Many decades back, Computer Science emerged as a new scientific discipline at
the crossroads of mathematics, physics and engineering. For a long period, Computer
Science’s syllabuses and computing curricula were static. However, after the invention
of the World Wide Web, for the last two decades, new areas have emerged and expanded
to such an extent that the terms describing the “next big things”, such as “Web Science”,
“Internet Science”, “Data Science”, “Network Science” or “e-Science”, audaciously tossed
at first, gained increasing popularity [1]. Next to these, new key terms came to stay, such as
quantum computing, optical computing, wearable computing, blockchain, analytics, sensor
networks, cloud and software as a service, and many others. Jim Gray—a Turing awardee
pioneer computer scientist, lost at sea in 2007—declared just before his disappearance
the area of data-intensive computing and the fourth paradigm [2]. We are experiencing a
DIGITAL revolution. Has the Pandora’s box been opened [3]?

Along with the rather purely theoretical scientific advances, technological advances
in materials—such as solid-state electronics, magnetic materials, or fiber optics—made
possible the widespread use of the above in a plethora of other scientific disciplines, of
interdisciplinary intersections and in everyday life, at home, at school, in amusement, in
tourism, the list goes on. It was in 1980 that Alvin Toffler in his futuristic book entitled “The
Third Wave” envisaged a number of technologies, such as personal computers, the internet,
and mobile communication [4]. Nowadays, not only have these visionary predictions come
true and are commodities, but irreversible consequences appeared in economy, government
and all social sectors.

We have thus entered the era of the fourth paradigm [5], the first three being (a) the
experimental or empirical evidence, (b) the scientific theory, and (c) the computational
science. In simple words, the tremendous increase in storage capacities, microprocessor
speeds, and network throughputs along with the dramatic decrease in their costs produced
an unforeseeable overwhelming flow of data, which now demands a change of the com-
puting milieu. The fourth paradigm introduces Data Science and leads to the popular
term of Big Data [6]. The only way to cope with the “exaflood” of observational data is a
new generation of scientific computing tools to store, process, visualize and analyze the
deluge of data [7]. Jim Gray suggested that things should move to “a world in which all
of the science literature is online, all of the science data is online, and they interoperate
with each other” [8]. He applied his vision to the field of astronomy, and before that to
global geographic information systems with the Sequoia project and worked with others to
show how to apply the approach to fields such as molecular biology, sensor networks for
environmental science, and oceanography, as mentioned during the ceremony where he
received the Turing award [9].

So, the Fourth Paradigm goes hand in hand with the Fourth Industrial Revolution
(Industry 4.0), which refers to automation of traditional manufacturing and industrial
practices, using modern smart technologies. Distributed processing systems and the
internet of things (IoT) have changed the landscape of human labor, amusement and
leisure, practically all human activities, including education (Education 4.0). This is where Digital comes in and provides room for publishing research outcomes.

Digital is open to receive contributions that advance the computing field in core areas such as distributed systems, blockchain technologies, data analytics, social network analysis—even at web scale—serious games, multimedia processing. Moreover Digital, as a multidisciplinary forum, encourages scientists to submit contributions in other fields where (big) data play a crucial role. To name just a few, we mention medical and health sciences, biotechnology, nanotechnology, digital humanities, digital economy including fintech approaches, agricultural sciences, educational analytics, digital ecosystems such as smart cities and buildings, digital marketing and commerce. The list is by no means exhaustive: in fact, the list is practically extremely long as the world is moving to a DIGITAL era, the Age of Algorithms [10].

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