

「大規模計算機環境下における進化計算の新たな展開」

主催：北海道大学情報基盤センター

共催：北海道大学情報基盤センター共同研究

「大規模計算機環境を活かした進化型多目的最適化の新たな展開」

「大規模問題解決のための進化計算並列化技術とクラウド時代の応用発掘」

「クラウド環境を用いた大規模群れ行動解析システムの構築」

日時：2017年3月6日（月）13:00 ～ 17:40

会場：北海道大学情報基盤センター北館4階会議室

プログラム

13:00 – 14:00 Invited Lecture

Chair: Masaharu Munetomo (Hokkaido University)

“Niches of Population-based Optimization Algorithms in Practice”

Kalyanmoy Deb, Koenig Endowed Chair Professor, Department of Electrical and Computer Engineering, Michigan State University, East Lansing, Michigan, USA

Abstract: Optimization problems are omnipresent in practice and researchers and practitioners have always been interested in developing computationally fast and reliable algorithms. Traditionally, optimization algorithms were developed based on the improvement of a single solution through the search space. However, in the past three decades, population-based optimization algorithms have dominated the field due to a number of niches that they provide. In this seminar, we shall present a generic framework of a population-based optimization algorithm and explain their advantages in handling various practicalities over their point-based counterparts. As a case study, we shall present a recent study in which a real-world resource allocation problem involving a staggering Billion variables has been solved.

Bio-sketch:

Kalyanmoy Deb is Koenig Endowed Chair Professor at Department of Electrical and

Computer Engineering in Michigan State University, USA. Prof. Deb's research interests are in evolutionary optimization and their application in optimization, modeling, and machine learning. He was awarded Infosys Prize, TWAS Prize in Engineering Sciences, CajAstur Mamdani Prize, Distinguished Alumni Award from IIT Kharagpur, Edgeworth-Pareto award, Bhatnagar Prize in Engineering Sciences, and Bessel Research award from Germany. He is fellow of IEEE, ASME, and three Indian science and engineering academies. He has published over 435 research papers with Google Scholar citation over 96,500 with h-index 101. He is in the editorial board on 20 major international journals. More information about his research contribution can be found from <http://www.egr.msu.edu/~kdeb>.

14:10 – 15:50 Session I

Chair: Yuji Sato (Hosei University)

“A Study on Affinity-Based Search Amount Control in MOEA/D”

Hiroyuki Sato*, Minami Miyakawa**, and Keiki Takadama*

*The University of Electro-Communications, **Hosei University, JSPS Research Fellow (PD)

“A Post-Analytical Framework by Multiobjective Genetic Fuzzy Rule Selection”

Yusuke Nojima, Yuki Tanigaki, Hisao Ishibuchi

Osaka Prefecture University

“Study of a dynamic control of aggregate functions in MOEA/D”

Shinya Watanabe, Takanori Sato and Hibiki Samonji

Muroran Institute of Technology

“Polynomial Mean-Centric Crossover for Directed Mating in Evolutionary Constrained Multi-Objective Continuous Optimization”

Minami Miyakawa*, Hiroyuki Sato**, Yuji Sato*

*Hosei University, **The University of Electro-Communications

“Constrained Many-objective Optimization with Initial Feasible Population Seeding”

Courtney Powell*, Katsunori Miura**, Phyto Thandar Thant*, Masaharu Munetomo*

*Hokkaido University, *Kitami Institute of Technology

16:00 – 17:40 Session II

Chair: Sinya Watanabe (Muroran Institute of Technology)

"Distributed NSGA-II with Migration using Compensation on Many-core Processors",

Yuji Sato, Mikiko Sato, and Minami Miyakawa

Hosei University

"Human-based Evolutionary Computation Using Tags and Sentences as Representation of Solutions"

Kei Ohnishi*, Masatomo Azumaya*, and Tomohiro Yoshikawa**

*Kyushu Institute of Technology, **Nagoya University

"A CUDA Implementation of the Standard Particle Swarm Optimization"

Noriyuki Fujimoto, Md. Maruf Hussain, Hiroshi Hattori

Osaka Prefecture University

"Autonomous Task Allocation for Swarm Robotic Systems using Behavioral Decomposition"

Toshiyuki Yasuda, Wei Yufei, Motoaki Hiraga

Hiroshima University

"Robust Solution Searching Scheme with GAs: A fossil record of my research"

Shigeyoshi Tsutsui

Osaka Prefecture University