Convex Optimization for Information Processing: A State of the Art Review

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Abstract

Striking developments in optimization theory have taken place since early 1980's. These include Karmarkar's interior-point methodology for linear programming in the 1980's, its generalization to convex programming in the 1990's, and recent advances in global optimization over polynomials. This body of knowledge has in turn led to widespread application of optimization techniques in information technology fields as well as new solution methods that were considered intractable not too long ago. In this talk we illustrate basic elements of convex programming and survey some current research activities in polynomial optimization. Software tools for convex and polynomial programming will also be discussed.

Prof. Wu-Sheng Lu received the B.Sc. degree in Mathematics from Fudan University, Shanghai, China, in 1964, and the M.S. degree in Electrical Engineering and the Ph.D. degree in Control Science from the University of Minnesota, Minneapolis, in 1983 and 1984, respectively. Since 1987, he has been with the University of Victoria where he is a professor. He is the co-author with A. Antoniou of Two-Dimensional Digital Filters (Marcel Dekker, 1992) and Practical Optimization: Algorithms and Engineering Applications (Springer 2007). Dr. Lu has served as editor or assocaite editor for several journals. He is a Fellow of the Engineering Institute of Canada and the IEEE.