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Prof. Yuh-Jye Lee / Department of Applied Mathematics

Data Science, Machine Learning, Numerical Optimization

My research is primarily rooted in optimization theory and spans a range of areas including machine learning, data mining, big data, numerical optimization and operations research. During the last decade, I have developed many learning algorithms in supervised learning, semi-supervised learning and unsupervised learning as well as linear/ nonlinear dimension reduction. My recent major research is applying machine learning to information security problems such as network intrusion detection, anomaly detection, malicious URLs detection and legitimate user identification. Currently, I focus on online learning algorithms for dealing with large scale datasets based on stochastic optimization. I am interested in exploring numerical techniques such as accelerated stochastic gradient, Hessian inverse approximation and the second order information. The compressed sensing, dictionary learning and sparse coding are other major research interests. I believe that all these research topics play extremely important roles in Big Data as well as Internet of Things (IoT) data analytics.