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**Education**

* Washington University in St. Louis:
* PhD. in Systems Science and Mathematics, January 2021
* McDonnell International Scholars Academy- US Scholar, NSF Fellow
* George Mason University:
* B.S. in Electrical Engineering, Applied Mathematics, May 2015
* Honors College, University Scholar

**Skills**

* Programming: R, Python, C, Matlab, SQL, Mathematica, MIPS Assembly, VHDL, Arduino, LaTex
* Machine Learning: Design and optimization of machine learning workflows, random forests, SVM, logistic regression, AdaBoost, Statistical Learning, Topological Data Analysis, deep learning, supervised, unsupervised.
* Signals and Systems: Detection and estimation, filter design and application, stability analysis, statistical signal processing, DSP, control systems.

**Experience**

* May 2020-September 2020: Decision Sciences Emerging Talent Summer Program, Bayer:
* Developed concepts of equality and conditions for scalability in workflows with MSE loss, created slide decks exploring Automated vs. Augmented Intelligence, presented work to team and leads.
* August 2015-December 2020: Graduate Research Scholar, Washington University in St. Louis:
* The topic of my dissertation is the design and optimization of machine learning workflows using Machine Learning Morphisms. Developed conditions for separability and lower bounds on generalization error.
* Built a machine learning model using topological data analysis to improve predictions of 30-day Hospital Readmissions in collaboration with Barnes Jewish Hospital.
* Designed a module to assign projects to abandoned urban lots, maximizing the Triple Bottom Line Score while considering cost, physical requirements, and local legal codes.
* Mentored Undergraduate Research Projects on matrix completion for historical temperature records, cloud recognition, and exploring the impact of interventions on 30-Day Hospital Readmissions.
* May 2018-August 2018: Research Fellow, Los Alamos National Laboratory:
* Developed machine learning algorithms to identify backbone networks in Discrete Fracture Networks. Algorithm improved previous work by constraining results to connected graphs.
* January 2014-May 2015, Fall 2011-Summer 2012: Research Assistant, C4I Center at George Mason University:
* Created maps using ArcGIS and Python predicting lost person behavior for use in wilderness search and rescue scenarios by fitting distribution parameters to case data.
* Developed path planning algorithms to control the trajectory of an autonomous search and rescue unit. Also responsible for implementing vehicle navigation. Worked with a team of four students.

**Publications**

* E. Cawi, P.S. La Rosa, and A. Nehorai, “Conditions for Separability of Machine Learning Workflows”, submitted, Journal of Artificial Intelligence Research, 2020.
* AMC Tukpah, E. Cawi (joint first), L. Wolf, A. Nehorai, L. Cummings-Vaughn, “Development of an Institution Specific Readmission Risk Prediction Model for Real-Time Prediction and Patient-Centered Interventions”, in revision, Journal of General, Internal Medicine, 2020.
* E. Cawi, P. S. La Rosa, and A. Nehorai, "Designing machine learning workflows with an application to topological data analysis," PLOS ONE, Vol. 14, No. 12, pp. 1-26, Dec. 2019.
* S. Srinivasan, E. Cawi, J. Hyman, H. Viswanathan, G. Srinivasan “Preserving network connectivity during system reduction of fracture networks via machine-learning”, accepted, Computational Methods for Water Resources, 2020.
* S. Srinivasan , E. Cawi, J. Hyman, D. Osthus, A. Hagberg, H. Viswanathan, & G. Srinivasan. (2020). Physics-informed machine learning for backbone identification in discrete fracture networks. *Computational Geosciences*, 1-16.
* Cassidy, A., Cawi, E., & Nehorai, A. (2017). A model for decision making under the influence of an artificial social network. *IEEE Transactions on Computational Social Systems*, *5*(1), 220-228.
* Agcayazi, M. T., Cawi, E., Jurgenson, A., Ghassemi, P., & Cook, G. (2016, June). ResQuad: Toward a semi-autonomous wilderness search and rescue unmanned aerial system. In *2016 International Conference on Unmanned Aircraft Systems* (pp. 898-904).