

**Lecture Notes in  
Operations Research**

**11**

Series Editors:  
Ding-Zhu Du and Xiang-Sun Zhang

**OPTIMIZATION AND  
SYSTEMS BIOLOGY**

The Third International Symposium, OSB'09  
Zhangjiajie, China, September 20–22, 2009  
Proceedings

Edited by  
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# ABOUT OSB 2009

## THEME AND SCOPE

The 3rd International Symposium on Optimization and Systems Biology (OSB 2009), organized by Chinese Academy of Sciences, Shanghai University and University of Tokyo will be held in Zhangjiajie, China from September 20 to 22, 2009. The symposium is sponsored by National Natural Science Foundation of China (NSFC).

Systems Biology and Bioinformatics have become intensive research topics in the recent past decade and attracted great many leading scientists working in Biology, Physics, Mathematics and Computer Science. Optimization, Statistics, and many other mathematical methods have been widely used in the field. Following the successful OSB 2007 and OSB 2008, the purposes of OSB 2009 is to extend the international forum for scientists, researchers, educators, and practitioners to exchange ideas and approaches, to present research findings and state-of-the-art solutions in this interdisciplinary field, including optimization methods and its applications in biosciences and researches on various aspects of Systems Biology, such as integration of genome-wide microarray, proteomic, and metabolomic data, inference and comparison of biological networks, and model testing through design of experiments.

The theme of OSB 2009 is interdisciplinary by its nature and focuses on bridging opportunities between Optimization and Systems Biology studies. We are particularly interested in submissions that report on theoretical, experimental and applied research motivated by systems biology problems. Theoretical and applied papers are expected to show convincingly the usefulness and efficiency of optimization algorithms discussed in a practical setting. Typical, but not exclusive, topics of interest are:

- Optimization Theory & Applications
- Approximation Algorithms
- Combinatorics
- Neural Networks
- Data Mining
- Machine Learning
- High Performance Computing
- Information Theory and Statistical Analysis

- Gene Regulatory Network
- Protein Interaction Network
- Protein Structures and Functions
- Comparative Genomics
- Microbial Community Analysis
- Quantitative Models of Cellular & Multi-Cellular Systems
- Designing and Modeling Synthetic Biological Systems
- Nonlinear Dynamics and Analysis of Biological Systems

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## **PROCEEDING PAPERS AND CONTRIBUTING AUTHORS**

In Proceedings of the Third International Symposium on Optimization and Systems Biology (OSB 2009), the papers are indexed by ISTP (Index to Scientific & Technical Proceedings).

Fifty nine papers in this volume cover wide range of optimization and systems biology. Authors of these papers come from China mainland, United States, Hong Kong, Taiwan, Japan, Korea, Singapore, India, Portugal, Australia, and Poland. Many active researchers in various areas contributed their overview and introduction in their fields besides specific deep research achievements. During the symposium, focusing sessions are organized such as in optimization, systems biology, bioinformatics, feature selection and extraction, networks in cellular systems, dynamic of molecular networks, support vector machine, computational models and algorithms.

OSB 2009 is held in Zhangjiajie, a must-see UNESCO World Heritage area known as world geological park in central-south China. We hope all the participants will enjoy very much not only the academic exchange, but also the beautiful trip of Zhangjiajie.

## **AVAILABILITY**

The electronic version of the proceedings can be downloaded from the web sites of ORSC and APORC.

ORSC: <http://www.orsc.org.cn>

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