上海交通大学自动化系
Department of Automation
Shanghai Jiao Tong University

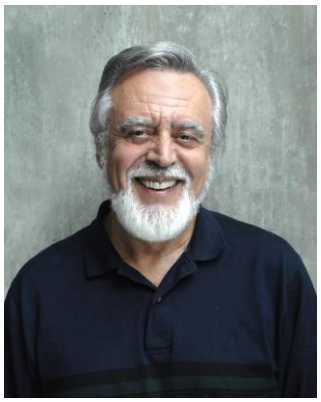
系统控制与信息处理教育部重点实验室
Key Laboratory of System Control and Information Processing, Ministry of Education

学术报告会

时间：2014年5月26日(周一)14:30

地点：电院群楼3-200会议室

Convex Optimization: Theory and Algorithms



Prof. Dimitri P. Bertsekas

Massachusetts Institute of Technology, USA

Abstract:

We survey recent results on the theory and algorithms of convex optimization, and its applications in large-scale optimization, inference/machine learning, signal processing, and large-scale and distributed optimization. We then focus on the class of incremental methods for problems involving cost functions and constraints consisting of a large number of convex components. Our methods consist of iterations applied to single components, and have proved very effective in practice. We introduce a unified algorithmic framework for a variety of such methods, some involving gradient and subgradient iterations, which are known, and some involving combinations of subgradient and proximal methods, which are new and offer greater flexibility in exploiting special structure. We provide an overview of the convergence and rate of convergence properties of these methods, including the advantages offered by randomization in the selection of components, and we discuss their extensive applications.

Biography:

Dimitri P. Bertsekas undergraduate studies were in engineering at the National Technical University of Athens, Greece. He obtained his MS in electrical engineering at the George Washington University, Wash. DC in 1969, and his Ph.D. in system science in 1971 at the Massachusetts Institute of Technology. Dr. Bertsekas has held faculty positions with the Engineering-Economic Systems Dept., Stanford University (1971-1974) and the Electrical Engineering Dept. of the University of Illinois, Urbana (1974-1979). Since 1979 he has been teaching at the Electrical Engineering and Computer Science Department of the Massachusetts Institute of Technology (M.I.T.), where he is currently McAfee Professor of Engineering. His research at M.I.T. spans several fields, including optimization, control, large-scale computation, and data communication networks, and is closely tied to his teaching and book authoring activities. Professor Bertsekas was awarded the INFORMS 1997 Prize for Research Excellence in the Interface Between Operations Research and Computer Science for his book "Neuro-Dynamic Programming" (co-authored with John Tsitsiklis), the 2000 Greek National Award for Operations Research, the 2001 ACC John R. Ragazzini Education Award, the 2009 INFORMS Expository Writing Award, and the 2014 Richard E. Bellman Control Heritage Award. In 2001, he was elected to the United States National Academy of Engineering for "pioneering contributions to fundamental research, practice and education of optimization/control theory, and especially its application to data communication networks."