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EDUCATION

2013 PH.D. Computer Science and Engineering, University at Buffalo, Buffalo, NY
Dissertation: MGLAIR: A Multimodal Cognitive Agent Architecture.
Dissertation chair: Stuart C. Shapiro
2004 M.S. Computer Science and Engineering, University at Buffalo, Buffalo, NY
2002 B.S. Computer Science, Canisius College, Buffalo, NY

APPOINTMENTS HELD

2015-2016 NIH/NCI BD-STEP Fellow, Veterans Health Administration
2015-2016 Postdoctoral Associate, Department of Biomedical Informatics, University at Buffalo
2013-2015 Postdoctoral Associate, Department of Oral Diagnostic Sciences, University at Buffalo

FORTHCOMING PUBLICATIONS

2016 Jonathan Bona, Selja Seppälä, and Werner Ceusters. Analysis of SNOMED 'Bleeding' Concepts & Terms. *International Conference on Biomedical Ontologies*, ICBO 2016, Corvalis, Oregon, August 1 - 4, 2016 (Accepted poster abstract).

2016 William Duncan, Travis Allen, Jonathan Bona, Olivia Helfer, Barry Smith, Alan Ruttenberg, Alexander D. Diehl. The ImmPort Antibody Ontology. *International Conference on Biomedical Ontologies*, ICBO 2016, Corvalis, Oregon, August 1 - 4, 2016 (Accepted poster abstract).

2016 Jonathan Bona and Werner Ceusters. Identifying Missing Finding Site Relations in SNOMED CT. *American Medical Informatics Association (AMIA) 2016 Annual Symposium*, Chicago, Illinois, November 12-16, 2016 (Accepted poster abstract).

2016 Thomas Bittner, Jonathan Bona, and Werner Ceusters. Ontologies of Dynamical Systems and Verifiable Ontology-based Computation: Towards a Haskell-based Implementation of Referent Tracking. *Ninth International Conference on Formal Ontology in Information Systems* (FOIS 2016), Annecy, France, July 6th-9th, 2016 (Accepted full paper)

PUBLICATIONS

2016 Werner Ceusters and Jonathan Bona. Ontological Foundations for Tracking Data Quality through the Internet of Things. *Special Topic Conference Transforming Healthcare with the Internet of Things* (EFMI-STC2016), Paris, France, April 17-19, 2016.

2015 Jonathan P. Bona, Gunther Kohn and Alan Ruttenberg. An Ontology-Driven Patient History Questionnaire System. *American Medical Informatics Association (AMIA) 2015 Annual Symposium*, Poster session, San Francisco, California, November 14-18, 2015.

2015 Jonathan Bona and Werner Ceusters. Replacing EHR structured data with explicit representations. *International Conference on Biomedical Ontologies*, ICBO 2015, Early career track, Lisbon, Portugal, July 27-30, 2015.

2015 Jonathan Bona, Gunther Kohn and Alan Ruttenberg. Ontology-driven patient history questionnaires. *International Conference on Biomedical Ontologies*, ICBO 2015, Early career track, Lisbon, Portugal, July 27-30, 2015.

2014 Jonathan P. Bona, Jenny Rouleau, and Alan Ruttenberg. Representing Modification Sites in PRO. *Proceedings of the 5th International Conference on Biomedical Ontology* (ICBO 2014), Houston, Texas.

2014 Mark Jensen, Alexander P. Cox, Jonathan P. Bona, William Duncan, Patrick L. Ray, Alexander D. Diehl Applications of OBI 'assay'. *Proceedings of the 5th International Conference on Biomedical Ontology* (ICBO 2014), Houston, Texas.

2014 Patrick Beeson, David Kortenkamp, R. Peter Bonasso, Andreas Persson, Amy Loutfi, and Jonathan P. Bona. An Ontology-Based Symbol Grounding System for Human-Robot Interaction. *Proceedings of the 2014 AAAI Fall Symposium*, Washington, DC.

2013 Jonathan P. Bona and Stuart C. Shapiro. Specifying Modalities in the MGLAIR Architecture. *Proceedings of the Workshop on Formalizing Mechanisms for Artificial General Intelligence and Cognition (Formal MAGIC)*, Osnabrück, Germany.

2013 Albert Goldfain, Min Xu, Jonathan Bona, and Barry Smith. Ontology Based Annotation of Contextualized Vital Signs. *Proceedings of the International Conference on Biomedical Ontology (ICBO)*, Montreal, Quebec.

2013 Jonathan P. Bona and Stuart C. Shapiro. Modality in the MGLAIR Architecture. *Biologically Inspired Cognitive Architectures 2012: Proceedings of the Third Annual Meeting of the BICA Society*, 75-81, Berlin, 2013. Springer.

2010 Stuart C. Shapiro and Jonathan P. Bona. The GLAIR Cognitive Architecture. *International Journal of Machine Consciousness*, 2 (2010), 307-332.

2009 J. Anstey, A.P. Seyed, S. Bay-Cheng, D. Pape, S. Shapiro, J. Bona, and S. Hibit. The Agent Takes the Stage. *International Journal of Arts and Technology 2*, 4 (2009), 277-296.

2009 Stuart C. Shapiro and Jonathan P. Bona. The GLAIR Cognitive Architecture. In *Alexei Samsonovich, editor, Biologically Inspired Cognitive Architectures-II: Papers from the AAAI Fall Symposium*, 141-152, Menlo Park, CA, 2009. AAAI Press.

2009 Jonathan P. Bona and Stuart C. Shapiro. SNePS As An Ontological Reasoning Tool. *Proceedings of the International Conference on Biomedical Ontologies (ICBO)*, Buffalo, NY.

Technical Reports

2011 Jonathan P. Bona and Stuart C. Shapiro. Creating SNePS/Greenfoot Agents and Worlds. SNeRG Technical Note 46, Department of Computer Science and Engineering, University at Buffalo, The State University of New York, Buffalo, NY.

2009 Jonathan Bona and Stuart C. Shapiro. Report on SNePS and RTS. SNeRG Technical Note 45, Department of Computer Science and Engineering, University at Buffalo, Buffalo, NY.

2008 Jonathan Bona. OWL Ontologies in SNePS. SNeRG Technical Note 41, Department of Computer Science and Engineering, University at Buffalo, Buffalo, NY.

INVITED TALKS

2015 Toward replacing EHR structured data with explicit representations. CTS Ontology Workshop 2015, Ontology in Practice. The Fourth Clinical and Translational Science Ontology Workshop. Charleston, SC, September 23-25, 2015

2014 The MGLAIR Multimodal Cognitive Agent Architecture. Centre for Applied Autonomous Sensor Systems, Örebro University, Örebro, Sweden. October 15, 2014.

RESEARCH EXPERIENCE

2015-2016 Postdoctoral Fellow, Department of Biomedical Informatics, University at Buffalo

Analyzing and modeling data from outpatient EHR records from the perspective of realist ontology and referent tracking. Identifying patterns of errors in the data by focusing on the entities in the world that patient records are about; developing procedures to map those records to ontological representations consistent with OGMS and related OBO Foundry resources.

Building methods and software that implements them to assess the quality and consistency of SNOMED CT releases.

Contributing to development of the ImmPort Antibody Ontology.

2013-2015 Postdoctoral Associate, School of Dental Medicine, University at Buffalo

Developed applications of ontology and semantic web tools to healthcare informatics; built ontological representations for use in a clinical information and management system to support dental education, research, and patient care.
Developed representations of post-translational modifications and modification sites for the Protein Ontology.
Created ontology and ontology-driven software system for medical history questionnaires.

2012-2015 Information Technology Consultant, Roswell Park Cancer Institute.

Conducting ontology-based analysis of a pathology report database to facilitate answering research questions about the data. Participated in a number of other multidisciplinary collaborations. including projects on clinical trials matching and information needs for tumor board meetings.

2012-2013 Graduate Assistant. School of Dental Medicine, University at Buffalo

Investigated and developed applications of ontology, semantic web tools, and natural language processing to analysis of clinical data, and built and maintained software tools to support these tasks.

2006-2013 Member, SNePS Research Group and SNePS Implementation Group, University at Buffalo

Developed theory and implementation of the MGLAIR cognitive agent architecture, which provides a model of concurrent multimodal perception and action for embodied agents.
Contributed to the implementation of the SNePS knowledge representation and reasoning system, and investigated applications of the system for a number of cognitive science projects.

2010-2012 Research Intern. Blue Highway Inc., Syracuse, NY

Researched and developed applications of machine learning, ontology, and knowledge representation & reasoning techniques for managing sensor data in the health informatics domain.

2008-2009 Graduate Assistant. University at Buffalo

Extended and adapted the SNePS system for use as a reasoning tool for inference over ontology-structured instance data.

2006-2007 Research Assistant. Intermedia Performance Studio, University at Buffalo

Designed and implemented logic-based computational agents and software tools for virtual drama performances and other collaborative interdisciplinary projects.

TEACHING EXPERIENCE

2013-2014 Adjunct Professor, Computer Science Department, Canisius College

Introduction to Programming (Spring 2014)
Computer Programming for Science (Fall 2013, Fall 2014)

2011 Adjunct Instructor, Department of Computer Science and Engineering, University at Buffalo

Programming Language Concepts (Summer 2011)

2009-2010 Teaching Assistant, Computer Science and Engineering, University at Buffalo

Programming Language Concepts (Spring 2010)
Knowledge Representation and Reasoning (Spring 2009, Fall 2009)

PROFESSIONAL SERVICE

2015-2016 Reviewer for American Medical Informatics Association Annual Symposium.
2011-2016 Reviewer for Biologically Inspired Cognitive Architectures.

PROFESSIONAL MEMBERSHIP/AFFILIATIONS

American Medical Informatics Association
Association for Computing Machinery
International Association for Ontology and its Applications