

Technologies in the research field of system modeling, numerical simulation, computation and optimization have made great progress in recent decades, and system optimization has now become a popular term in the field of electrical/mechanical engineering. Many researchers in system modeling, numerical simulation and optimization have made great efforts to develop methodologies for physical, engineering, biological, etc., and these research results have had great influence in the greater field of system simulation and control.

With the advancement of computer hardware providing more powerful computing environments, system modeling, numerical simulation and optimization researchers have been able to solve larger and more complex problems. Driven by such motivation, the innovative methodologies of system modeling, numerical simulation and optimization technologies are proposed not only in the area of engineering but also in new paradigms in computer science. In addition, system modeling, numerical simulation and optimization researchers have applied the developed methods to various real-world problems such as robotic systems. This special issue (SI) includes the mathematical and physical theories of the nonlinear dynamics analysis, computation and optimization in physical, engineering, biological studies, and their various applications. Also, this SI includes two major parts, one is from regular call for paper on line for 10 papers, and the other is from the submitted manuscripts of some of the presentations at the International Conference on Computing and Precision Engineering (ICCPE-2015), held during November 27-30, 2015 at Nantou, Taiwan.

The organizers of ICCPE-2015 decided to bring out papers presented at the conference, in full, as a special issue of Engineering Computations. Publication of full papers based on presentations at conferences/workshops has multiple advantages. For the authors, the quality of work may considerably improve through the seriousness of discussions with peers during the conference. For referees, it becomes easier to review the papers as referees are generally drawn from among the experts attending the conference.

The topics covered in this special issue include: Mechanical and Electrical System Modeling, Numerical Simulation, Computation and Nonlinear Analysis for Real World System, Optimization Schemes and Control Systems, Chaotic Systems, Other System Simulation and Applications. It is hoped that this special issue will make a good reference material and be of great use for engineering specialists.

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