

Speaker: Tom Santner, Ohio State University

**Title: A Sequential Design for Approximating the Pareto Front in Multi-Objective Function Optimization Using an Expected Fitness Improvement Function**

Date: Thursday, August 27

Time: 9 a.m.

Location: TA 3, Building 40, Room N125 (Moon Room)

Abstract:

**This talk proposes a methodology for the simultaneous optimization of multiple (expensive-to-compute) black box output functions, in the sense of Vilfredo Pareto, using a surrogate modeling algorithm. The algorithm has two key features. The first feature is the use of a stochastic process-based interpolator which allows the assessment of the error of the output predictors. The second feature is the use of a minimax fitness function as a measure of the improvement for potential new training sites. We use simulation to compute the expected minimax fitness given the current data. We select the next site at which each output will be computed to be that input which maximizes the expected minimax fitness. We examine the performance of the expected fitness criterion for two multivariate Gaussian process emulators and describe other process options. The proposed algorithm(s) are compared with a proposal of Keane, 2006 using two measures of completeness of the solution and its spread.**