## References

- [1] HTCondor Team, [Online]. Available: https://research.cs.wisc.edu/htcondor/. [Accessed 14 1 2021].
- [2] D. Thain, T. Tannenbaum and M. Livny, "Distributed computing in practice: the Condor experience," *Concurrency and Computation: Practice and Experience*, vol. 17, p. 323–356, 2005.
- [3] National Science Foundation, "Award #0320708," [Online]. Available: https://www.nsf.gov/awardsearch/showAward?AWD ID=0320708. [Accessed 8 1 2021].
- [4] National Science Foundation, "NSF #0722936," [Online]. Available: https://www.nsf.gov/awardsearch/showAward?AWD\_ID=0722936. [Accessed 8 1 2021].
- [5] UW2020 GPULab Award, [Online]. Available: https://research.wisc.edu/funding/uw2020/round-5-projects/enabling-graphics-processing-unit-based-data-science/. [Accessed 15 1 2021].
- [6] M. Altunay, P. Avery, K. Blackburn, B. Bockelman, M. Ernst, D. Fraser, R. Quick, R. Gardner, S. Goasguen, T. Levshina, M. Livny, J. McGee, D. Olson, R. Pordes, M. Potekhin, A. Rana, A. Roy, C. Sehgal, I. Sfiligoi and F. Wuerthwein, "A Science Driven Production Cyberinfrastructure—the Open Science Grid," *Journal of Grid Computing*, vol. 9, p. 201–218, 12 2010.
- [7] I. Sfiligoi, F. Wuerthwein, B. Riedel and D. Schultz, "Running a Pre-Exascale, Geographically Distributed, Multi-Cloud Scientific Simulation," *Proceedings of ISC High Performance 2020*, 2 2020.
- [8] I. Sfiligoi, D. Schultz, B. Riedel, F. Wuerthwein, S. Barnet and V. Brik, "Demonstrating a Pre-Exascale, Cost-Effective Multi-Cloud Environment for Scientific Computing," *Proceedings of PEARC'20*, p. arXiv:2004.09492, 4 2020.
- [9] A. Krull, T.-O. Buchholz and F. Jug, *Noise2Void Learning Denoising from Single Noisy Images*, 2019.
- [10] J. L. Cintineo, M. J. Pavolonis, J. M. Sieglaff, A. Wimmers, J. Brunner and W. Bellon, "A Deep-Learning Model for Automated Detection of Intense Midlatitude Convection Using Geostationary Satellite Images," Weather and Forecasting, vol. 35, p. 2567–2588, 12 2020.
- [11] C. H. White, A. K. Heidinger and S. A. Ackerman, "Evaluation of VIIRS Neural Network Cloud Detection against Current Operational Cloud Masks," *Atmospheric Measurement Techniques Discussions*, vol. 2020, p. 1–34, 2020.
- [12] A. Wimmers, S. Griffin, J. Gerth, S. Bachmeier and S. Lindstrom, "Observations of Gravity Waves with High-Pass Filtering in the New Generation of Geostationary Imagers and Their Relation to Aircraft Turbulence," *Weather and Forecasting*, vol. 33, pp. 139-144, 01 Feb. 2018.
- [13] A. Wimmers, C. Velden and J. H. Cossuth, "Using Deep Learning to Estimate Tropical Cyclone Intensity from Satellite Passive Microwave Imagery," *Monthly Weather Review*, vol. 147, pp. 2261-2282, 01 Jun. 2019.
- [14] L. Orf, High-Resolution Thunderstorm Modeling, Oxford University Press, 2020.
- [15] S.-A. Boukabara, V. Krasnopolsky, J. Q. Stewart, E. S. Maddy, N. Shahroudi and R. N. Hoffman, "Leveraging Modern Artificial Intelligence for Remote Sensing and NWP: Benefits and Challenges," Bulletin of the American Meteorological Society, vol. 100, pp. ES473 - ES491, 01 Dec. 2019.
- [16] J. Devlin, M.-W. Chang, K. Lee and K. Toutanova, "BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding," in *Proceedings of the 2019 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, Volume 1 (Long and Short Papers)*, Minneapolis, 2019.
- [17] T. Ching, D. S. Himmelstein, B. K. Beaulieu-Jones, A. A. Kalinin, B. T. Do, G. P. Way, E. Ferrero, P.-M. Agapow, M. Zietz, M. M. Hoffman, W. Xie, G. L. Rosen, B. J. Lengerich, J. Israeli, J. Lanchantin, S. Woloszynek, A. E. Carpenter, A. Shrikumar, J. Xu, E. M. Cofer, C. A. Lavender, S. C. Turaga, A. M. Alexandari, Z. Lu, D. J. Harris, D. DeCaprio, Y. Qi, A. Kundaje, Y. Peng, L. K. Wiley, M. H. S. Segler, S. M. Boca, S. J. Swamidass, A. Huang, A. Gitter and C. S. Greene, "Opportunities

- and obstacles for deep learning in biology and medicine," *Journal of The Royal Society Interface*, vol. 15, p. 20170387, 4 2018.
- [18] Z. J. Wang, A. J. Walsh, M. C. Skala and A. Gitter, "Classifying T cell activity in autofluorescence intensity images with convolutional neural networks," *Journal of Biophotonics*, vol. 13, 12 2019.
- [19] S. Gelman, P. A. Romero and A. Gitter, "Neural networks to learn protein sequence-function relationships from deep mutational scanning data," 10 2020.
- [20] J. G. Meyer, S. Liu, I. J. Miller, J. J. Coon and A. Gitter, "Learning Drug Functions from Chemical Structures with Convolutional Neural Networks and Random Forests," *Journal of Chemical Information and Modeling*, vol. 59, p. 4438–4449, 9 2019.
- [21] S. Liu, M. Alnammi, S. S. Ericksen, A. F. Voter, G. E. Ananiev, J. L. Keck, F. M. Hoffmann, S. A. Wildman and A. Gitter, "Practical Model Selection for Prospective Virtual Screening," *Journal of Chemical Information and Modeling*, vol. 59, p. 282–293, 11 2018.
- [22] S. Liu, Y. Liang and A. Gitter, "Loss-Balanced Task Weighting to Reduce Negative Transfer in Multi-Task Learning," *Proceedings of the AAAI Conference on Artificial Intelligence*, vol. 33, p. 9977–9978, 7 2019.
- [23] Y. Li, M. Liu and J. M. Rehg, "In the Eye of Beholder: Joint Learning of Gaze and Actions in First Person Video," in *Computer Vision ECCV 2018*, Springer International Publishing, 2018, p. 639–655.
- [24] N. D. Nguyen, T. Jin and D. Wang, "Varmole: a biologically drop-connect deep neural network model for prioritizing disease risk variants and genes," *Bioinformatics*, 12 2020.
- [25] T. Q. Dinh, Y. Xiong, Z. Huang, T. Vo, A. Mishra, W. H. Kim, S. Ravi and V. Singh, "Performing Group Difference Testing on Graph Structured Data from GANs: Analysis and Applications in Neuroimaging," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, p. 1–1, 2020.
- [26] C. Solís-Lemus, X. Ma, M. Hostetter, S. Kundu, P. Qiu and D. Pimentel-Alarcón, "Prediction of Functional Markers of Mass Cytometry Data via Deep Learning," in *Statistical Modeling in Biomedical Research*, Springer International Publishing, 2020, p. 95–104.
- [27] A. Martin, V. Bauer, A. Datta, C. Masi, G. Mosnaim, A. Solomonides and G. Rao, "Development and validation of an asthma exacerbation prediction model using electronic health record (EHR) data," *Journal of Asthma*, vol. 57, p. 1339–1346, 8 2019.
- [28] S. Jiang, J. Noh, C. Park, A. D. Smith, N. L. Abbott and V. M. Zavala, "Using machine learning and liquid crystal droplets to identify and quantify endotoxins from different bacterial species," *The Analyst*, 2021.
- [29] A. D. Smith, N. Abbott and V. M. Zavala, "Convolutional Network Analysis of Optical Micrographs for Liquid Crystal Sensors," *The Journal of Physical Chemistry C*, vol. 124, p. 15152–15161, 6 2020.
- [30] G. Diamos, S. Sengupta, B. Catanzaro, M. Chrzanowski, A. Coates, E. Elsen, J. Engel, A. Hannun and S. Satheesh, "Persistent RNNs: Stashing Recurrent Weights On-Chip," in *Proceedings of The 33rd International Conference on Machine Learning*, New York, New York, USA, 2016.
- [31] I. Gelado and M. Garland, "Throughput-Oriented GPU Memory Allocation," in *Proceedings of the 24th Symposium on Principles and Practice of Parallel Programming*, New York, NY, USA, 2019.
- [32] D. Cederman and P. Tsigas, "On Dynamic Load Balancing on Graphics Processors," in *Proceedings of the 23rd ACM SIGGRAPH/EUROGRAPHICS Symposium on Graphics Hardware*, Goslar, 2008.
- [33] NVIDIA Corp., [Online]. Available: https://www.nvidia.com/en-us/data-center/virtual-gpu-technology/. [Accessed 13 1 2021].
- [34] M. D. Sinclair, J. Alsop and S. V. Adve, "HeteroSync: A benchmark suite for fine-grained synchronization on tightly coupled GPUs," in 2017 IEEE International Symposium on Workload Characterization (IISWC), 2017.

- [35] N. Corp., "CUDA Cooperative Groups," 2017. [Online]. Available: https://devblogs.nvidia.com/cooperative-groups/.
- [36] D. Rankin, J. Krupa, P. Harris, M. A. Flechas, B. Holzman, T. Klijnsma, K. Pedro, N. Tran, S. Hauck, S.-C. Hsu and others, "FPGAs-as-a-service toolkit (FaaST)," in 2020 IEEE/ACM International Workshop on Heterogeneous High-performance Reconfigurable Computing (H2RC), 2020.
- [37] J. Ngadiuba, V. Loncar, M. Pierini, S. Summers, G. Di Guglielmo, J. Duarte, P. Harris, D. Rankin, S. Jindariani, M. Liu and et al., "Compressing deep neural networks on FPGAs to binary and ternary precision with hls4ml," *Machine Learning: Science and Technology*, vol. 2, p. 015001, 12 2020.
- [38] Dassault Systèmes, "CST Studio Suite," [Online]. Available: https://www.3ds.com/products-services/simulia/products/cst-studio-suite/. [Accessed 8 1 2021].
- [39] K. Bandura, E. Castorina, L. Connor, S. Foreman, D. Green, D. Karagiannis, A. Liu, K. W. Masui, D. Meerburg, M. Münchmeyer, L. B. Newburgh, C. Ng, P. O'Connor, A. Obuljen, H. Padmanabhan, B. Saliwanchik, J. R. Shaw, C. Sheehy, P. Stankus, A. Slosar, A. Stebbins, P. T. Timbie, W. Tyndall, F. Villaescusa-Navarro, B. Wallisch and M. White, *Packed Ultra-wideband Mapping Array (PUMA): A Radio Telescope for Cosmology and Transients*, 2019.
- [40] T. Nakane, A. Kotecha, A. Sente, G. McMullan, S. Masiulis, P. M. G. E. Brown, I. T. Grigoras, L. Malinauskaite, T. Malinauskas, J. Miehling, T. Uchański, L. Yu, D. Karia, E. V. Pechnikova, E. de Jong, J. Keizer, M. Bischoff, J. McCormack, P. Tiemeijer, S. W. Hardwick, D. Y. Chirgadze, G. Murshudov, A. R. Aricescu and S. H. W. Scheres, "Single-particle cryo-EM at atomic resolution," *Nature*, vol. 587, p. 152–156, 10 2020.
- [41] Data Science University of Wisconsin-Madison, [Online]. Available: https://datascience.wisc.edu/institute/. [Accessed 13 1 2021].
- [42] A. F. A. Fernandes, J. R. R. Dórea, R. Fitzgerald, W. Herring and G. J. M. Rosa, "A novel automated system to acquire biometric and morphological measurements and predict body weight of pigs via 3D computer vision1," *Journal of Animal Science*, vol. 97, p. 496–508, 10 2018.
- [43] Z. Zhang, Y. Jin, B. Chen and P. Brown, "California Almond Yield Prediction at the Orchard Level With a Machine Learning Approach," *Frontiers in Plant Science*, vol. 10, 7 2019.
- [44] W. Liu, X. Wang, J. Owens and Y. Li, "Energy-based Out-of-distribution Detection," *Advances in Neural Information Processing Systems (NeurIPS)*, 2020.
- [45] A. Pensia, S. Rajput, A. Nagle, H. Vishwakarma and D. Papailiopoulos, *Optimal Lottery Tickets via SubsetSum: Logarithmic Over-Parameterization is Sufficient*, 2020.
- [46] Y. Zhao, F. K. Sheong, J. Sun, P. Sander and X. Huang, "A fast parallel clustering algorithm for molecular simulation trajectories," *Journal of Computational Chemistry*, vol. 34, p. 95–104, 9 2012.
- [47] X. Wang, I. C. Unarta, P. P.-H. Cheung and X. Huang, "Elucidating molecular mechanisms of functional conformational changes of proteins via Markov state models," *Current Opinion in Structural Biology*, vol. 67, p. 69–77, 4 2021.
- [48] A. Albert and M. others, "Search for High-energy Neutrinos from Binary Neutron Star Merger GW170817 with ANTARES, IceCube, and the Pierre Auger Observatory," *The Astrophysical Journal*, vol. 850, p. L35, 11 2017.
- [49] B. P. Abbott and others, "Gravitational Waves and Gamma-Rays from a Binary Neutron Star Merger: GW170817 and GRB 170817A," *The Astrophysical Journal*, vol. 848, p. L13, 10 2017.
- [50] M. G. Aartsen and others, "Multimessenger observations of a flaring blazar coincident with high-energy neutrino IceCube-170922A," *Science*, vol. 361, p. eaat1378, 2018.
- [51] M. G. Aartsen and e. al., "The IceCube Neutrino Observatory: Instrumentation and Online Systems," *JINST*, vol. 12, p. P03012, 2017.

- [52] H. Collaboration, "The HAWC Gamma-Ray Observatory: Design, Calibration, and Operation," in *ICRC 2013*, 2013.
- [53] U. Barres de Almeida, "The Southern Wide-Field Gamma-ray Observatory (SWGO)," in *Proceedings* of the IWARA 2020 Virtual Conference, 2020.
- [54] Huennefeld, Mirco, "Reconstruction Techniques in IceCube using Convolutional and Generative Neural Networks," *EPJ Web Conf.*, vol. 207, p. 05005, 2019.
- [55] D. Chirkin, "Photon tracking with GPUs in IceCube," Nucl. Instrum. Meth., vol. A725, pp. 141-143, 2013.
- [56] I.-G. Collaboration, "IceCube-Gen2: A Vision for the Future of Neutrino Astronomy in Antarctica," *arXiv*, p. arXiv:1412.5106, 12 2014.
- [57] L. Fang and D. Negrut, *Producing 3D Friction Loads by Tracking the Motion of the Contact Point on Bodies in Mutual Contact*, 2020.
- [58] H. Choi, C. Crump, C. Duriez, A. Elmquist, G. Hager, D. Han, F. Hearl, J. Hodgins, A. Jain, F. Leve, C. Li, F. Meier, D. Negrut, L. Righetti, A. Rodriguez, J. Tan and J. Trinkle, "On the use of simulation in robotics: Opportunities, challenges, and suggestions for moving forward," *Proceedings of the National Academy of Sciences*, vol. 118, 2021.
- [59] Open Science Grid, [Online]. Available: http://www.opensciencegrid.org. [Accessed 19 1 2021].
- [60] J. Brehmer, G. Louppe, J. Pavez and K. Cranmer, "Mining gold from implicit models to improve likelihood-free inference," *Proc. Nat. Acad. Sci.*, vol. 117, p. 5242–5249, 2020.
- [61] J. Brehmer, S. Mishra-Sharma, J. Hermans, G. Louppe and K. Cranmer, "Mining for Dark Matter Substructure: Inferring subhalo population properties from strong lenses with machine learning," *Astrophys. J.*, vol. 886, p. 49, 2019.
- [62] A. G. Baydin and others, "Efficient Probabilistic Inference in the Quest for Physics Beyond the Standard Model," July 2018.
- [63] A. G. Baydin, L. Shao, W. Bhimji, L. Heinrich, L. Meadows, J. Liu, A. Munk, S. Naderiparizi, B. Gram-Hansen, G. Louppe and et al., "Etalumis," *Proceedings of the International Conference for High Performance Computing, Networking, Storage and Analysis*, November 2019.
- [64] K. Cranmer and L. Heinrich, "Analysis Preservation and Systematic Reinterpretation within the ATLAS experiment," *Journal of Physics: Conference Series*, vol. 1085, p. 042011, September 2018.
- [65] X. Chen, S. Dallmeier-Tiessen, R. Dasler, S. Feger, P. Fokianos, J. B. Gonzalez, H. Hirvonsalo, D. Kousidis, A. Lavasa, S. Mele, D. R. Rodriguez, T. Šimko, T. Smith, A. Trisovic, A. Trzcinska, I. Tsanaktsidis, M. Zimmermann, K. Cranmer, L. Heinrich, G. Watts, M. Hildreth, L. Lloret Iglesias, K. Lassila-Perini and S. Neubert, "Open is not enough," *Nature Physics*, vol. 15, p. 113–119, 2019.
- [66] T. Šimko, K. Cranmer, M. R. Crusoe, L. Heinrich, A. Khodak, D. Kousidis and D. Rodríguez, "Search for Computational Workflow Synergies in Reproducible Research Data Analyses in Particle Physics and Life Sciences," in 2018 IEEE 14th International Conference on e-Science (e-Science), 2018.
- [67] P. Baldi, K. Cranmer, T. Faucett, P. Sadowski and D. Whiteson, "Parameterized neural networks for high-energy physics," *The European Physical Journal C,* vol. 76, April 2016.
- [68] G. Carleo, I. Cirac, K. Cranmer, L. Daudet, M. Schuld, N. Tishby, L. Vogt-Maranto and L. Zdeborová, "Machine learning and the physical sciences," *Reviews of Modern Physics*, vol. 91, December 2019.
- [69] G. Louppe, M. Kagan and K. Cranmer, Learning to Pivot with Adversarial Networks, 2017.
- [70] A. Ghosh, "Deep generative models for fast shower simulation in ATLAS," *J. Phys. Conf. Ser.*, vol. 1525, p. 012077, 2020.

- [71] I. Henrion, J. Brehmer, J. Bruna, K. Cho, K. Cranmer, G. Louppe and G. Rochette, "Neural Message Passing for Jet Physics," in *In Proceedings of the Deep Learning for Physical Sciences Workshop at NIPS*, 2017.
- [72] IRIS-HEP. [Online]. Available: https://iris-hep.org/.
- [73] G. Louppe, K. Cranmer and J. Pavez, "carl: a likelihood-free inference toolbox," *Journal of Open Source Software*, vol. 1, p. 11, 2016.
- [74] L. Heinrich and K. Cranmer, "diana-hep/yadage v0.12.13," October 2017.
- [75] L. Heinrich, M. Feickert and G. Stark, "pyhf: v0.6.3," September 2021.
- [76] J. Brehmer, F. Kling, I. Espejo, S. Perez and K. Cranmer, "MadMiner," November 2021.
- [77] IceCube Neutrino Observatory, [Online]. Available: https://icecube.wisc.edu/pubs. [Accessed 19 1 2021].
- [78] M. E. MacGilvray, E. Shishkova, D. Chasman, M. Place, A. Gitter, J. J. Coon and A. P. Gasch, "Network inference reveals novel connections in pathways regulating growth and defense in the yeast salt response," *PLOS Computational Biology*, vol. 13, pp. 1-28, 5 2018.
- [79] T. Chandereng and A. Gitter, "Lag penalized weighted correlation for time series clustering," *BMC Bioinformatics*, vol. 21, 8 2020.
- [80] A. S. Köksal, K. Beck, D. R. Cronin, A. McKenna, N. D. Camp, S. Srivastava, M. E. MacGilvray, R. Bodík, A. Wolf-Yadlin, E. Fraenkel, J. Fisher and A. Gitter, "Synthesizing Signaling Pathways from Temporal Phosphoproteomic Data," *Cell Reports*, vol. 24, p. 3607–3618, 9 2018.
- [81] A. Deshpande, L.-F. Chu, R. Stewart and A. Gitter, "Network Inference with Granger Causality Ensembles on Single-Cell Transcriptomic Data," 1 2019.
- [82] C. S. Magnano and A. Gitter, "Automating parameter selection to avoid implausible biological pathway models," *npj Systems Biology and Applications*, vol. 7, 11 2021.
- [83] D. Merrell and A. Gitter, "Inferring signaling pathways with probabilistic programming," *Bioinformatics*, vol. 36, p. i822–i830, 12 2020.
- [84] A. Gitter. [Online]. Available: https://www.biostat.wisc.edu/~gitter/software.html. [Accessed 14 1 2021].
- [85] A. Gitter. [Online]. Available: https://gitter-lab.github.io/ml-bio-workshop/. [Accessed 14 1 2021].
- [86] A. Gitter, "Machine Learning for Biology," 2021. [Online]. Available: https://carpentries-incubator.github.io/ml4bio-workshop/.
- [87] A. Gitter. [Online]. Available: https://www.ebi.ac.uk/pride/archive/projects/PXD006697. [Accessed 14 1 2021].
- [88] 2021 Data Science Research Bazaar, [Online]. Available: https://datascience.wisc.edu/datascience-research-bazaar/. [Accessed 13 1 2021].
- [89] Computing in Engineering Forum, [Online]. Available: https://graingerinstitute.engr.wisc.edu/computing-in-engineering-forum-2020/. [Accessed 17 1 2021].
- [90] IceCube Collaboration, [Online]. Available: https://masterclass.icecube.wisc.edu/. [Accessed 13 1 2021].
- [91] M. J. Rodriguez, "Fast inference using FPGAs for DUNE data reconstruction," *EPJ Web of Conferences*, vol. 245, p. 01030, 2020.
- [92] U. Competition. [Online]. Available: https://research.wisc.edu/funding/uw2020/round-5-projects/establishing-a-radio-astronomy-data-science-center/. [Accessed 14 1 2021].
- [93] N. Corp., "NVIDIA A40," [Online]. Available: https://www.nvidia.com/en-us/data-center/a40/.

- [94] N. Corp., "RTX A6000," [Online]. Available: https://www.nvidia.com/en-us/design-visualization/rtx-a6000/.
- [95] N. Corp., "DGX A100," [Online]. Available: https://www.nvidia.com/en-us/data-center/dgx-a100/.
- [96] X. Corp.. [Online]. Available: https://www.xilinx.com/applications/data-center/high-performance-computing/u55c.html.
- [97] N. Corp.. [Online]. Available: https://www.nvidia.com/en-us/geforce/graphics-cards/30-series/rtx-3090/.
- [98] A. Corp.. [Online]. Available: https://www.amd.com/en/products/server-accelerators/instinct-mi100.
- [99] Ceph. [Online]. Available: https://ceph.io/en/.
- [100] Y. Lecun, L. Bottou, Y. Bengio and P. Haffner, "Gradient-based learning applied to document recognition," *Proceedings of the IEEE*, vol. 86, pp. 2278-2324, 1998.
- [101] K. He, X. Zhang, S. Ren and J. Sun, Identity Mappings in Deep Residual Networks, 2016.
- [102] K. He, X. Zhang, S. Ren and J. Sun, Deep Residual Learning for Image Recognition, 2015.
- [103] UW-Madison DoIT, [Online]. Available: https://it.wisc.edu/services/researchdrive/. [Accessed 21 1 2021].
- [104] D. Weitzel, M. Zvada, I. Vukotic, R. Gardner, B. Bockelman, M. Rynge, E. F. Hernandez, B. Lin and M. Selmeci, "StashCache," *Proceedings of the Practice and Experience in Advanced Research Computing on Rise of the Machines (learning)*, 7 2019.
- [105] J. Crichigno, E. Bou-Harb and N. Ghani, "A Comprehensive Tutorial on Science DMZ," *IEEE Communications Surveys & Tutorials*, vol. 21, p. 2041–2078, 2019.
- [106] I. Sfiligoi, M. Hare, D. Schultz, F. Würthwein, B. Riedel, T. Hutton, S. Barnet and V. Brik, "Managing Cloud networking costs for data-intensive applications by provisioning dedicated network links," *Practice and Experience in Advanced Research Computing*, July 2021.
- [107] D. Schultz, B. Riedel and G. Merino, "Pyglidein A Simple HTCondor Glidein Service," *Journal of Physics: Conference Series*, vol. 898, p. 092018, 10 2017.
- [108] J. Towns, T. Cockerill, M. Dahan, I. Foster, K. Gaither, A. Grimshaw, V. Hazlewood, S. Lathrop, D. Lifka, G. D. Peterson, R. Roskies, J. R. Scott and N. Wilkins-Diehr, "XSEDE: Accelerating Scientific Discovery," *Computing in Science & Engineering*, vol. 16, p. 62–74, 9 2014.
- [109] HTCondor Annex Documentation, [Online]. Available: https://htcondor.readthedocs.io/en/latest/cloud-computing/using-annex-first-time.html. [Accessed 14 1 2021].
- [110] "Chameleon Cloud," [Online]. Available: https://www.chameleoncloud.org/. [Accessed 2 Jan 2021].
- [111] National Science Foundation, "NSF #2005572," [Online]. Available: https://www.nsf.gov/awardsearch/showAward?AWD\_ID=2005572. [Accessed 2 1 2021].
- [112] National Science Foundation, "NSF #2005506," [Online]. Available: https://nsf.gov/awardsearch/showAward?AWD\_ID=2005506&HistoricalAwards=false. [Accessed 2 1 2021].
- [113] L. Michael and B. Maas, "Research Computing Facilitators: The Missing Human Link in Needs-Based Research Cyberinfrastructure," 5 2016.
- [114] H. Team. [Online]. Available: https://htcondor.readthedocs.io/en/latest/admin-manual/user-priorities-negotiation.html#.
- [115] H. Team. [Online]. Available: https://htcondor.readthedocs.io/en/latest/users-manual/priorities-and-preemption.html?highlight=priority.

- [116] M. G. Aartsen and others, "Neutrino emission from the direction of the blazar TXS 0506+056 prior to the IceCube-170922A alert," *Science*, vol. 361, pp. 147-151, 2018.
- [117] L. Zhang, M. Wahib, H. Zhang and S. Matsuoka, A Study of Single and Multi-device Synchronization Methods in Nvidia GPUs, 2020.
- [118] "R/qtl2," [Online]. Available: https://kbroman.org/qtl2/. [Accessed 13 1 2021].
- [119] "R/qtl2ggplot," [Online]. Available: https://github.com/byandell/qtl2ggplot. [Accessed 13 1 2021].
- [120] "R/qtl2pattern," [Online]. Available: https://github.com/byandell/qtl2pattern. [Accessed 13 1 2021].
- [121] "R/qtl2shiny," [Online]. Available: https://github.com/byandell/qtl2shiny. [Accessed 13 1 2021].
- [122] "Brian Yandell Publications," [Online]. Available: http://pages.stat.wisc.edu/~yandell/doc/pubs.html. [Accessed 13 1 2021].
- [123] M. D. Sinclair, J. Alsop and S. V. Adve, "Efficient GPU synchronization without scopes," in *Proceedings of the 48th International Symposium on Microarchitecture*, 2015.
- [124] L. Zhang, M. Wahib, H. Zhang and S. Matsuoka, "A Study of Single and Multi-device Synchronization Methods in Nvidia GPUs," in 2020 IEEE International Parallel and Distributed Processing Symposium (IPDPS), 2020.
- [125] J. Nelson and R. Palmieri, "Don\textquotesinglet Forget About Synchronization!," in *Proceedings of the 10th International Workshop on Programming Models and Applications for Multicores and Manycores PMAM\textquotesingle19*, 2019.
- [126] Machine Learning for Biology, [Online]. Available: https://carpentries-incubator.github.io/ml4bio-workshop/.
- [127] H. Serviansky, N. Segol, J. Shlomi, K. Cranmer, E. Gross, H. Maron and Y. Lipman, *Set2Graph: Learning Graphs From Sets*, 2020.