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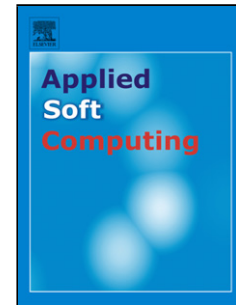
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Preface Special Issue on Non-Iterative Approaches in Learning

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1. Introduction

Optimization plays a central role in learning. Hence, it has received considerable attention from academics, researchers, and domain practitioners. Many optimization problems in machine learning are solved by iterative methods which generate a sequence of improving approximated solutions with some termination criteria. These methods usually suffer from slow convergence rate and are sensitive to parameter settings such as learning rate/step size, maximum number of iterations and so on. On the other hand, non-iterative solutions, which may be presented in closed-form manner, are in general computationally faster than iterative solutions. Due to the importance and growth of this field, this special issue focuses on the recent advances in non-iterative approaches in learning.

Even though non-iterative methods have attracted much attention in recent years, there exists a performance gap when compared with the competing iterative paradigms. This special issue aims to bridge this gap. Besides the dissemination of the latest research results on non-iterative algorithms, it is also expected that this special issue covers some industrial applications. The non-iterative learning topics of the special issue include methods with and without randomization, kernel ridge regression, kernel adaptive filters, feedforward, recurrent, multilayer, deep and other structures, ensemble learning, solutions procedures such as Moore-Penrose pseudo inverse, regularized least squares, SVD, and others. Further, large-scale problems, theoretical studies on non-iterative methods, comparative studies with iterative methods as well as regression, classification, and time series related applications of non-iterative solutions in domains such as power systems, biomedical, finance, signal processing, big data and all other areas are also included in this special issue.

This special issue received 87 submissions. Out of these, twenty were selected after a rigorous review process. These submissions are briefly described below.

2. An Overview of the Special Issue

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