Linear Programming at Stanford

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Abstract

Linear programming (LP) is becoming a more and more important and popular mathematical and numerical optimization model/tool in everyday and every field's decision making. Businesses, large and small, now use LP to control manufacture inventories, price commodities, design civil/communication networks, and plan investments. LP has also become a popular subject taught in under/graduate and MBA curricula, advancing human knowledge and promoting science education. We will present a few historical results of George Dantzig on LP and their impact on the field of computational mathematics and engineering. We will also present a few modern applications arisen from exchange market pricing and call auction mechanism designing. LP today is proven to be an extremely effective theory-proving machine as well. We will show a couple of such examples in coding theory and approximation algorithms for discrete optimization, together with some remaining open questions in LP.