1,045,123. This project involves the development of cognitive models of conflict from the dual viewpoint of cognitive processes and social constructs. The models involve a combination of cognitive and emotional factors that reflect both human limitations (attentional, memory), mechanisms (learning, adaptivity) and biases (emotional, sociocultural). Experimental data is generated from both detailed simulations of real-world conflicts (e.g., the Israeli-Palestinian conflict) and abstract games, both classic (prisoner's dilemma, chicken) as well as new variations that emphasize the effect of power on intragroup and intergroup dynamics.

AFOSR MURI contract FA95500810356: Modeling Synergies in Large Human-Machine Networked Systems. Co-PI with Katia Sycara. 5/1/2008 to 6/30/2013. $6,700,000. This project involves the development of cognitive models of planning and decision-making and their integration in large networks of human and machine systems. The goal is to scale up and abstract high-fidelity cognitive models in a way that preserves their fundamental properties while alleviating their computational limitations in order to describe and predict the information dynamics in large networks of intelligent entities.

DARPA contract W911NF-10-2-0061: Visually Understanding Events through Physically Grounded Reasoning in 3D. Co-PI with Takeo Kanade and Martial Hebert. 9/1/2010-8/30/2012. This project aims at understanding complex visual scenes by integrating low-level vision algorithms, learning processes and cognitive reasoning. The goal is to go beyond recognizing objects ("nouns") to understanding actions ("verbs"), describing their context, and inferring the goal of the actors. The cognitive reasoning engine is composed of a cognitive architecture, tasked with recognizing patterns of objects and micro-actions, and an ontology, charged with reasoning about spatio-temporal relations.

Battelle subcontract of ARL LWI contract 28-1080: Cognitive Modeling of AN/PSS-14 Mine Detector Operator Expertise. Co-PI with Jim Staszewski. 10/1/2008 to 12/31/2009. $174,020.

AFOSR contract FA9550-08-1-0404: Integrated Cognitive Architectures for Robust Decision Making. Co-PI with John R. Anderson. 7/1/2008 to 5/31/2010. $413,277.

Adaptive Cognitive Systems subcontract to ONR contract N00014-07-C-0912: Asymmetric Adversarial Modeling with Augmented Cognitive Architectures. 10/1/2007 to 9/31/2010. $300,000.

ARL Advanced Decision Architecture (ADA) Collaborative Technology Alliance (CTA) DAAD19-01-2-0009: Emergent Complexity in a Dynamic Control Task as a Domain for Model Comparison. Co-PI with Coty Gonzalez and Walter Warwick. 10/1/2008-12/31/2009. $240,000. This project involves the development of an experimental task testing the ability to control dynamic systems as the basis for a cognitive modeling competition to evaluate competing modeling frameworks ability to reproduce and predict human performance.

Adaptive Cognitive Systems subcontract to AFRL contract: Software Integration for Computational Cognitive Models in Virtual Environments. 12/1/2007 to 8/31/2008. $30,000.

Soar Technology subcontract 10081-1 to ONR contract N0014-05-C-0245: High-Level Symbolic Representation for Intelligent Agents. 12/01/2006 to 5/31/2008. $35,000.

Carnegie Mellon University subcontract 1150054-171528 to DARPA contract FA8650-05-C-7254: Developing a Complete and Effective ACT-R Architecture (BICA). 9/29/2005-10/31/2006. $208,137. This project aims at achieving a detailed mapping of the ACT-R cognitive architecture onto neural structures and mechanisms and apply the resulting architecture to a series of cognitive challenge tasks aimed at testing individual abilities and their integration in complex environments.

ARL SBIR phase II grant #W911QX-04-C-0068: Human Behavior Architecture Interface for Integrated Cognitive and Task Performance Model Development. 3/21/2006 – 3/21/2008. $730,000.

Soar Technology subcontract HLSR05-01 to ONR contract N0014-05-C-0245: High-Level Symbolic Representation for Intelligent Agents. 3/01/2005-2/28/2008. $186,104. This project aims at developing a high-level modeling language that abstracts away from the details of cognitive architectures such as ACT-R and Soar but retains their fundamental constraints and mechanisms by compiling into them using a library of modeling idioms.

Lockheed-Martin subcontract TT0669757 to DARPA contract FA8750-04-C-0266: Architectures for Cognitive Information Processing. 9/01/2004 – 12/31/2006. $295,184. This project aims at developing hybrid neural-symbolic cognitive architectures capable of processing complex tasks such as UAV mission planning and intelligence analysis with large amounts of data in real time on special-purpose hardware.

Eye Tracking subcontract 30110-01 to ONR contract N0014-05-C-0148: Cross-Validation of Indicators of Cognitive Workload. 3/24/2005-12/30/2005. $44,547. This project aims at developing experimental and computational indicators of cognitive workload, including validating computational measures based on the ACT-R cognitive architecture with physiological indicators such as pupil dilation.

ARL SBIR phase I grant #W911QX-04-C-0068: Human Behavior Architecture Interface for Integrated Cognitive and Task Performance Model Development. 12/8/2003 – 6/15/2004. $70,000.

ONR SBIR phase I grant #N00014-03-M-0318: Human Error Modeling. 7/2/2003 – 6/16/2004. $70,000.

Soar Technology subcontract HLSR03-01 to DMSO contract F33615-03-C-6343: Integrating ACT-R into High Level Symbolic Representation (HLSR). 7/01/2003 – 6/01/2004. $65,059.

Nissan Technical Center North America gift: Modeling Individual Differences in a Cognitive Architecture. 7/1/2002. $10,000.

ONR grant N00014-02-1-0269: Predicting Individual Performance in Complex Interactive Environments. 1/1/2002 – 9/30/2005. $597,738. This project aims at developing measures and tests of individual capacity in working memory, mapping them onto parameters of the ACT-R cognitive architecture, and predicting individual performance in complex interactive environments.

ONR grant N00014-01-1-0129: Learning and Teamwork in ACT-R for the Second Phase of the AMBR Competition. 2/1/2001 – 1/31/2003 $149,906.

SAIC subcontract of AFRL Contract F41624-98-C-6012: Integration of an ACT-R model of Shoot-List Management into the Combat Automation Requirements Testbed. 10/8/2001 – 9/30/2002 $59,986.

Micro Analysis and Design subcontract of NASA grant NAS2-99091. Integration of ACT-R and IMPRINT for Human Error Modeling in the Aviation Safety Program. 1/1/2001 – 9/30/2004 $120,000.

BBN Technologies subcontract of AFRL Contract F33615-99-C-6002: Conversion of ACT-R Model for Human Behavior Representation / High Level Architecture (HBR/HLA). 10/01/2000 – 9/30/2001. $74,771.

ONR grant N00014-00-1-0380: ACT-R, Entry into the First Phase of The AMBR Modeling Competition. 2/1/2000 – 10/31/2000. $56,112.

PUBLICATIONS

Book

Anderson, J. R., & Lebiere, C. (1998). *The Atomic Components of Thought.* Mahwah, NJ: Lawrence Erlbaum Associates.

Journal Articles

Buchler, N., Fitzhugh, S. M., Marusich, L. R., Ungvarsky, D. M., Lebiere, C., & Gonzalez, C. (2016). Mission Command in the Age of Network-Enabled Operations: Social Network Analysis of Information Sharing and Situation Awareness. *Frontiers in Psychology*, Special Issue on Macrocognition: The Science and Engineering of Sociotechnical Work Systems. http://dx.doi.org/10.3389/fpsyg.2016.00937

Juvina, I., Lebiere, C., & Gonzalez, C. (2015). Modeling trust dynamics in strategic interaction. *Journal of applied research in memory and cognition. 4*(3): 197-211. http://dx.doi.org/10.1016/j.jarmac.2014.09.004

Martin, J., Gonzalez, C., Juvina, I., & Lebiere, C. (2014). A Description-Experience Gap in Social Interactions: Information about Interdependence and Its Effects on Cooperation. *Journal of Behavioral Decision Making. 27: 349–362. DOI: 10.1002/bdm.1810*

Herd, S., Szabados, A., Vinokurov, Y., Lebiere, C., Cline, A., & O'Reilly, R. (2014). Integrating theories of motor sequencing in the SAL hybrid architecture. *Biologically Inspired Cognitive Architectures (6)*.

Thomson, R., Lebiere, C., Anderson, J. R., & Staszewski, J. (under review). A General Instance-Based Learning Framework for Studying Intuitive Decision-Making in a Cognitive Architecture. In Special Issue of the *Journal of Applied Research in Memory and Cognition* on Modeling and Aiding Intuitions in Organizational Decision Making.

Vinokurov, Y., Lebiere, C., Szabados, A., Herd, S., & O'Reilly, R. (2013). Integrating top-down expectations with bottom-up perceptual processing in a hybrid neural-symbolic architecture. *Biologically Inspired Cognitive Architectures (6),* pp. 140-146.

Lebiere, C., Pirolli, P., Thomson, R., Paik, J., Rutledge-Taylor, M., Staszewski, J., & Anderson, J. R. (2013). A Functional Model of Sensemaking in a Neurocognitive Architecture. *Computational Intelligence and Neuroscience. http://dx.doi.org/10.1155/2013/921695*

Gonzalez, C., & Lebiere, C. (2013). Cognitive architectures combine formal and heuristic approaches. *Behavioral and Brain Sciences 36:3, pp. 285-286. doi:10e instructions.1017/S0140525X12002956*

Kurup, U., & Lebiere, C. (2012). What can cognitive architectures do for robotics? *Biologically Inspired Cognitive Architectures (2), pp.* 88-99.

Stocco, A., Lebiere, C., O'Reilly, R. C., & Anderson, J. R. (2012). Distinct Contributions of the Caudate Nucleus, Rostral Prefrontal Cortex, and Parietal Cortex to the Execution of Instructed Tasks. *Cognitive, Affective, and Behavioral Neuroscience*. DOI 10.3758/s13415-012-0117-7

Juvina, I., Saleem M., Gonzalez, C., & Lebiere, C., (2012). Reciprocal Trust Mediates Deep Transfer of Learning Between Games of Strategic Interaction. *Organizational Behavior and Human Decision Processes.* Special Issue in Social Dilemmas. http://dx.doi.org/10.1016/j.obhdp.2012.09.004

Martin, J. M., Juvina, I., Lebiere, C., & Gonzalez, C. (in press). The Effects of Individual and Context on Aggression in Repeated Social Interaction. *Applied Ergonomics.*

Gonzalez, C., Dutt, V., & Lebiere, C. (2012). Validating Instance-Based Learning Mechanisms Outside of ACT-R. *Journal of Computational Science Special Issue Scientific Computing for the Cognitive Sciences*.

Lebiere, C., & Anderson, J. R. (2011). Cognitive constraints on decision making under uncertainty. *Frontiers in Cognition 2 (305).*

Mehlhorn, K., Taatgen, N. A., Lebiere, C., & Krems, J. F. (2011). Memory Activation and the Availability of Explanations in Sequential Diagnostic Reasoning. *Journal of Experimental Psychology: Learning, Memory and Cognition* 37(6), 1391-1411.

Juvina, I., Lebiere, C., Martin, J. M., & Gonzalez, C. (2011). Intergroup Prisoner's Dilemma with Intragroup Power Dynamics. *Games*, 2(1): 21-51. http://www.mdpi.com/2073-4336/2/1/21/

Reitter, D. & Lebiere, C. (2011). How groups develop a specialized domain vocabulary: A cognitive multi-agent model. *Journal of Cognitive Systems Research*, 12(2):175-185.

Reitter, D., & Lebiere, C. (2010). A cognitive model of spatial path planning. *Computational and Mathematical Organization Theory, 16(3),* 220-245.

Lebiere, C., Gonzalez, C., & Warwick, W. (2010). Cognitive Architectures, Model Comparison, and Artificial General Intelligence. *Journal of Artificial General Intelligence* 2(1), 1-19.

Stocco, A., Lebiere, C., O'Reilly, R. C., & Anderson, J. R. (2010). The role of the anterior prefrontal-basal ganglia circuit as a biological instruction interpreter. *Frontiers in Artificial Intelligence and Applications, 221*, 153-162.

Stocco, A., Lebiere, C., & Samsonovich, A. V. (2010). The B-I-C-A of biologically inspired cognitive architectures. *International Journal of Machine Consciousness,* 2(2), 171-192.

Stocco, A., Lebiere, C., & Anderson, J.R. (2010). Conditional Routing of Information to the Cortex: A Model of the Basal Ganglia's Role in Cognitive Coordination. *Psychological Review 117(2)* 541-574.

Erev, I., Ert, E., Roth, A. E., Haruvy, E., Herzog, S., Hau, R., Hertwig, R., Stewart, T., West, R., Lebiere, C. (2010). A choice prediction competition, for choices from experience and from description. *Journal of Behavioral Decision Making 23(1)*: 15-47.

Lebiere, C., Gonzalez, C., & Warwick, W. (2009). Convergence and constraints revealed in a qualitative model comparison. *Journal of Cognitive Engineering and Decision Making* 3(2), 131-155.

Lebiere, C., & Best, B. J. (2009). From Microcognition to Macrocognition: architectural support for asymmetric adversarial behavior. *Journal of Cognitive Engineering and Decision Making* 3(2), 176-193.

Jilk, D. J., Lebiere, C., O'Reilly, R. C. and Anderson, J. R. (2008). SAL: an explicitly pluralistic cognitive architecture. *Journal of Experimental & Theoretical Artificial Intelligence*, 20:3, 197-218.

Jilk, D. J., Lebiere, C., O'Reilly, R. C. and Anderson, J. R. (2008). Beyond red states and blue states in cognitive science. *Journal of Experimental & Theoretical Artificial Intelligence*, 20:3, 265-268.

Anderson, J. R., Bothell, D., Byrne, M. D., Douglass, S., Lebiere, C., & Qin, Y . (2004). An integrated theory of the mind. *Psychological Review* 111 (4), 1036-1060.

Anderson, J. R. & Lebiere, C. (2003). The Newell test for a theory of cognition. *Behavioral & Brain Sciences* 26, 587-637.

Gonzalez, C., Lerch, F. J., & Lebiere, C. (2003). Instance-based learning in dynamic decision making. *Cognitive Science* 27(4): 591-635.

Lebiere, C., & Lee, F. J. (2002). Intention superiority effect: A context-switching account. *Journal of Cognitive Systems Research*, 3(1), 57-65.

West, R. L., & Lebiere, C. (2001). Simple games as dynamic, coupled systems: Randomness and other emergent properties. *Journal of Cognitive Systems Research*, 1(4), 221-239.

Lebiere, C., & Wallach, D. (1999). Implicit and explicit learning in a hybrid architecture of cognition. *Behavioral and Brain Sciences*, (22), pp. 772-773.

Lebiere, C. (1999). The dynamics of cognitive arithmetic. *Kognitionswissenschaft* [Journal of the German Cognitive Science Society] Special issue on cognitive modelling and cognitive architectures, D. Wallach & H. A. Simon (eds.)., 8 (1), 5-19.

Anderson, J. R., Lebiere, C., Lovett, M. C., & Reder, L. M. (1998). ACT-R: A higher-level account of processing capacity. *Behavioral and Brain Sciences,* (21), 831-832.

Anderson, J. R., Bothell, D., Lebiere, C. & Matessa, M. (1998). An integrated theory of list memory. *Journal of Memory and Language*, 38, pp. 341-380.

Anderson, J. R., Matessa, M., & Lebiere, C. (1997). ACT-R: a theory of higher level cognition and its relation to visual attention. *Human Computer Interaction, 12 (4),* 439-460.

Anderson, J. R., Reder, L. M., & Lebiere, C. (1996). Working memory: Activation limitations on retrieval. *Cognitive Psychology, 30*, 221-256.

Book Chapters and Technical Reports

Gonzalez, C., Ben-Asher, N., Oltramari, A., & Lebiere, C. (in press). Cognitive models of cyber situation awareness and decision making. In C. Wang, A. Kott, & R. Erbacher (Eds.), *Cyber defense and situational awareness*.

O'Reilly, R. C., Petrov, A. A., Cohen, J. D., Lebiere, C. J., Herd, S. A., & Kriete, T. (2014). How Limited Systematicity Emerges: A Computational Cognitive Neuroscience Approach. In I. P. Calvo, & J. Symons (Eds.), *The architecture of cognition: Rethinking Fodor and Pylyshyn's Systematicity Challenge*. Cambridge, MA: MIT Press.

Oltramari, A., Vinokurov, Y., Lebiere, C., Oh, J., & Stentz, A. (2014). Ontology-based Cognitive System for Contextual Reasoning in Robot Architectures. Presented at the AAAI Spring Symposium on Knowledge Representation and Reasoning in Robotics. *AAAI Spring Symposium Technical Report SS-14-04*. Menlo Park, CA: AAAI Press.

Szabados, A., Herd, S., Vinokurov, Y., Lebiere, C., & O'Reilly, R. (2013). Integrating Systems and Theories in the SAL Hybrid Architecture. *AAAI Fall Symposium Technical Report FS-13-04*. Menlo Park, CA: AAAI Press.

Oltramari, A., & Lebiere, C. (2013). Knowledge in action: Integrating cognitive architectures and ontologies. In Oltramari, A., Vossen, P., Qin, L., & Hovy, E. (Eds.), *New Trends of Research in Ontologies and Lexical Resources: Ideas, Projects, Systems*. Springer, Germany.

Juvina, I, Lebiere, C., Martin, J., & Gonzalez, C. (2011). Cognitive Aspects of Power in a Two-level Game. In *Lecture Notes in Computer Science,* Volume 6589, pp. 34-41.

Lebiere, C., O'Reilly, R., Jilk, D. J., Taatgen, N., & Anderson, J. R. (2008). The SAL integrated cognitive architecture. *AAAI Fall Symposium Technical Report FS-08-04.* Menlo Park, CA: AAAI Press.

Lebiere, C. & Wray, R. (2008). Modeling and simulating human behavior. In *Frontiers of Engineering: Reports on Leading-Edge Engineering from the 2007 Symposium.* National Academies Press, Washington, DC.

Lebiere, C., Archer, R., Best, B., & Schunk, D. (2008). Modeling pilot performance with an integrated task network and cognitive architecture approach. In Foyle, D. & Hooey, B. (Eds.) *Human Performance Modeling in Aviation*. Mahwah, NJ: Erlbaum.

Lebiere, C. & Wray, R. (2006). Between a Rock and a Hard Place: Cognitive Science Principles Meet AI-Hard Problems. *AAAI Spring Symposium Technical Report SS-06-02*. Menlo Park, CA: AAAI Press.

Laughery, K. R., Lebiere, C., & Archer, S. (2006). Modeling human performance in complex systems. In Salvendy, G. (Ed.) *Handbook of Human Factors*. NY, NY: Wiley.

Best, B. J. & Lebiere, C. (2006). Cognitive agents interacting in real and virtual worlds. In Sun, R. (Ed) *Cognition and Multi-Agent Interaction: From Cognitive Modeling to Social Simulation.* NY, NY: Cambridge University Press.

West, R. L., Lebiere, C. & Bothell, D. J. (2006). Cognitive architectures, game playing and human evolution. In Sun, R. (Ed) *Cognition and Multi-Agent Interaction: From Cognitive Modeling to Social Simulation.* NY, NY: Cambridge University Press. Pp. 103-121.

Taatgen, N., Lebiere, C. & Anderson, J.R. (2006). Modeling paradigms in ACT-R. In Sun, R. (Ed) *Cognition and Multi-Agent Interaction: From Cognitive Modeling to Social Simulation.* NY, NY: Cambridge University Press.

Gonzalez, C., & Lebiere, C. (2005). Instance-based cognitive models of decision making. In D. Zizzo & A. Courakis (Eds.), *Transfer of knowledge in economic decision making*. New York: Palgrave McMillan.

Lebiere, C. (2005). Constrained functionality: Application of the ACT-R cognitive architecture to the AMBR modeling comparison. In Gluck, K, & Pew, R. (Eds.) *Modeling Human Behavior with Integrated Cognitive Architectures*. Mahwah, NJ: Erlbaum.

Wallach, D. & Lebiere, C. (2003). Conscious and unconscious knowledge: Mapping to the symbolic and subsymbolic levels of a hybrid architecture. In Jimenez, L. (Ed.) *Attention and Implicit Learning*. Amsterdam, Netherlands: John Benjamins Publishing Company.

Lebiere, C. (2002). ACT. *Encyclopedia of Cognitive Science*. MacMillan, UK.

Lebiere, C., & Wallach, D. (2001). Sequence learning in the ACT-R cognitive architecture: Empirical analysis of a hybrid model. In Sun, R. & Giles, L. (Eds.) *Sequence Learning: Paradigms, Algorithms, and Applications*. Springer LNCS/LNAI, Germany. Pp. 188-212.

Lovett, M. C., Reder, L. M., & Lebiere, C. (1999). Modeling working memory in a unified architecture: An ACT-R perspective. In Miyake, A. & Shah, P. (Eds.) *Models of Working Memory: Mechanisms of Active Maintenance and Executive Control*. New York: Cambridge University Press.

Lebiere, C. (1998). The dynamics of cognition: An ACT-R model of cognitive arithmetic. Ph.D. Dissertation. *CMU Computer Science Dept Technical Report* CMU-CS-98-186. Pittsburgh,PA. Available at http://reports-archive.adm.cs.cmu.edu/.

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Anderson, J. R., Kushmerick, N., & Lebiere, C. (1993). Tower of Hanoi and goal structures. In *Rules of the Mind*, by Anderson, J. R., L. Erlbaum Associates.

Fahlman, S. E., & Lebiere, C. (1990). The Cascade-Correlation learning architecture. *CMU Computer Science Dept Technical Report* CMU-CS-90-100. Pittsburgh, PA.

Lebiere, C. (1986). Formes de raisonnement non-monotone en Intelligence Artificielle. *These de Licencie en Informatique*, Universite de Liege, Belgium.

Conference Papers and Presentations

Vinod, A. P., Tang, Y., Oishi, M., Sycara, K., Lebiere, C., & M. Lewis., M. (2016). Validation of cognitive models for collaborative hybrid systems with discrete human input. In the Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems, Daejon, Korea, October 2016.

Veksler, D., Buchler, N., Lebiere, C., Morrison, D., & Kelley, T. (in press). The performance comparison problem: Universal task access for cross-framework evaluation, Turing tests, grand challenges, and cognitive decathlons. To be presented at *2016 Biologically Inspired Cognitive Architectures Conference (BICA-2016)*. New York, NY.

Lebiere, C., Morrison, D., Abdelzaher, T., Hu, S., Gonzalez, C., Buchler, N., & Veksler, V. D. (2016). Cognitive Models of Prediction as Decision Aids. In Proceedings of *2016 International Conference on Cognitive Modeling* (ICCM-2016). State College, PA.

Warwick, W., Walsh, M., Rodgers, S., & Lebiere, C. (2016). Integrating Heterogeneous Modeling Frameworks using the DREAMIT Workspace. In *Proceedings for the First International Conference on Human Factors and Simulation*. Orlando, FL: July 27-31, 2016.

Nunes, E., Buto, C., Shakarian, P., Lebiere, C., Bennati, S., Thomson, R., & Jaenisch, H. (2015). Malware Task Identification: A Data Driven Approach. In *Proceedings of IEEE/ACM International Symposium on Foundations of Open Source Intelligence and Security Informatics* (FOSINT-SI).

Fields, M., Lennon, C., Lebiere, C., & Martin, M. K. (2015). Recognizing scenes by simulating implied social interaction networks. In Proceedings of the 8th International Conference on Intelligent Robotics and its Applications. Portsmouth, UK, August 24-27, 2015.

Tang, Y., Lebiere, C., Sycara, K., Morrison, D., Lewis, M., & Smart, P. (2015). Information Sharing for Collective Sensemaking. In *Proceedings of the Hawaii International Conference on System Sciences (HICSS-49)*. IEEE Digital Library.

Sycara, K., Lebiere, C., Pei, Y., Morrison, D., Tang, Y., & Lewis, M. (2015). Abstraction of analytical models from cognitive models of human control of robotic swarms. In *Proceedings of the 13th International Conference on Cognitive Modeling (ICCM-2015)*. Groningen, NL.

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Selected Invited Presentations

Cognitive Architectures for Robotics. Invited Keynote Talk at 2015 IEEE International Multi-Disciplinary Conference on Cognitive Methods in Situation Awareness and Decision Support (CogSIMA), March 3-6, Orlando, USA.

Combining Instructions and Examples in Developing Cognitive Models of Human-System Interaction. Invited Keynote Talk at AAAI Spring Symposium on Formal Verification and Modeling in Human-Machine Systems. March 24-26, 2014.

"Neurally-inspired modeling of cognitive architectures", NSF-funded workshop on topic of "Cognitive Science: the Computational Paradigm Symposium", IJCNN conference in Dallas, Texas, August 2013.

"Symbolic and Statistical Approaches to Generalization", Soar Workshop, University of Michigan, June 2013.

Indiana University. School of Public and Environmental Affairs. "Cognitive Architectures for Social Decision Making." May, 2012.

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