William La Cava

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Education

2012 - 2016	Ph.D., Mechanical Engineering, University of Massachusetts Amherst
2009 - 2010	M.Eng., Mechanical Engineering, Cornell University
2005 - 2009	B.S., Mechanical Engineering, Cornell University

Research Experience

2020 -	**Research Associate, University of Pennsylvania**
	Institute for Biomedical Informatics
2019 - 2020	**Consultant, National Institute on Aging, National Institutes of Health**
	Division of Geriatrics and Clinical Gerontology
	Multi-omics data integration for longevity-related outcomes
2016 - 2020	**Postdoctoral Fellow, University of Pennsylvania**
	Advisor: Jason H. Moore
	Institute for Biomedical Informatics
	Fellow, Warren Center for Network and Data Sciences
2012 - 2016	**PhD Student, University of Massachusetts Amherst**
	Committee: Kourosh Danai, Lee Spector, Matthew Lackner
	Fellow, NSF IGERT Offshore Wind Energy Program
Jun–Aug 2015	**Visiting Researcher, Laboratory of Agent Modeling, University of Lisbon**
	Hosts: Sara Silva, Leonardo Vanneschi
	Multiclass classification of complex systems using genetic programming
2010 - 2012	**Research Scientist, National Renewable Energy Laboratory (NREL)**
	Supervisors: Paul Veers, Jonathan Keller
	Wind turbine field testing, numerical modeling, and data analysis

2008 - 2010	**Lead Engineer of Mechanical Power Systems, Cornell 100+ MPG Team**
	Advisor: Albert George
	Drivetrain design, fabrication and testing for a hybrid-electric vehicle that competed in the Automotive X-Prize and won the 2011 Green Grand Prix, achieving over 120 MPG equivalent
2007 - 2008	**Independent Research, Cornell Computational Synthesis Laboratory**
	Advisor: Hod Lipson
	Robotics, path planning and artificial intelligence

Grants & Awards

2020	Best Paper Award, Genetic and Evolutionary Computation Conference
2019	**NIH Pathway to Independence Award (K99/R00)**
	National Library of Medicine
	Title: Multi-objective representation learning methods for interpretable predictions of patient outcomes using electronic health records (link)
2019	Best Paper Nomination, Genetic and Evolutionary Computation Conference
2019	Winner, Best Informatics Abstract, DBEI and CCEB Research Day
2018	Best Paper Nomination, Genetic and Evolutionary Computation Conference
2017	Best Paper Nomination, European Conference on Genetic Programming
2016	Postdoctoral Fellowship, Warren Center for Network and Data Sciences
2016	Student Travel Grant, Genetic and Evolutionary Computation Conference
2015	Student Travel Grant, ASME Dynamic Systems and Controls Conference
2015	Best Paper Nomination, Genetic and Evolutionary Computation Conference
2014	XSEDE Startup Allocation Award: Automatic Identification of Dynamic Models for Complex Systems (PI)
2012	NSF Fellowship, IGERT: Offshore Wind Energy Engineering, Environmental Science, and Policy
2011	First Place, Cornell 100+ MPG Team, Green Grand Prix Competition

Publications

Google Scholar

Peer-reviewed Conference Proceedings

[1] **William La Cava** and Jason H. Moore. "Genetic programming approaches to learning fair classifiers". *Proceedings of the 2020 Genetic and Evolutionary Computation Conference*. GECCO '20. 2020. DOI: 10.1145/3377930.3390157. arXiv: 2004.13282. **Best Paper Award**.

[2] **William La Cava**, Paul C Lee, Imran Ajmal, Xiruo Ding, Jordana B Cohen, Jason H Moore, and Daniel S Herman. "Application of flexible machine learning to construct accurate and interpretable EHR computable phenotypes". Symposium on Artificial Intelligence for Learning Health Systems (SAIL). In Press. 2020.

[3] **William La Cava** and Jason H. Moore. "Learning concise representations for regression by evolving networks of trees". *International Conference on Learning Representations*. ICLR. May 2019. arXiv: 1807.00981.

[4] **William La Cava** and Jason H. Moore. "Semantic variation operators for multidimensional genetic programming". *Proceedings of the 2019 Genetic and Evolutionary Computation Conference*. GECCO '19. Prague, Czech Republic: ACM, Apr. 2019. DOI: 10.1145/3321707.3321776. arXiv: 1904.08577. *Best Paper Nominee*.

[5] **William La Cava**, Christopher R. Bauer, Jason H. Moore, and Sarah A. Pendergrass. "Interpretation of machine learning predictions for patient outcomes in electronic health records". Vol. abs/1903.12074. AMIA 2019 Annual Symposium. AMIA, 2019. arXiv: 1903.12074.

[6] **William La Cava** and Jason H. Moore. "An Analysis of epsilon-lexicase Selection for Large-scale Many-objective Optimization". *Proceedings of the Genetic and Evolutionary Computation Conference Companion*. GECCO '18. Kyoto, Japan: ACM, 2018, pp. 185–186. DOI: 10.1145/3205651.3205656.

[7] **William La Cava** and Jason H. Moore. "Behavioral search drivers and the role of elitism in soft robotics". *Artificial Life*. MIT Press, 2018, pp. 206–213. DOI: 10.1162/isal_a_00044.

[8] Patryk Orzechowski, **William La Cava**, and Jason H. Moore. "Where are we now? A large benchmark study of recent symbolic regression methods". *Proceedings of the 2018 Genetic and Evolutionary Computation Conference*. GECCO '18. Apr. 2018. DOI: 10.1145/3205455.3205539. arXiv: 1804.09331. *Best Paper Nominee*.

[9] **William La Cava** and Jason H. Moore. "A general feature engineering wrapper for machine learning using ϵ-lexicase survival". *Genetic Programming*. Lecture Notes in Computer Science. Springer, Apr. 2017, pp. 80–95. DOI: 10.1007/978-3-319-55696-3_6. *Best Paper Nominee*.

[10] **William La Cava** and Jason H. Moore. "Ensemble representation learning: an analysis of fitness and survival for wrapper-based genetic programming methods". *GECCO '17: Proceedings of the 2017 Genetic and Evolutionary Computation Conference*. ACM, July 2017. arXiv: 1703.06934.

[11] **William La Cava**, Sara Silva, Leonardo Vanneschi, Lee Spector, and Jason Moore. "Genetic Programming Representations for Multi-dimensional Feature Learning in Biomedical Classification". *Applications of Evolutionary Computation*. Vol. 10199. Lecture Notes in Computer Science. Cham: Springer International Publishing, 2017, pp. 158–173. DOI: 10.1007/978-3-319-55849-3_11.

[12] Randal S. Olson*, **William La Cava***, Zairah Mustahsan, Akshay Varik, and Jason H. Moore. "Data-driven Advice for Applying Machine Learning to Bioinformatics Problems". *Pacific Symposium on Biocomputing (PSB)*. *Contributed Equally. Sept. 2017. arXiv: 1708.05070.

[13] **William La Cava**, Lee Spector, and Kourosh Danai. "Epsilon-Lexicase Selection for Regression". *Proceedings of the 2016 on Genetic and Evolutionary Computation Conference*. ACM. 2016, pp. 741–748. DOI: 10.1145/2908812.2908898. arXiv: 1905.13266.

[14] Semyung Park, Matthew A Lackner, John Cross-Whiter, A Rodriguez Tsouroukdissian, and **William La Cava**. "An Investigation of Passive and Semi-Active Tuned Mass Dampers for a Tension Leg Platform Floating Offshore Wind Turbine in ULS Conditions". *ASME 2016 35th International Conference on Ocean, Offshore and Arctic Engineering*. American Society of Mechanical Engineers. 2016, V003T02A061–V003T02A061.

[15] Arturo Rodriguez Tsouroukdissian, Mathew Lackner, John Cross-Whiter, Se Myung Park, Pariya Pourazarm, **William La Cava**, and Sungho Lee. "Smart Novel Semi-Active Tuned Mass Damper for Fixed-Bottom and Floating Offshore Wind (Paper)". *Offshore Technology Conference*. Houston, TX: U.S. DOE Office of Science and Technical Information, May 2016. PDF.

[16] Y Guo, J Keller, **W La Cava**, J Austin, AR Nejad, C Halse, L Bastard, and J Helsen. "Recommendations on Model Fidelity for Wind Turbine Gearbox Simulations". *Conference for Wind Power Drives (CWD) 2015*. AAchen, Germany, Mar. 2015.

[17]   **William La Cava** and Kourosh Danai. "Model Structure Adaptation: A Gradient-based Approach". *ASME 2015 Dynamic Systems and Control Conference*. Columbus, Ohio: ASME, Oct. 2015.

[18]   **William La Cava**, Kourosh Danai, Lee Spector, Paul Fleming, Alan D. Wright, and Matthew Lackner. "Automated Identification of Closed-Loop Wind Turbine Dynamics via Genetic Programming". *ASME 2015 Dynamic Systems and Control Conference*. Columbus, Ohio: ASME, Oct. 2015.

[19]   **William La Cava**, Thomas Helmuth, Lee Spector, and Kourosh Danai. "Genetic Programming with Epigenetic Local Search". *Proceedings of the Genetic and Evolutionary Computation Conference*. GECCO 2015. Madrid, Spain: ACM Press, 2015, pp. 1055–1062. DOI: 10.1145/2739480.2754763. *Best Paper Nominee*.

[20]   **William La Cava**, Lee Spector, Kourosh Danai, and Matthew Lackner. "Evolving differential equations with developmental linear genetic programming and epigenetic hill climbing". *Companion proceedings of the 2014 conference on Genetic and Evolutionary Computation*. GECCO 2014. Vancouver, B.C.: ACM Press, 2014, pp. 141–142. DOI: 10.1145/2598394.2598491.

[21]   Yi Guo, Jonathan Keller, and **William La Cava**. "Combined effects of gravity, bending moment, bearing clearance, and input torque on wind turbine planetary gear load sharing". *AGMA Fall Technical Meeting*. Dearborn, MI: AGMA, 2012–.

[22]   Jonathan Keller, Hal F. Link, Yi Guo, **William La Cava**, and Brian P. McNiff. "Gearbox reliability collaborative phase 1 and 2: testing and modelling results". *Conference proceedings of ISMA2012-USD2012*. International Conference on Noise and Vibration engineering. Leuven, Belgium, Sept. 2012.

[23]   **William La Cava**, Jonathan Keller, and Brian McNiff. "Gearbox reliability collaborative: test and model investigation of sun orbit and planet load share in a wind turbine gearbox". *AIAA 53rd Structures, Structural Dynamics, and Materials and Colocated Conferences*. Honolulu, Hawaii, 2012.

[24]   **William La Cava**, Y. Xing, Y. Guo, and Torgeir Moan. "Determining wind turbine gearbox model complexity using measurement validation and cost comparison". *European Wind Energy Association annual event*. EWEA 2012. Copenhagen, Denmark, 2012.

[25]   **William La Cava**, B McNiff, and J van Dam. "NREL Gearbox Reliability Collaborative: Comparing In-field Gearbox Response to Different Dynamometer Test Conditions". AWEA Windpower 2011. Anaheim, California: AWEA, May 2011.

Journal Papers

[1]   Kourosh Danai and **William La Cava**. "Controller design by symbolic regression". *Mechanical Systems and Signal Processing* 151 (2021), p. 107348. DOI: https://doi.org/10.1016/j.ymssp.2020.107348.

[2]   **William La Cava** and Jason H. Moore. "Learning feature spaces for regression with genetic programming". *Genetic Programming and Evolvable Machines* (Mar. 2020). DOI: 10.1007/s10710-020-09383-4.

[3]   **William La Cava**, Heather Williams, Weixuan Fu, S. Vitale, D. Srivatsan, and Jason H. Moore. "Evaluating recommender systems for AI-driven biomedical informatics". *Bioinformatics* (Aug. 2020). DOI: 10.1093.

[4]   **William La Cava**, Thomas Helmuth, Lee Spector, and Jason H. Moore. "A probabilistic and multi-objective analysis of lexicase selection and epsilon-lexicase selection". *Evolutionary Computation* 27 (3 Sept. 2019), pp. 377–402. DOI: 10.1162/evco_a_00224.

[5] A. P. Wojcieszynski Jr, **W La Cava**, B. C. Baumann, J. N. Lukens, A. Fotouhi Ghiam, R. J. Urbanowicz, S. D. Swisher-McClure, A. Doucette, P. E. Gabriel, A. Lin, Y. Xiao, J. H. Moore, and J. M. Metz. "Machine Learning to Predict Toxicity in Head and Neck Cancer Patients Treated with Definitive Chemoradiation". *International Journal of Radiation Oncology Biology Physics* (Sept. 2019). DOI: 10.1016/j.ijrobp.2019.06.2182.

[6] **William La Cava**, Sara Silva, Kourosh Danai, Lee Spector, Leonardo Vanneschi, and Jason H. Moore. "Multidimensional genetic programming for multiclass classification". *Swarm and Evolutionary Computation* (Apr. 2018). DOI: 10.1016/j.swevo.2018.03.015.

[7] Ryan J. Urbanowicz, Melissa Meeker, **William La Cava**, Randal S. Olson, and Jason H. Moore. "Relief-based feature selection: Introduction and review". *Journal of Biomedical Informatics* 85 (2018), pp. 189 –203. DOI: https://doi.org/10.1016/j.jbi.2018.07.014. arXiv: 1711.08421.

[8] **William La Cava**, Kushal Sahare, and Kourosh Danai. "Restructuring Controllers to Accommodate Plant Nonlinearities". *Journal of Dynamic Systems, Measurement, and Control* 139.8 (May 2017), pp. 081004–081004–10. DOI: 10.1115/1.4035870.

[9] Randal S. Olson, **William La Cava**, Patryk Orzechowski, Ryan J. Urbanowicz, and Jason H. Moore. "PMLB: A Large Benchmark Suite for Machine Learning Evaluation and Comparison". *BioData Mining* (Sept. 2017). arXiv: 1703.00512.

[10] **William La Cava**, Kourosh Danai, and Lee Spector. "Inference of compact nonlinear dynamic models by epigenetic local search". *Engineering Applications of Artificial Intelligence* 55 (2016), pp. 292–306. DOI: 10.1016/j.engappai.2016.07.004.

[11] **William La Cava** and Kourosh Danai. "Gradient-based adaptation of continuous dynamic model structures". *International Journal of Systems Science* 47 (1 Aug. 2015), pp. 249–263. DOI: 10.1080/00207721.2015.1069905.

[12] **William La Cava**, Kourosh Danai, Lee Spector, Paul Fleming, Alan Wright, and Matthew Lackner. "Automatic identification of wind turbine models using evolutionary multiobjective optimization". *Renewable Energy* (Nov. 2015). DOI: 10.1016/j.renene.2015.09.068.

[13] Yi Guo, Jonathan Keller, and **William La Cava**. "Planetary gear load sharing of wind turbine drivetrains subjected to non-torque loads". *Wind Energy* 18 (Mar. 2014), pp. 757–768. DOI: 10.1002/we.1731.

[14] **William La Cava**, Yi Guo, Chris Marks, Yihan Xing, and Torgeir Moan. "Three-dimensional bearing load share behaviour in the planetary stage of a wind turbine gearbox". *IET Renewable Power Generation* 7.4 (July 2013), pp. 359–369. DOI: 10.1049/iet-rpg.2012.0274.

Book Chapters

[1] Lee Spector, **William La Cava**, Saul Shanabrook, Thomas Helmuth, and Edward Pantridge. "Relaxations of Lexicase Parent Selection". *Genetic Programming Theory and Practice XV*. Ed. by Wolfgang Banzhaf, Randal S. Olson, William Tozier, and Rick Riolo. Cham: Springer International Publishing, 2018, pp. 105–120.

[2] Randal S Olson, Moshe Sipper, **William La Cava**, Sharon Tartarone, Steven Vitale, Weixuan Fu, John H Holmes, and Jason H. Moore. "A System for Accessible Artificial Intelligence". *Genetic Programming Theory and Practice XIV*. Springer, 2017. arXiv: 1705.00594.

[3] Karthik Kannappan, Lee Spector, Moshe Sipper, Thomas Helmuth, **William La Cava**, Jake Wisdom, and Omri Bernstein. "Analyzing a Decade of Human-Competitive ("HUMIE") Winners: What Can We Learn?" *Genetic Programming Theory and Practice XII*. Springer, 2015, pp. 149–166.

[4] **William La Cava** and Lee Spector. "Inheritable Epigenetics in Genetic Programming". *Genetic Programming Theory and Practice XII*. Ed. by Rick Riolo, William P. Worzel, and Mark Kotanchek. Cham: Springer, 2015, pp. 37–51.

Dissertations

[1] **William La Cava**. "Automatic Development and Adaptation of Concise Nonlinear Models for System Identification". *Doctoral Dissertations May 2014 - current.* Vol. 731. 2016. PhD Dissertation, University of Massachusetts Amherst. URL: http://scholarworks.umass.edu/dissertations_2/731/.

Technical Reports

[1] **William La Cava** and Matthew Lackner. *Theory manual for the tuned mass damper module in FAST 8.* Tech. rep. University of Massachusetts Amherst, Mar. 2015. DOI: DOI:10.13140/rg.2.1.4565.9684. PDF.

[2] Hal Link, **W La Cava**, J van Dam, B McNiff, S Sheng, R Wallen, M McDade, S Lambert, S Butterfield, and F Oyague. *Gearbox reliability collaborative project report: findings from phase 1 and phase 2 testing.* Tech. rep. NREL/TP-5000-51885. National Renewable Energy Laboratory, 2011.

[3] S Sheng, H Link, **W La Cava**, J Van Dam, B McNiff, P Veers, J Keller, S Butterfield, and F Oyague. *Wind turbine drivetrain condition monitoring during GRC phase 1 and phase 2 testing.* Tech. rep. NREL/TP-5000-52748. National Renewable Energy Laboratory, 2011.

Press

[1] Rachel Ewing. *Penn's New Artificial Intelligence Assistant.* Penn Medicine News. Nov. 20, 2017. URL: https://www.pennmedicine.org/news/news-blog/2017/november/penns-new-artificial-intelligence-assistant (visited on 11/27/2017).

[2] Jordan Pearson. *These Researchers Want the People to Seize the Means of AI Production.* Motherboard. May 3, 2017. URL: https://motherboard.vice.com/en_us/article/z4jb9j/researchers-want-people-to-seize-the-means-of-ai-production-penn-ai (visited on 09/16/2017).

[3] Anne Ju. *Sleek, Cornell-red 100 mpg car is ready for public debut.* Cornell Chronicle. Apr. 22, 2010. URL: http://news.cornell.edu/stories/2010/04/cornell-100-mpg-car-painted-ready-race (visited on 11/27/2017).

[4] Anne Ju. *Cornell 100+ MPG Team accelerates forward in $10 million Automotive X Prize competition.* Cornell Chronicle. Oct. 20, 2009. URL: http://news.cornell.edu/stories/2009/10/cornell-100-mpg-car-makes-cut-competition (visited on 11/27/2017).

[5] Anne Ju. *Students work day and night to make 100 mpg car a reality.* Cornell Chronicle. July 29, 2009. URL: http://news.cornell.edu/stories/2009/07/100-mpg-car-taking-shape-over-summer (visited on 11/27/2017).

[6] Erin McCarthy. *Cornell Students Seek 100-mpg Auto X Prize (and PM Sponsors Them).* Popular Mechanics. Oct. 1, 2009. URL: http://www.popularmechanics.com/cars/news/4220598 (visited on 11/27/2017).

Software (Github Profile)

[1] **William La Cava**. *FEAT: Feature Engineering Automation Tool.* Oct. 2018. URL: http://github.com/lacava/feat.

[2] Heather Williams, Weixuan Fu, **William La Cava**, Sharon Tartarone, Steve Vitale, and other open source contributors. *PennAI: A Friendly Data Science Assistant.* 2018. URL: http://github.com/EpistasisLab/pennai.

[3] **William La Cava**. *ellynGP: a Linear Genetic Programming System for Python*. 2016. URL: http://github.com/EpistasisLab/ellyn.

[4] **William La Cava**. *FEW: a Feature Engineering Wrapper for Scikit-Learn*. Dec. 2016. URL: http://github.com/lacava/few.

[5] Randal Olson, **William La Cava**, Trang Le, Weixuan Fu, and other open source contributors. *PMLB: Penn Machine Learning Benchmarks*. Nov. 2016. URL: http://github.com/EpistasisLab/pmlb.

[6] **William La Cava**. *ellenGP: a Linear Genetic Programming System*. Jan. 2015. URL: http://github.com/lacava/ellen.

[7] **William La Cava** and Matthew Lackner. *Tuned Mass Damper Module for FAST v8*. Mar. 2015. URL: https://nwtc.nrel.gov/tmd.

Video

[1] *Visualizing Genetic Programming Genomes*. Sept. 2015. URL: http://www.williamlacava.com/gp-genomes.

[2] **William La Cava**. *Offshore Wind in the Caribbean*. 2013 IGERT Video and Poster Competition. May 2013. URL: https://vimeo.com/65178378.

Invited Talks

[1] *Automated data integration approaches for multi-omics analysis*. Computational and Functional Genomics Group, National Institute on Aging. May 2020.

[2] *Learning interpretable models from biomedical data*. Mt. Sinai. Mar. 2020.

[3] *Learning interpretable models from biomedical data*. Northeastern Department of Bioengineering. Mar. 2020.

[4] *Randomized search heuristics for learning fair classifiers*. Harvard Department of Biomedical Informatics. Mar. 2020.

[5] *Transformative AI-based strategies to identify determinants of exceptional health and life span*. National Institute on Aging. June 2020.

[6] *Automated data integration approaches for multi-omics analysis*. National Institute on Aging. Dec. 2019.

[7] *Automating Data Science for Biomedical Informatics*. Temple University. Nov. 2019.

[8] *Learning Features from Longitudinal Data*. Research Day: Penn Department of Biostatistics, Epidemiology and Informatics. May 2019.

[9] *Towards Automated Feature Engineering and Automated Data Science*. Wharton Undergraduate Data Analytics Club. Feb. 2019.

[10] *Multidimensional Feature Learning for Biomedical Classification*. Penn Genetics and Computational Biology Retreat, College of Physicians. June 2017.

[11] *Symbolic Representation Learning*. EDGE 2017 Workshop. Feb. 2017.

[12] *Developing compact nonlinear dynamic models with biologically inspired algorithms*. Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology. Nov. 2015.

[13] *Genetic programming with epigenetic local search*. Laboratory of Agent Modeling, University of Lisbon. June 2015.

[14] *Intelligible system modeling with applications to wind energy (and genomics!)* Institute for Biomedical Informatics, University of Pennsylvania. Nov. 2015.

[15]   *Gearbox Reliability Collaborative: Findings from Phase 1 and 2.* Norwegian University of Science and Technology. Mar. 2013.

Teaching Experience

2017 - 2020	**Guest Lecturer, University of Pennsylvania**
	BMIN 521: AI III: Advanced Methods and Health Applications in Machine Learning
	Fairness and Bias in AI for Medicine
2018 -	*BMIN 504: Special Topics in Biomedical and Health Informatics*
	Module: Nature-inspired computing
2017 -	*BMIN 503: Data Science for Biomedical Informatics*
	Module: Introduction to Supervised and Unsupervised Learning
2014 - 2016	**Guest Lecturer, University of Massachusetts Amherst**
	System Dynamics
	Linearization and state-space representations
	Control Systems Laboratory
	Parameter estimation
	Offshore Wind Energy Design
	Wind turbine control design
2014 - 2015	**Teaching Assistant, University of Massachusetts Amherst**
	Control Systems Laboratory
2007	**Lab Technician, Cornell University**
	Designed and built robotic platforms for a graduate level artificial intelligence course

Mentoring Experience

Jun 2017 -	**Research Mentor, University of Pennsylvania**
	Students: Nupur Baghel (B.S.); Isabel Lee (B.S.); Efe Ayhan (B.S.); Max Roling (B.S.); Saurav Bose (M.S.); Tilak Raj Singh (M.S.); Rishabh Gupta (M.S.); Sophia Moses (B.S.); James Taggart (B.S.); Srinivas Suri (M.S.)
Jun - Aug 2015	**NSF Research Experiences for Undergraduates (REU) Mentor, University of Massachusetts Amherst**
	Student: Branch Vincent (B.S.)

Service

Organizer	Good Benchmarking Practices for Evolutionary Computation, GECCO and PPSN Workshop (2020)
	New Standards for Benchmarking in Evolutionary Computation Research, GECCO Workshop (2017-2019)
	Collaboration with University of Maine's Advanced Structures and Composites Center (2014)
	Gearbox Reliability Collaborative Annual Meeting, National Renewable Energy Laboratory (2011, 2012)
Committee Member	Genetic and Evolutionary Computation Conference (GECCO)
	International Workshop on Benchmarking of Computational Intelligence Algorithms, ICACI (2018)
Member	Association of Computing Machinery (ACM)
	International Society for Computational Biology (ISCB)
	American Society of Mechanical Engineers (ASME)
	American Institute of Aeronautics and Astronautics (AIAA)
Referee	AAAI
	Neurips
	Pacific Symposium on Biocomputing
	PLOS ONE
	Artificial Life Journal
	Genetic and Evolutionary Computation Conference
	European Conference on Genetic Programming
	Genetic Programming and Evolvable Machines
	IEEE Transactions on Neural Networks and Learning Systems
	IEEE Congress on Evolutionary Computation
	Swarm and Evolutionary Computation
	Information Journal
	Wind Energy Journal
	Renewable Energy Journal
	AIAA Wind Energy Symposium (2014)
	ASME Dynamic Systems and Controls Conference (2015)

Volunteer & Outreach Activities

2020	Founder, A Pizza Relief, a fundraising non-profit for black and trans communities in West Philadelphia
2019	Green Labs participant, Perelman School of Medicine
2019	Volunteer, Love Your Park Week, Fairmount Park Conservancy
2016	**Science Fair Judge, Hampshire Regional High School**
2013 - 2014	**Invited Science Teacher, Four Rivers Charter School**
	Taught classes on wind energy to high school students
2011 - 2012	**Volunteer, Boulder Food Rescue**
	This organization has saved hundreds of thousands of pounds of left over food from grocery stores and bakeries and delivered it to homeless shelters and other community food stations.
2001 - 2005	**American Cancer Society Relay for Life**