

**DANIEL J. EPSTEIN DEPARTMENT OF
INDUSTRIAL AND SYSTEMS ENGINEERING**

EPSTEIN INSTITUTE SEMINAR • ISE 651 SEMINAR

***Nested Solutions in Combinatorial
Optimization***

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ABSTRACT

We consider two classes of combinatorial optimization problems in which we maximize a gain function subject to a knapsack constraint. In the first class of models the gain function is supermodular and the knapsack constraint function is submodular and increasing. In the second class, the gain function is increasing and submodular and the knapsack constraint is simply a cardinality constraint. For both classes of models we focus on obtaining, in polynomial time, nested solutions to the parametric model under an increasing budget. We provide motivating examples involving border security, joint chance constraints, clustering, and rapidly detecting cell-phone viruses. This includes joint work with John Hasenbein, Jinho Lee, and Michael Nehme.

**TUESDAY, APRIL 9, 2013
VON KLEINSMID CENTER (VKC) ROOM 100
3:45 – 5:00 PM**

SPEAKER BIO



David Morton is Engineering Foundation Professor in the Graduate Program in Operations Research & Industrial Engineering in the Mechanical Engineering Department at The University of Texas at Austin. He has an MS and PhD in Operations Research from Stanford University and, prior to joining the faculty at UT-Austin, was a National Research Council Postdoctoral Fellow at the Naval Postgraduate School.