THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學
75th
INNOVATION AND APPLICATION
FOR THE FUTURE
凝聚智慧 創建未來

DEPARTMENT OF APPLIED MATHEMATICS
應 用 數 學 系

Academy of Mathematics
and Systems Sciences

PolyU 75th Anniversary Special

The AMSS-PolyU Joint Research Institute

Distinguished Lecture

A Trust Region Method Based On A New Affine Scaling Technique

by

Professor Yaxiang Yuan

Abstract

This lecture will give a new affine scaling technique for nonlinear programming with simple bounds. Based on this, an interior point trust region method with the new scaling technique is derived. The scaling matrix depends on the distances of the current iterate to the boundaries, the gradient of the objective function and the trust region radius. This scaling technique is different from existing ones. It is motivated by our analyzing the linear programming case. The trial step is obtained by minimizing the quadratic approximation to the objective function in the scaled trust region. It is proved that our algorithm guarantees that at least one accumulation point of the iterates is a stationary point. Preliminary numerical experience on problems with simple bounds from the CUTEr collection is also reported. The numerical performance reveals that our method is effective and competitive with the famous algorithm LANCELOT. It also indicates that the new scaling technique is more effective than that used in the subroutine fmincon from Matlab Optimization Toolbox.

Biography

Yaxiang Yuan is a Professor of the Institute of Computational Mathematics and Scientific/Engineering Computing of the Chinese Academy of Sciences and the Director of AMSS-PolyU joint Institute. He is a Fellow of Chinese Academic Sciences. He received his Ph.D. from University of Cambridge in 1985, and then worked in Cambridge for three years as a Rutherford research fellow at Fitzwilliam College of Cambridge. He was the director of the Institute of Computational Mathematics and Scientific/Engineering Computing of the Chinese Academy of Sciences for about 12 years (from 1995 to 2006), the director of the State Key Laboratory of Scientific and Engineering Computing of China for 10 years (from 1996 to 2005), and one of the vice presidents of Academy of Mathematics and System Sciences of the Chinese Academy of Sciences for 8 years (from 1998 to 2006). He received many academic awards. He works on nonlinear optimization, mainly on trust region algorithms, quasi-Newton methods, etc. He has published widely in leading optimization journals.

ALL ARE WELCOME !

Date : 9 January 2012 (Mon)

Time : 3:00pm - 4:00 pm
(Tea reception at 4:15pm)

Venue: Room AG710

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