

---

## Introduction

---

### Abdellatif El Afia\* and Rdouan Faizi

ENSIAS,  
Mohammed V University,  
Avenue Mohammed Ben Abdallah Regragui,  
Madinat Al Irfane, BP 713, Agdal Rabat, Morocco  
Email: a.elfafia@um5s.net.ma  
Email: r.faizi@um5s.net.ma  
\*Corresponding author

### Salvador García

Escuela Técnica Superior de Ingenierías Informática  
y de Telecomunicación,  
Dpto. Ciencias de la Computación e Inteligencia Artificial,  
C/ Daniel Saucedo Aranda S/N. 18071,  
Granada, Spain  
Email: salvagl@decsai.ugr.es

**Biographical notes:** Abdellatif El Afia is a Full Professor at the National School of Computer Science and Systems Analysis (ENSIAS), Mohammed V University in Rabat, Morocco. He obtained his PhD in Operation Research from the University of Sherbrooke, Canada, in 1999. His research areas of interest are mathematical programming (stochastic and deterministic), metaheuristics, recommendation systems and machine learning. He has participated in several international conferences and published many research papers in highly indexed journals.

Rdouan Faizi is a Full Professor at the National School of Computer Science and Systems Analysis (ENSIAS), Mohammed V University in Rabat, Morocco. His areas of interest include e-learning and natural language processing. He has participated in many international conferences and published several articles in highly refereed journals.

Salvador García received his BS and PhD degrees in Computer Science from the University of Granada, Granada, Spain, in 2004 and 2008, respectively. He is currently a Full Professor in the Department of Computer Science and Artificial Intelligence, University of Granada, Granada, Spain. He has published more than 100 papers in international journals (more than 70 in Q1), h-index 52. His research interests include data science, data pre-processing, big data, evolutionary learning, deep learning, metaheuristics and biometrics. He belongs to the list of the highly cited researchers in the area of computer sciences (2014–2020): <http://highlycited.com/> (Clarivate Analytics).

---

Machine learning addresses the question of how to build expertise from experience provided by data. It is one of today's most rapidly growing domains, lying at the core of artificial intelligence and at the intersection of statistics and computer science. Machine learning models have been adopted in different walks of life, including education,

policing, healthcare, marketing, finance, manufacturing, meteorology, hydrology and energy.

In recent decades, the diversification of automated learning applications has led to new requirements inherent in the availability of large-scale data. Given the new scientific and technological challenges that are encountered, mathematical optimisation has been established as the right approach for many machine learning problems. The specific requirements of machine learning raise new challenges for optimisation. In turn, optimisation takes advantage of machine learning insofar as concepts, formalisms, approximations, and algorithms are revisited.

In this special issue, different applications of machine learning and optimisation are presented, including data clustering, sentiment classification, breast cancer identification, data mining, smart housing and object recognition.