

The 33rd ICUS Open Lecture

Perspectives of Mathematical Optimization in Social Systems

—Leading Society Developed with Mathematical Engineering—

Thursday, December 1st, 2016, from 13:15 to 17:30
in Anniversary Hall, S-building
Institute of Industrial Science

[Purpose]

The mathematical optimization is one of the essential technique to develop the social systems. Same as civil and architectural infrastructures, it could be say that the mathematical optimization is also "the infrastructure" to support our society. In this lecture, Dr. Bixby and Dr. Rothberg, both of who have developed the most sophisticated optimization softs in the world (CPLEX and Gurobi), will explain us not only the theoretical background but also plenty of example to real application.

[Schedule]

13:15- Opening Remarks

13:30- Lecture 1: How to apply the optimization?

—Example of setting school area in Oregon Portland, U.S.A.—

Dr. Edoward Rothberg (Gurobi Optimization Inc. CEO)

15-minute Break

14:45- Short Lecture: Introduction to Case study in Japan (in Japanese)

15-minute Break

15:30- Lecture 2: Business and Mathematics: A Saga of 25 Years of Progress in Optimization

Dr. Robart Bixby (Gurobi Optimization Inc. CSO)

17:15- Closing Remarks

[Organizer]

International Center for Urban Safety Engineering (ICUS)

Institute of Industrial Science

The University of Tokyo

c/o Honma Lab. (honmalab@iis.u-tokyo.ac.jp)

[Biography]

Robert Bixby

Gurobi Optimization Inc. Chief Strategy Officer and Co-founder

Dr. Bixby has over twenty years of experience in the optimization software business. Prior to his role as Gurobi CSO, Dr. Bixby held the Gurobi CEO role since co-founding Gurobi in 2008. Prior to Gurobi, Dr. Bixby co-founded CPLEX Optimization, Inc. in 1987. CPLEX was acquired by ILOG, Inc., in 1997, after which he served on the ILOG Board of Directors, was manager of the ILOG CPLEX Development Team, President of the ILOG Technical Advisory Board, and General Manager of ILOG 's Semiconductor Business Division.

Dr. Robert Bixby has a BS in Industrial Engineering and Operations Research from the University of California, Berkeley, and a PhD in Operations Research from Cornell University. He has held academic positions at the University of Kentucky, Northwestern University, and Rice University. He is currently Noah Harding Professor Emeritus of Computational and Applied Mathematics at Rice, and Research Professor of Management in Rice 's Jones School of Management.

Dr. Bixby has published over fifty journal articles, and is an acknowledged expert on the computational aspects of linear and integer programming. He has won several awards for his work in optimization, including the Beale-Orchard-Hays Prize of the Mathematical Programming Society, and the INFORMS Impact and Frederick W. Lanchester Prizes. In 1997 he was elected to the National Academy of Engineering for his contributions to the theory and practice of optimization.

Edward Rothberg

Gurobi Optimization Inc. Chief Executive Officer and Co-founder

Dr. Rothberg has served in senior leadership positions in optimization software companies for more than fifteen years. Prior to his role as Gurobi CEO, Dr. Rothberg held the Gurobi COO position since co-founding Gurobi in 2008, and prior to that he led the ILOG CPLEX team.

Dr. Edward Rothberg has a BS in Mathematical and Computational Science from Stanford University, and an MS and PhD in Computer Science, also from Stanford University.

Dr. Rothberg has published numerous papers in the fields of linear algebra, parallel computing, and mathematical programming. He is one of the world's leading experts in sparse Cholesky factorization and computational linear, integer, and quadratic programming. He is particularly well known for his work in parallel sparse matrix factorization, and in heuristics for mixed integer programming.