Jonathan P. Bona, Ph.D.

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Department of Biomedical Informatics
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APPOINTMENTS HELD

2020-	Co-Director, Arkansas Center for Health Disparities T32 Pre-doctoral Research Training Program
2018-	Assistant Professor, Department of Biomedical Informatics, University of Arkansas for Medical Sciences
2016-2018	Postdoctoral Fellow, Department of Biomedical Informatics, University of Arkansas for Medical Sciences
2017	Adjunct Lecturer, School of Information Sciences, University of Illinois at Urbana-Champaign
2015-2016	NIH/NCI BD-STEP Fellow, Veterans Health Administration
2015-2016	Postdoctoral Associate, Department of Biomedical Informatics, University at Buffalo
2014-2015	Senior Research Support Specialist, Institute for Healthcare Informatics, University at Buffalo
2013-2015	Postdoctoral Associate, Department of Oral Diagnostic Sciences, University at Buffalo
2013-2014	Adjunct Professor, Department of Computer Science, Canisius College

ACTIVE RESEARCH FUNDING

2022-2025	Trauma Institutional Priorities and Teams for Outcome Efficacy (TIPTOE) (NIH/NIGMS R01GM111324-07A1) Role: Co-Investigator
2020-2024	Arkansas Center for Health Disparities T32 Pre-doctoral Research Training Program (NIH/DHHS T32MD015016) Role: Co-Director / Co-PI
2020-2024	EuCanImage: A European Cancer Image Platform Linked to Biological and Health Data for Next-Generation Artificial Intelligence and Precision Medicine in Oncology (EU SEP-210631720) Role: Co-Investigator
2019-2024	Expanding Translational Research in Arkansas - UL1 (NIH/NCATS 1UL1TR003107) Role: Contributor

PEER-REVIEWED PUBLICATIONS

2023	*In press*: Matthew Najarian, Anthony Goudie, Jonathan Bona, Mandana Rezaeiahari, Sean G. Young, Cari A. Bogulski, and Corey Hayes. Socioeconomic Determinants of Remote Patient Monitoring Implementation Among Rural and Urban Hospitals. Telemedicine and e-Health. Accepted 12/27/2022.
2023	Catherine C. Shoults, Michael W. Rutherford, Aaron S. Kemp, Merideth A. Addicott, Aliza Brown, Carolyn J. Greene, Corey J. Hayes, Jennifer M. Gan, Linda J. Larson-Prior, and Jonathan P. Bona. Analysis of caregiver burden expressed in social media discussions. Int. J. Environ. Res. Public Health 2023, 20(3), 1933. doi:10.3390/ijerph20031933

2023   Jonathan P. Bona, Joseph Utecht, Aaron S. Kemp, Jennifer M. Gan, Alison Caballero, Christopher R. Trudeau, Mathias Brochhausen, and Laura James. The Informed Consent Form Navigator: A Tool for Producing Readable and Compliant Consent Documents. Journal of Clinical and Translational Science. 2023;7(1):e3. doi:10.1017/cts.2022.507

2022   Jonathan P. Bona, Joseph Utecht, Sarah Bost, Mathias Brochhausen, and Fred Prior. The PRISM semantic cohort builder: a novel tool to search and access clinical data in TCIA imaging collections. Physics in Medicine & Biology. 2022 Dec 23;68(1):014003. PMID: 36279873.

2022   Allen M Smith, Mahip Acharya, Teresa Hudson, Corey Hayes, Austin Porter, Jamie Turpin, Jonathan Bona, Joseph Utecht, and Bradley C Martin. Evaluating the temporal association between the recency of prescribed controlled substance acquisition and fatal and non-fatal opioid overdose. J Am Pharm Assoc (2003). 2022 Dec 23:S1544-3191(22)00420-4. PMID: 36628659.

2021   Divyan Chopra, Chenghui Li, Jacob T. Painter, Jonathan P. Bona, Intawat Nookaew, and Bradley C. Martin. Characteristics and Network Influence of Providers Involved in the Treatment of Patients With Chronic Back, Neck or Joint Pain in Arkansas. The Journal of Pain 22, no. 12 (2021): 1681-1695. PMID: 34174385.

2021   Shorabuddin Syed, Mahanazuddin Syed, Hafsa Bareen Syeda, Maryam Garza, William Bennett, Jonathan Bona, Salma Begum, Ahmad Baghal, Meredith Zozus, and Fred Prior. API driven on-demand participant ID pseudonymization in heterogeneous multi-study research. Healthcare Informatics Research 27, no. 1 (2021): 39-47. PMID: 33611875.

2021   Jonathan Bona, Aaron S. Kemp, Carli Cox, Tracy S. Nolan, Lakshmi Pillai, Aparna Das, James E. Galvin, Linda Larson-Prior, Tuhin Virmani, and Fred Prior. Semantic Integration of Multi-Modal Data and Derived Neuroimaging Results Using the Platform for Imaging in Precision Medicine (PRISM) in the Arkansas Imaging Enterprise System (ARIES). Frontiers in Artificial Intelligence 4 (2021). PMID: 35224477.

2020   Andrey Fedorov, Matthew Hancock, David Clunie, Mathias Brochhausen, Jonathan Bona, Justin Kirby, John Freymann et al. DICOM re□ encoding of volumetrically annotated Lung Imaging Database Consortium (LIDC) nodules. Medical physics 47, no. 11 (2020): 5953-5965. PMID: 32772385.

2020   Ashish Sharma, Lawrence Tarbox, Tahsin Kurc, Jonathan Bona, Kirk Smith, Pradeeban Kathiravelu, Erich Bremer, Joel H. Saltz, and Fred Prior. PRISM: A Platform for Imaging in Precision Medicine. JCO Clinical Cancer Informatics. 2020;4:491-499. PMID: 32479186

2019   Jonathan P. Bona, Mathias Brochhausen, and William R. Hogan. Enhancing the drug ontology with semantically-rich representations of national drug codes and rxnorm unique concept identifiers. BMC bioinformatics 20.21 (2019): 1-14. PMID: 31865907

2019   Jonathan P. Bona, Joseph Utecht, Sarah Bost, Corey Hayes, and Mathias Brochhausen. Building a Shared Ontology Use Patterns Repository. *Proceedings of the International Conference on Biomedical Ontology (ICBO) 2019*, Buffalo, NY, July 30 - August 2, 2019.

2019   Jonathan P. Bona, Fred W. Prior, Meredith N. Zozus, and Mathias Brochhausen. Enhancing Clinical and Clinical Research Data with Biomedical Ontologies - Insights from the Knowledge Representation Perspective. Yearbook of Medical Informatics 28 (2019): 140-151. PMID: 31419826

2018   Jonathan P. Bona, Tracy S. Nolan, Dillon Gibson, and Mathias Brochhausen. Ontologies Enabling Non-image Data Queries in The Cancer Imaging Archive. *American Medical Informatics Association 2018 Annual Symposium* Poster session, San Francisco, CA, November 3 - 7, 2018.

2018   Jonathan P. Bona, Tracy S. Nolan, and Mathias Brochhausen. Ontology-Enhanced Representations of Non-image Data in The Cancer Imaging Archive. *Proceedings of the International Conference on Biological Ontology 2018*, Corvallis, OR, August 7 - 10, 2018.
CEUR-WS.org, online http://ceur-ws.org/Vol-2285/ICBO_2018_paper_37.pdf

2018   Mathias Brochhausen, Jonathan Bona, and Bernd Blobel. The Role of Axiomatically-Rich Ontologies in Transforming Medical Data to Knowledge. *Studies in Health Technology and Informatics* 249 (2018): 38-49. PMID: 29866954

2018   Jonathan P. Bona and Werner Ceusters. Mismatches between major subhierarchies and semantic tags in SNOMED CT. *Journal of Biomedical Informatics* 81 (2018): 1-15. PMID: 29462668

2017   Jonathan P. Bona. Does Semantic Tag Usage in SNOMED CT Match its Concept Hierarchy? *American Medical Informatics Association 2017 Annual Symposium* Poster session, Washington, DC, November 4 - 8, 2017; 1973.

2017   Joseph R. Utecht, Jonathan P. Bona, and Mathias Brochhausen. Creating RDF Data on Trauma Care Organizations from Questionnaires. *American Medical Informatics Association 2017 Annual Symposium* Poster session, Washington, DC, November 4 - 8, 2017.

2017   Jonathan Bona and Werner Ceusters. Scrutinizing the relationships between SNOMED CT concepts and semantic tags. *Proceedings of the 8th International Conference on Biomedical Ontology (ICBO 2017)*, Newcastle-upon-Tyne, United Kingdom, September 13th - 15th, 2017.

2016   Werner Ceusters and Jonathan Bona. Pain in SNOMED CT: is there an anesthetic? In *Zaibert, Leo (ed.) The Theory and Practice of Ontology*. Palgrave MacMillan, 2016:157-185.

2016   Darren A. Natale, Cecilia N. Arighi, Judith A. Blake, Jonathan Bona, Chuming Chen, Sheng-Chih Chen, Karen R. Christie, Julie Cowart, Peter D'Eustachio, Alexander D. Diehl, Harold J. Drabkin, William D. Duncan, Hongzhan Huang, Jia Ren, Karen Ross, Alan Ruttenberg, Veronica Shamovsky, Barry Smith, Qinghua Wang, Jian Zhang, Abdelrahman El-Sayed, Cathy H. Wu. Protein Ontology (PRO): enhancing and scaling up the representation of protein entities. *Nucleic Acids Research* 2016; 45 (D1): D339-D346.

2016   Werner Ceusters and Jonathan Bona. Analyzing SNOMED CT's Historical Data: Pitfalls and Possibilities. *American Medical Informatics Association 2016 Annual Symposium Proceedings*, Chicago IL, November 12-16, 2016;361-370.

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.

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 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   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.

Abstracts and Posters

2019   Jonathan P. Bona, Aaron S. Kemp, Tracy Nolan, Linda Larson-Prior, Aparna Das,Tuhin Virmani, Lakshmi Pillai, Mathias Brochhausen, and Fred Prior. Semantic Integration of Neuroinformatics Data in the Arkansas Image Enterprise System with Open Biomedical Ontologies. Poster abstract forthcoming in *Proceedings of the International Conference on Biomedical Ontology (ICBO) 2019*, Buffalo, NY, July 30 - August 2, 2019.

2019   Jonathan P. Bona, Joseph Utecht, and Mathias Brochhausen. Providing a User-oriented Interface to Enable Semantic Queries in PRISM. American Medical Informatics Association 2019 (AMIA) Annual Symposium, Poster session, Washington, DC, November 16 - 20, 2019.

2019   Aaron S. Kemp, Jonathan P. Bona, Tracy S. Nola, Linda Larson-Prior, Tuhin Virmani, Lakshmi Pillai, Mathias Brochhausen, Lawrence Tarbox, and Fred Prior. Semantic Representations of Multi-Modal Data, NeuroInformatic Processing Pipelines, and Derived Neuroimaging Results in the Arkansas Image Enterprise System (ARIES). American Medical Informatics Association 2019 (AMIA) Annual Symposium, Poster session, Washington, DC, November 16 - 20, 2019.

2019   Corey J. Hayes, Jonathan P. Bona, and Mathias Brochhausen. Using Semantic Representations for Urine Drug Tests in the Veterans Health Administration. American Medical Informatics Association 2019 (AMIA) Annual Symposium, Poster session, Washington, DC, November 16 - 20, 2019.

2018   Corey J. Hayes, Jonathan P. Bona, and Mathias Brochhausen. Towards the Development of an Opioid Misuse Ontology. Poster abstract in *Proceedings International Conference on Biological Ontology 2018*, Corvallis, OR, August 7 - 10, 2018.
        CEUR-WS.org, online http://ceur-ws.org/Vol-2285/ICBO_2018_paper_56.pdf

2017   Jonathan Bona, John Grohol, Meredith Zozus, Robert Zozus, and Mathias Brochhausen. Toward using ontologies to improve results in searches for mental health information. (Awarded best poster) *Proceedings of the 8th International Conference on Biomedical Ontology (ICBO 2017)*, Newcastle-upon-Tyne, United Kingdom, September 13th - 15th, 2017.

2016   Jonathan Bona and Werner Ceusters. Identifying Missing Finding Site Relations in SNOMED CT. *American Medical Informatics Association 2016 Annual Symposium Proceedings*, Chicago IL, November 12-16, 2016;1347.

2016   Jonathan Bona, Selja Seppala, and Werner Ceusters. Analysis of SNOMED 'Bleeding' Concepts & Terms. *Proceedings of the Joint International Conference on Biological Ontology and BioCreative (ICBO-BioCreative 2016)*, Corvallis, Oregon, United States, August 1-4, 2016.

2016	William Duncan, Travis Allen, Jonathan Bona, Olivia Helfer, Barry Smith, Alan Ruttenberg, Alexander D. Diehl. The ImmPort Antibody Ontology. *Proceedings of the Joint International Conference on Biological Ontology and BioCreative (ICBO-BioCreative 2016)*, Corvallis, Oregon, United States, August 1-4, 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.
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.

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.
2009	Jonathan Bona and Michael Prentice. PyRovio: Python API for WowWee Rovio. Unpublished white paper. 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

2019	Semantic Integration of Non-Image Data in The Cancer Imaging Archive Collections with Biomedical Ontologies. Practical Big Data Workshop (PBDW 2019), Ann Arbor, MI, June 7, 2019.
2018	The Role of Axiomatically-Rich Ontologies in Transforming Medical Data to Knowledge. 15th International Conference on Wearable, Micro and Nano Technologies for Personalized Health (pHealth 2018), Gjøvik, Norway, June 14, 2018.
2017	Knowledge Representation and Reasoning in Biomedical Informatics. Biomedical Informatics Research and Applications Seminar Series. University of Arkansas for Medical Sciences, Little Rock, AR, October 19, 2017.
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, Orebro, Sweden. October 15, 2014.

EDUCATION

2013	Ph.D. Computer Science and Engineering, University at Buffalo, Buffalo, NY
2004	M.S. Computer Science and Engineering, University at Buffalo, Buffalo, NY
2002	B.S. Computer Science, Canisius College, Buffalo, NY

TEACHING EXPERIENCE

2018-   Assistant Professor, Biomedical Informatics, University of Arkansas for Medical Sciences

Information Modeling: from Data to Knowledge (Fall 2022)
Natural Language Processing for Biomedical Informatics (Fall 2021)
Information Modeling: from Data to Knowledge (Fall 2021)
Natural Language Processing for Biomedical Informatics (Fall 2020)
Information Modeling: from Data to Knowledge (Fall 2020)
Information Modeling: from Data to Knowledge (Fall 2019)

Machine Learning for Biomedical Informatics (1 guest lecture, Spring 2020)
Foundations of Biomedical Informatics: Clinical Information (1 guest lecture, Spring 2020)
Computational Methods in Biomedical Informatics (4 guest lectures, Fall 2019)
Foundations of Biomedical Informatics: Clinical Information (1 guest lecture, Fall 2018)

2017-2018   Postdoctoral Fellow, Biomedical Informatics, University of Arkansas for Medical Sciences

Information Modelling – From Data to Knowledge (4 guest lectures, Fall 2018)
Introduction to Biomedical Informatics II (4 guest lectures, Spring 2018)
Reasoning Medical Data (6 guest lectures, Spring 2017)

2017   Adjunct Lecturer, School of Information Sciences, University of Illinois at Urbana-Champaign

Information Modelling (Summer 2017)

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

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

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)

SERVICE TO THE PROFESSION

2022   Scientific Program Committee Member, International Conference for Biomedical Ontology (ICBO 2022)
2021 -   Chair, American Medical Informatics Association Knowledge Representation and Semantics Working Group
2021   Scientific Program Committee Member, International Conference for Biomedical Ontology (ICBO 2021)
2020   Reviewer for Journal of Clinical Oncology
2020   Chair-elect, American Medical Informatics Association Knowledge Representation and Semantics Working Group

2020	Scientific Program Committee Member, International Conference for Biomedical Ontology (ICBO 2020)
2019 - 2020	Reviewer for Journal of Biomedical Informatics
2019 - 2020	Reviewer for American Medical Informatics Association Informatics Summit
2019	Scientific Program Committee Member, International Conference for Biomedical Ontology (ICBO 2019)
2019	Scientific Program Committee Member, American Medical Informatics Association Annual Symposium (AMIA 2019)
2018 - 2020	Reviewer for BMC Medical Informatics and Decision Making
2017	Reviewer for Cognitive Systems Research.
2017	Reviewer for the Journal of Applied Ontology
2015 - 2020	Reviewer for American Medical Informatics Association Annual Symposium.
2011 - 2016	Reviewer for Biologically Inspired Cognitive Architectures.

DEPARTMENTAL / UNIVERSITY SERVICE

2023	Member, UAMS Department of Biomedical Informatics Admissions Committee
2020	Member, UAMS COVID-19 Research Steering Committee
2020	Chair, UAMS COVID-19 Research Data Science and Artificial Intelligence Subcommitee
2019 - 2020	Member, Arkansas Clinical Data Repository Avisory Commitee
2019	Member, UAMS Department of Biomedical Informatics Faculty Search Committee
2018 - 2022	Chair, UAMS Department of Biomedical Informatics Admissions Committee
2018 - 2022	Member, UAMS Department of Biomedical Informatics Curriculum Committee

PROFESSIONAL MEMBERSHIP/AFFILIATIONS

Association for Computing Machinery (ACM)
American Medical Informatics Association (AMIA)
International Association for Ontology and its Applications (IAOA)
The Institute of Electrical and Electronics Engineers (IEEE)