

Mathematics Department Colloquium

Speaker: Dr. Hieu Nguyen, Rowan University Department of Mathematics.

Title: Machine Learning, Anomaly Detection, and Error-Correcting Output Codes

Date/time: Nov 26, 2019 at 2PM

Room: James Hall 2101.

Abstract: In this talk we will discuss an error-correcting output code (ECOC) driven approach in machine learning where class labels are represented by codewords constructed from an error-correcting code that when arranged as a matrix (called an ECOC matrix) has relatively large minimum row and column Hamming distances. Classification of an object is performed by matching its corresponding output codeword to the class codeword that is closest in terms of Hamming distance. Anomalies are detected and encoded as new concepts based on the output codewords of the unseen objects and their Hamming distances with respect to seen objects. We describe constructions of optimal ECOC matrices based on Hadamard matrices and present some classification error bounds.