

Professor Qingfu Zhang

<http://www.cs.cityu.edu.hk/~qzhang/index.html>

Department of Computer Science

City University of Hong Kong

Hong Kong School of Computer Science and Electronic Engineering

University of Essex, UK

Title:

Combination of Evolutionary Algorithms with Experimental Design, Traditional Optimization and Machine Learning

Abstract

Evolutionary algorithms alone cannot solve optimization problems very efficiently since there are many random (not very rational) decisions in these algorithms. Combination of evolutionary algorithms and other techniques have been proven to be an efficient optimization methodology. In this talk, I will explain the basic ideas of our three algorithms along this line (1): Orthogonal genetic algorithm which treats crossover/mutation as an experimental design problem, (2) Multiobjective evolutionary algorithm based on decomposition (MOEA/D) which uses decomposition techniques from traditional mathematical programming in multiobjective optimization evolutionary algorithm, and (3) Regular model based multiobjective estimation of distribution algorithms (RM-MEDA) which uses the regular property and machine learning methods for improving multiobjective evolutionary algorithms.