

Byron Tasseff

Staff Optimization Engineer, Geli Data Science
Qcells North America

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Education

- Aug 2021 **Ph.D., Industrial and Operations Engineering**, *University of Michigan*, GPA 4.00/4.00.
Advised by [Russell Bent](#), [Marina Epelman](#), and [Pascal Van Hentenryck](#)
Dissertation: [Optimization of critical infrastructure with fluids](#)
- April 2018 **M.S., Industrial and Operations Engineering**, *University of Michigan*, GPA 4.00/4.00.
- May 2012 **B.S., Physics**, *University of Northern Iowa*, *summa cum laude*, GPA 3.97/4.00.
Minor: Mathematics; Honors Thesis: [GPU-accelerated molecular dynamics simulation of rigid water](#)

Experience

- May 2022 – Present **Qcells North America**, *Staff Optimization Engineer*, San Francisco, California.
Developing optimization methods for the operation of energy storage systems.
- June 2018 – May 2022 **Los Alamos National Laboratory**, *Scientist*, Los Alamos, New Mexico.
Developed optimization methods for the design and operation of natural gas, power, and water networks.
- Sept 2013 – June 2018 **Los Alamos National Laboratory**, *Research Technologist*, Los Alamos, New Mexico.
Developed simulations, optimization methods, and automated workflows for infrastructure analysis.
- Aug 2012 – Sept 2013 **Los Alamos National Laboratory**, *Postbaccalaureate Researcher*, Los Alamos, New Mexico.
Developed a parallel hydrodynamics simulation framework used in national emergency flood response.
- May 2012 – July 2012 **LSU Center for Computation & Technology**, *NSF REU Researcher*, Baton Rouge, Louisiana.
[Leveraged graphics processing units to parallelize an existing quantum Monte Carlo code.](#)
- Oct 2010 – May 2012 **University of Northern Iowa**, *Student Researcher*, Cedar Falls, Iowa.
Developed a parallel molecular dynamics simulation of rigid water for graphics processing units.
- May 2011 – Aug 2011 **SRI International**, *NSF REU Researcher*, Menlo Park, California.
[Investigated the insertion of peptides into model lipid bilayers using novel microfluidic techniques.](#)
- Nov 2010 – May 2011 **John Deere Product Engineering Center**, *Part-Time Student*, Cedar Falls, Iowa.
Supported the [selective catalytic reduction](#) team; documented test protocol; developed data analysis tools.
- May 2010 – Aug 2010 **University of Northern Iowa**, *Summer Research Fellow*, Cedar Falls, Iowa.
[Developed a Monte Carlo simulation model for electron transport at metal-semiconductor interfaces.](#)
- Nov 2009 – May 2010 **University of Northern Iowa**, *Student Researcher*, Cedar Falls, Iowa.
Operated scanning tunneling microscopes; constructed small test chambers; analyzed nanoscale imagery.

Awards & Honors

- 2021 SPOT Award (for the development of multi-infrastructure optimization software), LANL
- 2019 R&D 100 Award (for [Severe Contingency Solver: Electric Power Transmission](#)), R&D Magazine
- 2019 Distinguished Performance Award (for the Critical Infrastructure Optimization Team), LANL
- 2016 – 2021 [Graduate Research Fellowship](#), NSF
- 2014, 2015 LAAP Award (for outstanding contributions to the [NISAC](#) project), LANL
- 2014 LAAP Award (for the development of novel flood simulation and visualization software), LANL
- 2012 [Top Poster in REU Program](#), LSU Summer Undergraduate Research Forum
- 2011 [Barry M. Goldwater Scholarship](#), Honorable Mention
- 2011 [Louis Begeman Memorial Scholarship](#), UNI Department of Physics
- 2010 Outstanding Performance in Introductory Physics, UNI Department of Physics
- 2008 – 2012 [Provost Scholarship](#), UNI Honors Program

Skills

General	C++, Julia, Python, CPLEX, Gurobi, SQL, Bash, CMake, \LaTeX , QGIS, GDAL/OGR.
Optimization	Solution of large-scale network optimization problems involving complex constraints.
Parallel Computing	CUDA, OpenMP, SLURM, various profiling tools. Analysis and tuning of multithreaded applications.
Cloud Computing	AWS (EC2, RDS, SNS, SQS, SWF), automation and scaling of long-running scientific workflows.

Affiliations

2020 – Present	Society for Industrial and Applied Mathematics (SIAM)
2016 – Present	Institute for Operations Research and the Management Sciences (INFORMS)
2012 – Present	Kappa Mu Epsilon (The Mathematics Honor Society)
2011 – Present	Sigma Pi Sigma (The Physics Honor Society)
2011 – Present	Society of Physics Students
2010 – Present	American Physical Society
2009 – 2012	UNI Physics Club (2011 – 2012 Vice President)

Publications

Conference & Journal Papers

- [1] Russell Bent, **Byron Tasseff**, and Carleton Coffrin. InfrastructureModels: Composable multi-infrastructure optimization in Julia. *INFORMS Journal on Computing*, 2023. To appear.
- [2] **Byron Tasseff**, Carleton Coffrin, Russell Bent, Kaarthik Sundar, and Anatoly Zlotnik. [Natural gas maximal load delivery for multi-contingency analysis](#). *Computers & Chemical Engineering*, 168:108032, 2022.
- [3] Elena Khlebnikova, Kaarthik Sundar, Anatoly Zlotnik, Russell Bent, Mary Ewers, and **Byron Tasseff**. [Optimal economic operation of liquid petroleum products pipeline systems](#). *AIChE Journal*, 67(4):e17124, 2021.
- [4] Elena Khlebnikova, Anatoly Zlotnik, Kaarthik Sundar, Mary Ewers, **Byron Tasseff**, and Russell Bent. [Optimization of liquid pipeline control for economic and efficient operations](#). In *SPE Europec Featured at 82nd EAGE Conference and Exhibition*. Society of Petroleum Engineers, December 1-3, 2020.
- [5] Carleton Coffrin, Russell Bent, **Byron Tasseff**, Kaarthik Sundar, and Scott Backhaus. [Relaxations of AC maximal load delivery for severe contingency analysis](#). *IEEE Transactions on Power Systems*, 34(2):1450–1458, 2019.
- [6] **Byron Tasseff**, Russell Bent, and Pascal Van Hentenryck. [Optimization of structural flood mitigation strategies](#). *Water Resources Research*, 55(2):1490–1509, 2019.
- [7] Geoffrey Fairchild, **Byron Tasseff**, Hari Khalsa, Nicholas Generous, Ashlynn Daughton, Nileena Velappan, Reid Priedhorsky, and Alina Deshpande. [Epidemiological data challenges: planning for a more robust future through data standards](#). *Frontiers in Public Health*, 6:336, 2018.
- [8] **Byron Tasseff**, Russell Bent, and Pascal Van Hentenryck. [Optimal flood mitigation over flood propagation approximations](#). In *Proceedings of the Thirteenth International Conference on Integration of Artificial Intelligence and Operations Research Techniques in Constraint Programming (CPAIOR 2016)*, Banff, Canada, May 29 – June 1, 2016.

Workshop Papers & Technical Reports

- [9] **Byron Tasseff**, Tameem Albash, Zachary Morrell, Marc Vuffray, Andrey Y. Lokhov, Sidhant Misra, and Carleton Coffrin. [On the emerging potential of quantum annealing hardware for combinatorial optimization](#). *arXiv preprint*, 2022.

- [10] **Byron Tasseff**, Russell Bent, Carleton Coffrin, Clayton Barrows, Devon Sigler, Jonathan Stickel, Ahmed S. Zamzam, Yang Liu, and Pascal Van Hentenryck. [Polyhedral relaxations for optimal pump scheduling of potable water distribution networks](#). *arXiv preprint*, 2022.
- [11] **Byron Tasseff**, Carleton Coffrin, and Russell Bent. [Convex relaxations of maximal load delivery for multi-contingency analysis of joint electric power and natural gas transmission networks](#). *arXiv preprint*, 2021.
- [12] **Byron Tasseff**, Russell Bent, Marina Epelman, Donatella Pasqualini, and Pascal Van Hentenryck. [Exact mixed-integer convex programming formulation for optimal water network design](#). *arXiv preprint*, 2020.
- [13] **Byron Tasseff**, Carleton Coffrin, Andreas Wächter, and Carl Laird. [Exploring benefits of linear solver parallelism on modern nonlinear optimization applications](#). *arXiv preprint*, 2019.
- [14] David Judi, **Byron Tasseff**, Russell Bent, and Feng Pan. [Topography-based flood planning and optimization capability development report](#). Technical report, Los Alamos National Laboratory, February 2014. LA-UR-14-21247.
- [15] Russell Bent, Christa Brelsford, **Byron Tasseff**, and Darrin Visarraga. [Hydropolis dam failure: Impact assessments](#). In *12th International Benchmark Workshop on Numerical Analysis of Dams (ICOLD'13)*, Graz, Austria, October 2-4, 2013. LA-UR-13-26664.
- [16] David Judi and **Byron Tasseff**. [Rainfall-driven flooding capability development report](#). Technical report, Los Alamos National Laboratory, June 2013. LA-UR-13-24778.

Posters & Presentations

- [17] **Byron Tasseff**, Russell Bent, Marina Epelman, Donatella Pasqualini, and Pascal Van Hentenryck. [Exact mixed-integer convex programming formulation for optimal water network design](#). In *2020 Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*, Virtual, November 7-13, 2020.
- [18] Elena Khlebnikova, Mary Ewers, Kaarthik Sundar, Anatoly Zlotnik, **Byron Tasseff**, and Russell Bent. [Optimization of liquid petroleum products pipeline operations](#). In *2019 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Orlando, FL, November 10-15, 2019.
- [19] **Byron Tasseff**, Russell Bent, and Carleton Coffrin. [WATERMODELS.JL: An open-source framework for exploring water network optimization formulations](#). In *2019 Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*, Seattle, WA, October 20-23, 2019.
- [20] **Byron Tasseff**, Russell Bent, and Pascal Van Hentenryck. [Cutting planes for global optimization of water distribution network design](#). In *2019 Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*, Seattle, WA, October 20-23, 2019.
- [21] **Byron Tasseff**. [Exploring benefits of linear solver parallelism on modern nonlinear optimization applications](#). In *Center for Nonlinear Studies (CNLS) Smart Grid Seminar*, Los Alamos, NM, August 13, 2019.
- [22] Donatella Pasqualini, Nathan Urban, Joel Rowland, John Moulton, Phillip Wolfram, Chonggang Xu, Russell Bent, Devin Goodsman, Devin Francom, Harsha Nagarajan, **Byron Tasseff**, Bowen Li, and Benjamin Vega-Westhoff. [Preparing our coastlines for climate security threats](#). In *2018 American Geophysical Union (AGU) Fall Meeting*, Washington, D.C., December 10-14, 2018.
- [23] **Byron Tasseff**, Russell Bent, and Pascal Van Hentenryck. [Flood mitigation optimization](#). In *Institute for Operations Research and the Management Sciences (INFORMS) at the University of Michigan: Hurricane Fundraising Seminar*, Ann Arbor, MI, October 20, 2017.

- [24] David Judi and **Byron Tasseff**. Modeling and simulation of rainfall-runoff flooding using probabilistic precipitation forecasts. In *7th International Congress on Environmental Modelling and Software (iEMSs'14)*, San Diego, CA, June 16-19, 2014. LA-UR-14-24438.
- [25] **Byron Tasseff** and David Judi. Simulating floods in virtual reality. In *7th International Congress on Environmental Modelling and Software (iEMSs'14)*, San Diego, CA, June 16-19, 2014. LA-UR-14-24432.
- [26] Niladri Sengupta, Kaushik Ragavan, **Byron Tasseff**, Ka Ming Tam, Juana Moreno, and Mark Jarrell. GPU acceleration of a variational Monte Carlo method. In *GPU Technology Conference (GTC'14)*, San Jose, CA, March 24-27, 2014.
- [27] **Byron Tasseff**, Narendra Setty, Niladri Sengupta, Zhifeng Yun, Sameer Abu Asal, Ye Fang, Sandeep Pathak, Juana Moreno, J. Ramanujam, and Mark Jarrell. GPU-accelerated variational Monte Carlo. In *LSU Summer Undergraduate Research Forum*, Baton Rouge, LA, July 27, 2012.
- [28] **Byron Tasseff**. GPU-accelerated molecular dynamics simulation of rigid water. In *UNI Honors Research Day*, Cedar Falls, IA, April 14, 2012.
- [29] **Byron Tasseff**. Droplet lipid bilayers. In *SRI International Student Seminar*, Menlo Park, CA, August 11, 2011.
- [30] **Byron Tasseff**. Ballistic transport at metal-semiconductor interfaces. In *Argonne Undergraduate Research Symposium*, Lemont, IL, October 15, 2010.