Amy L. Sliva

Contact Information	Charles River Analytics Inc. 625 Mount Auburn Street Cambridge, MA, USA 02138 *Phone:* 617-491-3474 x751 *E-mail:* asliva@cra.com *WWW:* http://www.cra.com

Research Interests

Cultural modeling and reasoning, forecasting/predictive modeling, data science, probabilistic logic, linear programs, decision theory, distributed algorithms, international security, counterterrorism, international development

Education

University of Maryland, College Park, MD

Doctor of Philosophy, Computer Science, May 2011

Thesis: Scalable Techniques for Behavioral Analysis and Forecasting
Advisor: Dr. V.S. Subrahmanian

Master of Public Policy (M.P.P.), International Security and Economic Policy, December 2010

Thesis: Information Management and Technology Integration in the Intelligence Community
Advisors: Jonas Siegel, Dr. I. M. Destler, and Dr. Catherine Kelleher

Master of Science, Computer Science, December 2007

Thesis: Parallel Computing for Finding Most Probable Worlds from Opponent Models
Advisor: Dr. V.S. Subrahmanian

Georgetown University, Washington, DC

Bachelor of Science, Computer Science, May 2005

Magna cum Laude, With Honors in Computer Science
Double major in Government (Concentration in International Relations)

Experience

Charles River Analytics Inc, Cambridge, MA

Scientist **August 2013–present**

College of Computer and Information Science & Department of Political Science, **Northeastern University**, Boston, MA

Assistant Professor **August 2011–present**

National Defense University, Institute for National Strategic Studies, Washington, District of Columbia

Researcher **September 2010–October 2012**

The World Bank, Washington, District of Columbia

Short Term Consultant   **May 2008–November 2009**

University of Maryland, College Park, Maryland

Graduate Student & Research Assistant   **August 2005–July 2011**

The MITRE Corporation, McLean, Virginia

Software Systems Developer   **June 2003–May 2005**

Georgetown University, Washington, District of Columbia

Teaching & Research Assistant   **September 2002–May 2005**

TEACHING

Northeastern University, Boston, Massachusetts

College of Computer and Information Science

CS 7180: Behavioral Modeling and Decision-Making in AI	**Fall 2012**
CS 2500: Fundamentals of Computer Science	**Spring 2012**
CS 5100: Foundations of Artificial Intelligence	**Fall 2011**

Department of Political Science

POLS 3408: International Security   **Spring 2013**

University of Maryland, College Park, Maryland

Department of Computer Science—Adjunct Instructor

CMSC 330: Organization of Programming Languages   **Summer 2010**

PROFESSIONAL
ACTIVITIES &
SERVICE

Conference Chairs
International Conference on Social Computing, Behavioral Modeling, and Prediction (SBP)
Area Chair: Military and Security   **2014**

Conference Program Committees
International Conference on Social Computing, Behavioral Modeling and Prediction (SBP)   **2014**

IEEE International Conference on Intelligence and Security Informatics (ISI)   **2012, 2013**

European Intelligence and Security Informatics Conference   **2011, 2012, 2013**

International Symposium on Foundation of Open Source Intelligence and Security Informatics (FOSINT)   **2012**

International Symposium on Open Source Intelligence & Web Mining (OSINT-WM)   **2011**

International Conference on Computational Cultural Dynamics (ICCCD)   **2008**

BOOKS	V.S. Subrahmanian, Aaron Mannes, **Amy Sliva**, Jana Shakarian, John Dickerson. *Computational Analysis of Terrorist Groups: Lashkar-e-Taiba.* Springer-Verlag, 2012.
SHORT ARTICLES AND OP-EDS	V.S. Subrahmanian, Aaron Mannes, and **Amy Sliva**. Op-Ed: "Black hole for foreign aid—As U.S. funds increase, so does terrorism," *The Washington Times*, September 24, 2010.

JOURNAL
PUBLICATIONS

Cristian Molinaro, **Amy Sliva**, V.S. Subrahmanian. "Super-solutions: Succinctly Representing Solutions in Abductive Annotated Probabilistic Temporal Logic," *ACM Transactions on Computational Logic*, To Appear (2013).

Francesco Parisi, **Amy Sliva**, and V. S. Subrahmanian. "A Temporal Database Forecasting Algebra," *International Journal of Approximate Reasoning*, vol. 54, no. 7, 2013.

Gerardo I. Simari, John Dickerson, **Amy Sliva**, V.S. Subrahmanian, "Parallel Abductive Query Answering in Probabilistic Logic Programs," *ACM Transactions on Computational Logic*,vol. 14, no. 2, 2013.

Gerardo I. Simari, Maria Vanina Martinez, **Amy Sliva**, V.S. Subrahmanian, "Focused Most Probable World Computations in Probabilistic Logic Programs," *Annals of Mathematics and Artificial Intelligence*, vol. 64, no. 2-3, pp. 113-143, 2012.

Vanina Martinez, Gerardo I. Simari, **Amy Sliva**, V.S. Subrahmanian, "CONVEX: Context Vectors as a Paradigm for Learning Group Behaviors based on Similarity," *IEEE Intelligent Systems*, vol. 23, no. 4, pp. 51-57, Jul/Aug 2008.

Samir Khuller, Maria Vanina Martinez, Dana Nau, Gerardo Simari, **Amy Sliva**, and V.S. Subrahmanian. "Computing Most Probable Worlds of Action Probabilistic Logic Programs: Scalable Estimation for $10^{30,000}$ Worlds." *Annals of Mathematics and Artificial Intelligence*, November 2007.

V.S. Subrahmanian, Massimiliano Albanese, Maria Vanina Martinez, Dana Nau, Diego Reforgiato, Gerardo I. Simari, **Amy Sliva**, Octavian Udrea, Jonathan Wilkenfeld, "CARA: A Cultural-Reasoning Architecture," *IEEE Intelligent Systems*, vol. 22, no. 2, pp. 12-16, Mar/Apr, 2007.

Blake, M.B., Singh, L., Williams, A.B., Norman, W. N., and **Sliva, A.L.** "A Component-Based Data Management and Knowledge Discovery Framework for Aviation Studies", *International Journal of Information Technology and Web Engineering*, 1(1), 76-90, January-March 2006.

CONFERENCE
PUBLICATIONS

Amy Sliva, Scott Neal Reilly, John Chamberlain, Camille Monnier. "Tools for Validating Causal and Predictive Claims in Social Science Models," *International Conferences on Social Computing, Behavioral-Cultural Modleing, and Prediction (SBP)*, 2014 (Under Review).

Amy Sliva, Mikhail Malyutov, Glenn Pierce, Xin Li. "Threats to Peace: Threat Perception and the Persistence or Desistence of Violent Conflict," *European Intelligence and Security Informatics Conference* (EISIC2013), August 2013.

Amy Sliva, Richard Andres. "Espionage or War?: A Policy Analysis Framework for Cybersecurity," NSF Workshop to Explore Social Science Contributions to Understanding Cyber Security, May 2013.

Si Li, Ryan Rickert, **Amy Sliva**, "Risk-based Models of Attacker Behavior in Cybersecurity," *International Conference on Social Computing, Behavioral-Cultural Modeling, & Prediction* (SBP 2013), April 2013.

Francesco Parisi, **Amy Sliva**, and V. S. Subrahmanian. "Embedding Forecast Operators in Databases," Proceedings of the Fifth International Conference on Scalable Uncertainty Management (SUM), October 2011.

Aaron Mannes, Jana Shakarian, **Amy Sliva**, V.S. Subrahmanian. "A Computationally-Enabled Analysis of Lashkar-e-Taiba Attacks in Jammu & Kashmir," European Intelligence and Security Informatics Conference (EISIC), September 2011 (short paper).

Cristian Molinaro, **Amy Sliva**, and V.S. Subrahmanian. "Abduction in Annotated Probabilistic Temporal Logic," *Leibniz International Proceedings in Informatics*, Technical communication of the International Conference on Logic Programming, July 2011.

Austin Parker, Gerardo I. Simari, **Amy Sliva**, and V.S. Subrahmanian. "Approximate Achievability in Event Databases," Eleventh European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty (ECSQARU), June 2011.

Gerardo I. Simari, Maria Vanina Martinez, **Amy Sliva** and V.S. Subrahmanian. "Scaling Most Probable World Computations in Probabilistic Logic Programs," Proceedings of the Second International Conference on Scalable Uncertainty Management (SUM), October 2008.

Aaron Mannes, **Amy Sliva**, V.S. Subrahmanian, Jonathan Wilkenfeld. "Stochastic Opponent Modeling Agents: A Case Study with Hamas," Second International Conference on Computational Cultural Dynamics (ICCCD), September 2008.

A. Sliva, V. Martinez, G.I. Simari, V.S. Subrahmanian. "The SOMA Terror Organization Portal (STOP): social network and analytic tools for the real-time analysis of terror groups," First International Workshop on Social Computing, Behavioral Modeling, and Prediction, April 2008.

Aaron Mannes, Mary Michael, Amy Pate, **Amy Sliva**, V.S. Subrahmanian, Jonathan Wilkenfeld. "Stochastic Opponent Modeling Agents: A Case Study with Hezbollah," First International Workshop on Social Computing, Behavioral Modeling, and Prediction, April 2008.

Samir Khuller, Vanina Martinez, Dana Nau, Gerardo Simari, **Amy Sliva**, V.S. Subrahmanian. "Finding Most Probable Worlds of Probabilistic Logic Programs," Proceedings of the First International Conference on Scalable Uncertainty Management (SUM), October 2007.

Maria Vanina Martinez, **Amy Sliva**, Gerardo I. Simari, V.S. Subrahmanian. "Tractable Methods for Predicting an Agents Most Probable Actions," Proceedings of the 2007 Grace Hopper Celebration of Women in Computing, October 2007.

Amy Sliva, Maria Vanina Martinez, Gerardo I. Simari, V.S. Subrahmanian. "SOMA Models of the Behaviors of Stakeholders in the Afghan Drug Economy: A Preliminary

Report," Proceedings of the First International Conference on Computational Cultural Dynamics (ICCCD), August 2007.

Blake, M.B., **Sliva, A.L.**, zur Muehlen, M., and Nickerson, J. "Binding Now or Binding Later: The Performance of UDDI Registries", IEEE Hawaii International Conference of System Sciences (HICSS-2007), Track on Technology and Strategies for Realizing Service-Oriented Architectures with Web services, Hawaii, 2007.

Gerardo I. Simari, **Amy Sliva**, Dana Nau, and VS Subrahmanian. "A Stochastic Language for Modelling Opponent Agents," Proceedings of the Fifth International Joint Conference on Agents and Multiagent Systems (AAMAS), 2006.

Saez, G., **Sliva, A.L.**, Blake, M.B. "Web Services-Based Data Management: Evaluating the Performance of UDDI Registries", Proceedings of the International Conference on Web Services (ICWS 2004), San Diego, CA, July 2004 (short paper).

Saez, G., **Sliva, A.L.**, and Blake, M.B. "Evaluating the Impacts of Internet Dynamism on UDDI Mechanisms and Frameworks for Web Services", Technical Symposium in Computer Science Education SIGCSE 2004 (also ACM National Research Competition) Norfolk, VA, March 2004 (abstract and presentation).

BOOK CHAPTERS

Amy Sliva. "Computational Modeling Approaches for Sociocultural Mitigation," *Sociocultural behavior sensemaking: State of the art in understanding the operational environment*. Egeth, J.E., Klein, G.L., and Schmorrow, D. (Eds.). McLean, VA: The MITRE Corporation. Manuscript in preparation.

Amy Sliva, Gerardo I. Simari, Maria Vanina Martinez, and V.S. Subrahmanian. "SOMA: Stochastic Opponent Modeling Agents for Forecasting Violent Behavior," *Handbook of Computational Approaches to Counter-Terrorism*, Springer-Verlag, 2012.

Maria Vanina Martinez, **Amy Sliva**, Gerardo I. Simari, and V.S. Subrahmanian. "Forecasting Changes in Terror Group Behavior," *Handbook of Computational Approaches to Counter-Terrorism*, Springer-Verlag, 2012.

Gerardo I. Simari, John P. Dickerson, **Amy Sliva**, and V.S. Subrahmanian. "Policy Analytics Generation using Action Probabilistic Logic Programs," *Handbook of Computational Approaches to Counter-Terrorism*, Springer-Verlag, 2012.

Sliva, A., Subrahmanian, V. S., Martinez, V., and Simari, G. I. "CAPE: Automatically predicting changes in group behavior". In *Mathematical Methods in Counterterrorism*, N. Memon, J. D. Farley, D. L. Hicks, and T. Rosenorn, Eds. Springer Verlag, 2009, pp. 247–263.

TECHNICAL REPORTS

Amy Sliva. "Finding Most Probable Worlds of Probabilistic Logic Programs: a Parallel Approach", Department of Computer Science, University of Maryland.(Master's Scholarly Paper).

Sliva, A.L. (2005). "Characterizing Data Management Techniques for Service Oriented Computing", Department of Computer Science, Georgetown University (honors thesis).

INVITED TALKS

Amy Sliva. *Scalable Analysis of Behavioral Models and Decision-Making*, Computer Science Colloquium, University of Massachusetts Lowel, December 11, 2013.

Amy Sliva. *Scalable Analysis of Behavioral Models and Decision-Making*, Harvard Applied Statistics Workshop, Harvard University, November 6, 2013.

Amy Sliva. *Using Artificial Intelligence to Understand Global Conflit*, Faculty Works-in-Progress Colloquium, Northeastern Humanities Center, Northeastern University, November 5, 2012.

Amy Sliva. "Artificial Intelligence and Cyber Security," *Academic Minute*, Northeast Public Radio, October 23, 2012.

Amy Sliva. *Balkan Security, Technology, and Education Conference–the Challenges Within Cyber Infrastructure*, Ministry of Security of Bosnia and Herzegovina & the American University of Bosnia and Herzegovina, September 2012.

Amy Sliva. "Security Informatics: An Artificial Intelligence Approach to Security," Boston University Computer Science Department Theory Seminar, December 2011.

Amy Sliva. "Interdisciplinary Research at Northeastern: The Intersection of Artificial Intelligence and Political Science," Northeastern University Board of Trustees Meeting, October 2011.

Amy Sliva. "Predicting changes in terror group behaviors", Second International Conference on Computational Cultural Dynamics (ICCCD), September 2008.

Awards and Honors		
Northeastern University		
Excellence in Teaching Award–Nomination		**February 2012**
Booz Allen Hamilton		
Case Competition		**February 2008**
Department of Computer Science, University of Maryland		
Outstanding Dissertation Award–Nomination		**2011**
Verizon Graduate Fellowship		**2005**

AFFILIATIONS

Association for Computing Machinery (ACM)

Association for Computing Machinery-Women (ACM-W)

Institute of Electrical and Electronics Engineers (IEEE)

IEEE Women in Engineering

Association for the Advancement of Artificial Intelligence (AAAI)

American Political Science Association (APSA)

International Studies Association (ISA)