



TEXAS A&M  
Institute of  
Data Science



TEXAS A&M UNIVERSITY  
Department of Industrial  
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## OPERATIONS RESEARCH AND DATA SCIENCE DISTINGUISHED SEMINAR SERIES

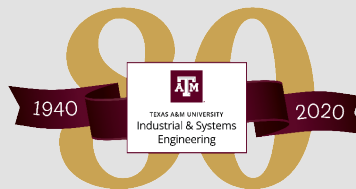
### Learning to Benchmark



Using mathematical models to benchmark the capability of a sensor platform to provide data for accurate signal detection, classification, or estimation has been an essential part of performance-driven system design. When a mathematical model is unreliable, or not available, a natural question to ask is whether it is possible to use machine learning to accurately benchmark the capability of a sensor solely from experimental data collected from the sensor. In this talk we will answer this question in the affirmative. For example, in the context of classification, empirical estimation of the minimal achievable classification error, i.e., the Bayes error rate, from labeled experimental sensor data can be framed as the meta-learning problem of estimating the Bayes-optimal misclassification error rate without having to estimate the Bayes-optimal classifier. The talk will cover relevant background, theory, algorithms, and applications of benchmark learning.

#### Alfred O. Hero III, Ph.D.

John H. Holland Distinguished University  
Professor & R. Jamison and Betty Williams  
Professor  
University of Michigan



**Seminar Date:** Friday, January 17  
**Time:** 1:50 - 2:40 p.m.  
**Location:** ETB 1034

### Biography

Alfred O. Hero III is the John H. Holland Distinguished University Professor of Electrical Engineering and Computer Science and the R. Jamison and Betty Williams Professor of Engineering at the University of Michigan, Ann Arbor. He was founding Co-Director of the University's Michigan Institute for Data Science (MIDAS) (2015-2018). He received the B.S. from Boston University (1980) and the Ph.D. from Princeton University (1984). He is an IEEE Fellow, a Section Editor of the SIAM Journal on Mathematics of Data Science, a Senior Editor of the IEEE Journal on Selected Topics in Signal Processing. He is also on the editorial board of the Harvard Data Science Review and has served as a member of the IEEE Board of Directors. He has received several best paper awards, the IEEE Signal Processing Society Technical Achievement Award in 2013, the 2015 IEEE Signal Processing Society Award, the 2020 IEEE Fourier Award. He has received a Rackham Distinguished Faculty Achievement Award in 2011, the 2017 Stephen S. Attwood Excellence in Engineering Award and the 2018 H. Scott Fogler Award for Professional Leadership and Service from the University of Michigan. Alfred Hero's recent research interests are in high dimensional spatio-temporal data, multi-modal data integration, statistical signal processing, and machine learning.



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