

# LUCY LU WANG

Curriculum vitae

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## APPOINTMENTS

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### The Allen Institute for Artificial Intelligence (AI2)

2019–2020 Postdoctoral Young Investigator

### University of Washington

2018–2019 Research Assistant, Department of Radiology

2014–2018 NLM Graduate Trainee, Department of Biomedical Informatics and Medical Education

## EDUCATION

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2019 Ph.D., Biomedical Informatics and Medical Education  
University of Washington, Seattle, WA

2013 M.S., Applied Biomedical Engineering  
The Johns Hopkins University, Baltimore, MD

2009 B.S., Physics  
Massachusetts Institute of Technology, Cambridge, MA

## PUBLICATIONS

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### Journal and Conference Articles

- 2019 Wang, L.L., Hayman, G.T., Smith, J.R., Tutaj, M., Shimoyama, M.E., Gennari, J.H. Predicting instances of Pathway Ontology classes for pathway integration. *Journal of Biomedical Semantics*. 10:11. PMID: 31196182, doi: 10.1186/s13326-019-0202-8.
- 2018 Wang, L.L., Bhagavatula, C., Neumann, M., Lo, K., Wilhelm, C. & Ammar, W. Ontology alignment in the biomedical domain using entity definitions and context. *Proceedings of the 56th Annual Meeting of the Association for Computational Linguistics*. arXiv:1806.07976
- 2018 Ammar, W., Groeneveld, D., Bhagavatula, C., Beltagy, I., Crawford, M., Downey, D. et al. Construction of the literature graph in Semantic Scholar. *Proceedings of the 2018 Conference of the North American Chapter of the Association for Computational Linguistics*. arXiv:1805.02262
- 2017 Kaminsky, D.A., Wang, L.L., Bates, J.H., Thamrin, C., Shade, D.M., Dixon, A. et al. Fluctuation analysis of peak expiratory flow and its associations with treatment failure in

- asthma. *American Journal of Respiratory and Critical Care Medicine*, 195(8): 993-9. pmid: 27814453, doi: 10.1164/rccm.201601-0076OC.
- 2017 Wang, L.L. & Gennari, J.H. Similarity metrics for determining overlap among biological pathways. *Proceedings of the 2017 International Conference on Biomedical Ontology*.
- 2016 Jung, H., Law, A.B., Grunblatt, E., Wang, L.L., Kusano, A., Mejino, J.L.V., Jr. et al. Development of a novel Markov chain model for the prediction of head and neck squamous cell carcinoma dissemination. *AMIA Annual Symposium Proceedings, 2016*: 1832-9. pmid: 28269942
- 2016 Wang, L.L., Gennari, J.H. & Abernethy, N.F. An analysis of differences in biological pathway resources. *Proceedings of the 2016 Joint International Conference on Biological Ontology and BioCreative*.
- 2015 Zaidman, C.M., Wang, L.L., Connolly, A.M., Florence, J., Wong, B.L., Parsons, J.A. et al. Electrical impedance myography in Duchenne muscular dystrophy and health controls: a multi-center study of reliability and validity. *Muscle & Nerve*, 52(4): 592-7. pmid: 25702806, doi: 10.1002/mus.24611.
- 2015 Wang, L.L., Grunblatt, E., Jung, H., Kalet, I.J. & Whipple, M.E. Biological model development as an opportunity to provide content auditing for the foundational model of anatomy ontology. *AMIA Annual Symposium Proceedings, 2015*: 2111-20. pmid: 26958311
- 2011 Wang, L.L., Spieker, A.J., Li, J. & Rutkove, S.B. Electrical impedance myography for monitoring motor neuron loss in the SOD1 G93A amyotrophic lateral sclerosis rat. *Clinical Neurophysiology*, 122: 2505-11. pmid: 21612980, doi: 10.1016/j.clinph.2011.04.021.
- 2011 Wang, L.L., Ahad, M., McEwan, A., Li, J., Jafarpoor, M. & Rutkove, S.B. Assessment of alterations in the electrical impedance of muscle after experimental nerve injury via finite-element analysis. *IEEE Transactions on Biomedical Engineering*, 58(6): 1585-91. pmid: 21224171, doi: 10.1109/TBME.2011.2104957.

### Refereed Conference Abstracts

- 2019 Wang, L.L., Taffjord, O., Cohan, A., Jain, S., Skjonsberg, S., Schoenick, C., Botner, N., Ammar, W. Extracting evidence of supplement-drug interactions from literature. *Machine Learning for Health Workshop at NeurIPS*. arXiv: 1909.08135

### Manuscripts in Submission

- 2019 Lo, K.\*, Wang, L.L.\*, Neumann, M., Kinney, R., Weld, D. GORC: a large contextual citation graph of academic papers. arXiv: 1911.02782.
- 2019 Wang, L.L., Stanovsky, G., Weihs, L., Etzioni, O. Gender trends in computer science authorship. arXiv: 1906.07883.

### Preprints

- 2018 Wang, L.L., Lin, H., Bao, X., Sengupta, S., Busby, B. & Butler, R.R., III. PhenotypeXpression: sub-classification of disease states using public gene expression data and literature. bioRxiv: 10.1101/461301

## FELLOWSHIPS & AWARDS

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- 2014–2018 National Library of Medicine Informatics Training Fellowship  
2015, 2017 UW Graduate School Fund for Excellence and Innovation Travel Award  
2016 BioCreative/ICBO travel fellowship

## GRANTS

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- 2018 UW Student Technology Grant, \$88,426  
University of Washington Student Technology Fee Committee

## CONFERENCE ACTIVITY

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- 2019 “Extracting evidence of supplement-drug interactions from literature.” Machine Learning for Health (ML4H) at NeurIPS, December 13, 2019, Vancouver, BC, Canada.
- 2019 “Automated Identification of Noise Signal in Spinal DCE-MRI using Independent Component Analysis and Unsupervised Machine Learning.” International Society for Magnetic Resonance in Medicine (ISMRM) 27th Annual Meeting and Exhibition, May 11-16, 2019, Montréal, QC, Canada.
- 2018 “Quantifying the effects of gene entity disambiguation for GSEA.” American Medical Informatics Association (AMIA) Annual Symposium, November 3-7, 2018, San Francisco, CA, USA.
- 2018 “Semi-automated integration of pathway data for pathway analysis.” Knowledge Representation and Semantics (KRS) Working Group Pre-Symposium Doctoral Consortium, American Medical Informatics Association (AMIA) Annual Symposium, November 3, 2018, San Francisco, CA, USA.
- 2018 “Ontology alignment in the biomedical domain using entity definitions and context.” Bio-NLP Workshop at the Annual Meeting of the Association for Computational Linguistics (ACL), July 19, 2018, Melbourne, Victoria, Australia.
- 2018 “Ontology-based integration of pathway databases using Pathway Ontology annotations.” Bio-Ontologies at the 26th Conference on Intelligent Systems for Molecular Biology (ISMB), July 6-10, 2018, Chicago, IL, USA.
- 2017 “Similarity metrics for determining overlap among biological pathways.” International Conference on Biomedical Ontology (ICBO), September 13-15, 2017, Newcastle upon Tyne, United Kingdom.
- 2017 “Detection and Functional Classification of Fusion Genes Using Pathway Expression Profiles.” American Medical Informatics Association (AMIA) Joint Summits on Translational Science, March 27-30, 2017, San Francisco, CA, USA.
- 2016 “Discovering representational differences between pathway knowledge bases for pathway resource merging.” American Medical Informatics Association (AMIA) Annual Symposium, November 12-16, 2016, Chicago, IL, USA.
- 2016 “Auditing tree-like organ systems in the FMA using network motifs.” American Medical Informatics Association (AMIA) Annual Symposium, November 12-16, 2016, Chicago, IL, USA.

- 2016 “An analysis of differences in biological pathway resources.” Joint International Conference on Biological Ontology (ICBO) and BioCreative, August 1-4, 2016, Corvallis, OR, USA.
- 2016 “Identifying and resolving inconsistencies in biological pathway resources.” National Library of Medicine (NLM) Informatics Training Conference, June 27-28, 2016, Columbus, OH, USA.
- 2015 “Biological model development as an opportunity to provide content auditing for the foundational model of anatomy ontology.” American Medical Informatics Association (AMIA) Annual Symposium, November 14-18, 2015, San Francisco, CA, USA.
- 2015 “Development of a discharge ontology to support postanesthesia discharge decision making.” International Conference on Biomedical Ontology (ICBO), July 26-30, 2015, Lisbon, Portugal.
- 2015 “Ontological content auditing during model creation using the foundational model of anatomy.” National Library of Medicine (NLM) Informatics Training Conference, June 23-24, 2015, Bethesda, MD, USA.
- 2014 “Detrended fluctuation analysis of peak expiratory flow and its association with destabilization of asthma control.” International Conference of the American Thoracic Society (ATS), May 16, 2014, San Diego, CA, USA.
- 2013 “Electrical impedance myography in DMD: a multi-center study of reliability and relationships to strength and function.” The 18th International Congress of the World Muscle Society, October 2, 2013, Asilomar, CA, USA.

## **INVITED TALKS**

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- 2019 “Ontology-based integration of biological pathway data.” Automated Knowledge Base Construction Scientific Literature Knowledge Bases Workshop, Amherst, MA. May 22, 2019.
- 2018 “Ontologies and algorithms for integrating biological pathway data.” BIME 590 Seminar, Department of Biomedical Informatics and Medical Education, University of Washington, Seattle, WA. October 11, 2018.
- 2018 “Learning from biomedical knowledge.” The Allen Institute for Artificial Intelligence (AI2), Seattle, WA. October 10, 2018.
- 2018 “A brief introduction to ontology.” Kidney Precision Medicine Project Ontology Workshop, Seattle, WA. July 24, 2018.

## **TEACHING**

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- 2017 BIME 591, Biological Pathway Analysis: Trends and Applications  
Department of Biomedical Informatics and Medical Education, University of Washington

### **Lectures**

- 2019 BIME 550, Knowledge Representation, “A SPARQL Tutorial”  
Department of Biomedical Informatics and Medical Education, University of Washington

## **OTHER RESEARCH & WORK EXPERIENCE**

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- 2017 Research Intern, Semantic Scholar Research, The Allen Institute for Artificial Intelligence
- 2013–2014 Software Engineer, Xcision Medical Systems, LLC.
- 2012–2014 Data Analyst, Skulpt Inc., formerly Convergence Medical Devices, Inc.
- 2011–2012 Research Data Coordinator, Asthma Clinical Research Center, Johns Hopkins Bloomberg School of Public Health
- 2009–2010 Research Assistant, Rutkove Lab, Department of Neurology, Beth Israel Deaconess Medical Center

## **SERVICE**

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- 2017–2020 Board Member, Nihon Ki-in Go Institute of the West
- 2017–2019 Member, JAMIA Student Editorial Board
- 2017–2018 Manager, JAMIA Journal Club
- 2017–2018 Graduate Mentor, University of Washington High Performance Computing Club
- 2017 Assistant Editor, MedInfo 2017
- 2015–2016 Curriculum Committee, Department of Biomedical Informatics and Medical Education, University of Washington

Reviewer for various journals and conferences:

Journal of the American Medical Information Association (JAMIA), Journal of Biomedical Informatics (JBI), Data Science, American Medical Informatics Association (AMIA) Annual Symposium, American Medical Informatics Association (AMIA) Translational Bioinformatics, Association of Computational Linguistics (ACL), Conference on Empirical Methods in Natural Language Processing (EMNLP), Machine Learning for Health (ML4H), IEEE Transactions on Knowledge and Data Engineering, and the American Medical Informatics Association (AMIA) translational bioinformatics YIR (2017-2018)

## **PROFESSIONAL MEMBERSHIPS**

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- 2015–2020 American Medical Informatics Association (AMIA)
- 2015–2020 The International Association for Ontology and its Applications (IAOA)
- 2018–2020 International Society for Computational Biology (ISCB)
- 2018–2020 Association for Computational Linguistics (ACL)