Indo-US Workshop on
Advances in Computational Optimization and Analysis of Systems
(COSA 2007), 6-9 February, 2007
Outreach Centre, IIT Kanpur

6 February 2007 (Tuesday) Tutorial

Morning Session I [9:00 AM to 10:00 AM]

Optimization Theory by Joydeep Dutta

Tea Break [10:00AM to 10:30 AM]

Morning Session II [10:30 AM to 12:30 PM]

Optimization Theory (Cont.) by Joydeep Dutta
Genetic Algorithms by Kalyanmoy Deb

Lunch Break [01:00 PM to 02:00 PM]

Afternoon Session I [02:00 PM to 03:00 PM]

Evolutionary Multi-objective optimization by Kalyanmoy Deb

Tea Break [03:00 PM to 03:30 PM]

Afternoon Session II [03:30PM to 5:30 PM]

Problem Formulation and Application by Partha Chakroborty

7 February 2007 (Wednesday)

Inaugural Session [9:00 AM to 09:50 AM]

Invocation by Shanta Raghavendra
Welcome address by Kalyanmoy Deb, Indo-US Workshop organizer
Address by Smriti Trikha, Indo-US Technology Forum
Inaugural address by Sanjay G. Dhande, Director, IIT Kanpur
Vote of Thanks by Parhta Chakroborty, Indo-US Workshop organizer

Photo Session [09:50AM to 10:00 AM]

Tea Break [10:00 AM to 10:30 AM]

Morning [10:30 AM to 01:00 PM] **Chair: Ashok Mittal**

Kenneth A. De Jong: *Evolutionary Computation: Where We Are and Where We're Heading*
R.Chandrasekaran: *Recent Network Flow and Synthesis Problems*
V. S. Borkar: *Reinforcement Learning for Markov Decision Processes*
Goutam Dutta: *My Journey of Optimization Based Modeling in Process Industries*

Lunch Break [01:00 PM to 02:30 PM]

Afternoon Session I [02:30 PM to 04:15 PM] **Chair: Prabha Sharma**

C. A. Floudas: *Deterministic Global Optimization: Advances in Improved Convex Underestimation Methods*
V. Adimurthy: *Optimization in Mission Design and Aero Space System Dynamics*
Trilochan Sastry: *Alternate Formulations and Solution Procedures for the TSP*

Tea Break [04:15 PM to 04:45 PM]

Afternoon Session II [04:45 PM to 05:45 PM] **Chair: Ashu Jain**

John A. Cafeo: *Challenges in the Use of Optimization to Support Decisions in Vehicle Design*
Vinay Ramanath : *Optimization as a Vehicle for DFSS*

Cultural Programme [06:30 PM to 08:00 PM]

A Violin Recital by Dr. N. Rajam
Auditorium

8 February 2007 (Thursday)

Morning Session I [9:00 AM to 10:15 AM] **Chair: N. G. R. Iyengar**

G. Fadel: *Packing and Layout Optimization*
Kalyanmoy Deb: *Optimization Research at IIT Kanpur*

Tea Break [10:15 AM to 10:45 AM]

Morning Session II [10:45 AM to 12:45 PM] **Chair: Bithin Dutta**

Singiresu S. Rao: *Uncertainty Models in Engineering Design Optimization*
K. Sudhakar: *Handling of Dependencies of Coupled Analyses in Multidisciplinary System*
R. K. Ramanathan: *Structural Optimization in Aircraft Design--Approximation Concepts, Algorithms, Frameworks, Design Areas to Multi Disciplinary Optimization*

Lunch Break [12:45 PM to 02:15 PM]

Afternoon Session [02:15 PM to 04:00 PM] **Chair: Partha Chakroborty**

Milan Zeleny: *Optimization, Optimal Design and de Novo Programming: Discussion Notes*
G. K. Ananthasuresh: *Optimization in the Design and Analysis of Proteins and Biological Cells*
D. Bhattacharjee: *Soft Computing in Steel*

Tea Break [04:00 PM to 04:30 PM]

Poster Session [04:30 PM to 05:45 PM] **Chair: Ramprasad Potluri**

Multi-objective Optimal Design of Shell and Tube Heat Exchangers using the sJG Adaptation of the Binary-Coded NSGA-II
Aaditya Agarwal and Santosh K. Gupta, Indian Institute of Technology Kanpur

Solving Assets and Liabilities Management Problems in Banks via Fuzzy Optimization
N. Arun and V. Ravi, Institute for Development & Research in Banking Technology, Hyderabad

From Convex to Non-convex Optimization: A Perspective on Modern Optimization Theory
Joydeep Dutta, Indian Institute of Technology Kanpur

Hybrid Evolutionary Optimization Algorithms for Protein Structure Prediction
Swapna Gunda and V. Sundararajan, CDAC, Pune

Nonlinear Dynamics Based Methods for Global Optimization of Unconstrained Functions
Rahul Konnur, Tata Consultancy Services, Pune

Optimization Problem Solving Using Evolutionary Algorithm
Abhay Kumar and Swanand M. Lele, Indian Institute of Technology Kanpur

Finding Heuristics for Optimized Compilation in Embedded Systems using Machine Learning
A. R. Mahajan and M. S. Ali, G. H. Raisoni College of Engineering, Nagpur

Solving Industrial Problems using Evolutionary Multi-Objective Optimization Framework
Kishalay Mitra, Tata Consultancy Services, Pune

Determination of MQL for Automatic Drilling Process using GA Based Estimation of Parameters
Arup K. Nandi, Momemtive Performance Materials, Chennai

Evolutionary Multi-Objective Optimization: Research, Development and Applications
Karthik S. and G. Sesha Kiran, Indian Institute of Technology Kanpur

Dominance Analysis for Local Search Algorithms
Prabha Sharma, Indian Institute of Technology Kanpur

Gene Expression Profiling and Gene Network Analysis using Mathematical Programming
G. S. Sikarwar, R. Verma and Sanjeev Garg, Indian Institute of Technology Kanpur

A Comparative Study of Genetic Algorithm, Improved-Repulsive Particle Swarm Optimization and Simulated Annealing
Sanjeev K. Singh, Tezpur University, Assam

A New Hybrid Optimization Approach Based on Ant Colony for Data Clustering
Amarendra N. Sinha and Nibedita Das, Birla Institute of Technology, Mesra, Ranchi

Optimization of a Feeder Transit Network Using Genetic Algorithm
Ashish Verma, Indian Institute of Technology Guwahati

9 February 2007 (Friday)

Morning Session I [9:00 AM to 10:15 AM] **Chair: S. K. Gupta**

Garud Iyengar: *Robust Optimization: a Solution to the Curse of Uncertainty*
Asim K. Pal: *On Optimization Algorithms and Heuristics and Their Applications: Some Examples*

Break Tea [10:15 AM to 10:45 AM]

Morning Session II [10:45 AM to 12:45 PM] **Chair: Joydeep Dutta**

B. Mordukhovich: *Recent Advances in Variational Analysis with Applications to Optimization and Control*
M. C. Joshi: *Optimal Control Problems Involving Elliptic Differential Partial Equations*
Nirupam Chakraborti: *A Novel Method for Alignment of Two Nucleic Acid Sequences Using Ant Colony Optimization and Genetic Algorithms*

Lunch Break [12:45 PM to 02:15 PM]

Afternoon Session [02:15 PM to 04:00 PM] **Chair: Brahma Deo**

M. Wiecek: *Multi-scenario Multi-objective Optimization for Engineering Design*
B. V. Babu: *Improved Differential Evolution for Single- and Multi-Objective Optimization: MDE, MODE, NSDE and MNSDE*
Warren Dias: *The Optimization Driven Design Process*

Tea Break [04:00 PM to 04:30 PM]

Panel Discussion Session [04:30 PM to 05:45 PM] **Chair: Kripa Shanker**
Moderator: Garud Iynegar