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An Introduction to the Special Issue on Numerical Techniques Meet with OR - Part II

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Abstract. The special issue: "Numerical Techniques Meet with OR" of the Foundations of Computing and Decision Sciences consists of two parts which are of the main theme of numerical techniques and their applications in multi-disciplinary areas. The first part of this special issue was already collected in the FCDS Vol. 46, issue 1. In this second part of our special issue editorial, a description of the special issue presents numerical methods which can be used as alternative techniques for Scientific Computing and led Operational Research applications in many fields for further investigation.

Scientific computing is an important research topic that supports many fields to develop outcomes. The numerical methods and computing algorithms based on mathematics bring new ideas to many research topics, ranging from numerical and symbolic or algebraic computations, parallel or distributed processing, inverse problems or image processing, to machine learning and visualization. It also contributes to computational science and engineering and continues to broaden new fields in Operational Research. From the historical point of view, numerical scientific computing has been of great importance to the foundation of Computer Science. As a good example, the first mechanical calculator, also known as the first programmable computer Z1, was created by German Konrad Zuse for solving systems of linear equations to build a bridge between civil engineering designs with scientific computation in 1938. On the other hand, Harvard Mark I (IBM Automatic Sequence Controlled Calculator; ASCC) was called Mark I by Harvard University's staff and developed by Howard Aiken who was a scientist curious about the solutions of systems of ordinary differential equations. From those days onward, the quality of the computations have been dramatically increased and the studies in different science fields were developed. In

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brief, numerical techniques of scientific computing are the compilation of theories together with techniques and tools which maintain approximation in order on a modern computer to solve mathematical models of problems from science and engineering, and notably from Operational Research. With the help of numerical approaches, we can visualize our findings, which emerge real-world applications in real life. In a sense, with the support of numerical techniques, mathematical applications, management of organized systems, and decision-making mechanisms are improved and they lead applied sciences to play a key role in real-world phenomena. Thus, by including these topics in our special issue, we contribute to applied sciences with the help of outstanding research studies. The special issue consists of thirteen papers that reveal various numerical applications based on real-world problems. The collection of these studies give the readers an enhanced well-understanding in many fields, including modern Operational Research.

As the Guest Editors, we genuinely thank all the contributors to our special issue. Our superior reviewers provided fundamental comments to the authors which gave extraordinary support to them in order to improve their research articles. During this period of time, we have had a great opportunity to work with a magnificent team of FCDS. We cordially thank them who gave us a great chance to bring our ideas to life in a very friendly and genial environment. We would like to send our deepest thanks to Prof. Dr. Jerzy Stefanowski, the Editor-in-Chief of FCDS, and Dr. Marcin Radom, the Managing Editor of FCDS, as well as all the Editorial Board members of FCDS. Consequently, we would like to thank all the prestigious contributed authors who made this project real with their hard and devoted work and commitment.

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