future internet

MDPI

Editorial

Editorial for the Special Issue on "Software Engineering and Data Science", Volume II

Davide Tosi

Department of Theoretical and Applied Sciences (DISTA), Università degli Studi dell'Insubria, 21100 Varese, Italy; davide.tosi@uninsubria.it

The Special Issue "Software Engineering and Data Science, Volume II" is the natural continuation of its greatly successful predecessor, Volume I [1]. In an environment where Artificial Intelligence (AI) technologies are receiving increasing attention, data science and data-driven software solutions necessary to enable their development. The seamless integration of AI and data science into all phases of software engineering is a new challenge we will face in the coming years. Hence, this Special Issue of the *Journal of Future Internet* is devoted to recent trends and advancements in the field of engineering data-intensive software solutions to address challenges in developing, testing, and maintaining such systems. We received 13 submissions, and after the initial screening and peer-review process, 6 papers were finally accepted for publication. Accepted articles can be divided into two sets: (1) infrastructures to manage data properly and (2) data-driven solutions to everyday problems.

The first set of articles discusses advanced infrastructures and file systems to manage big data. Csirmaz et al. [2] introduce a theoretical framework for the problem of data synchronization in a file system. Instead of using operation-based approaches (i.e., defining heuristics to solve conflicts without considering the effect of the resolution on subsequent conflicts), they adopted a new declaration-based strategy that evaluates all possible resolution scenarios to convert the replicas into a common synchronized state. The authors developed and built a proof-of-concept implementation of the algorithm suite to synchronize an arbitrary number of replicas [3]. Xu et al. describe a distributed file system to manage biomedical big data [4]. The paper discusses the three-layer architecture of the F3BFS file system, the optimizations introduced for the management of biomedical data, and a set of functional utilities to help researchers manage biology datasets more efficiently and productively.

The second set of articles discusses the use of data-driven solutions to improve the management of business and learning processes. Ferretti et al. devise several multivariate predictive data models based on deep learning to forecast container transport volume in port terminals [5]. They define the neural network-based model and a set of experiments (on data downloaded from the Port of Barcelona's website) to validate the model in predicting container traffic volume. Bocciarelli et al. introduce an extension of the Business Process Model and Notation (BPMN) for specifying the operational view of IoT systems [6]. This extension is enriched with a methodology that supports the development and analysis of IoT-aware BPs, and an architecture that describes the operational components for their simulation-based analysis. The framework is implemented and experiments are carried out using a water monitoring system (WMS) that controls a sensor network to evaluate the flood risk of a water basin. AbuKhousa et al. propose an architecture to develop a metaverse-intensive learning experience (MiLEx) platform [7]. The authors also highlight the challenges and open issues that researchers must confront to facilitate the practical development of the MiLEx platform, such as technological hw/sw improvements in the metaverse environment.

check for updates

Citation: Tosi, D. Editorial for the Special Issue on "Software Engineering and Data Science", Volume II. *Future Internet* **2023**, *15*, 312. https://doi.org/10.3390/fi15090312

Received: 15 September 2023
Accepted: 15 September 2023
Published: 16 September 2023

Copyright: © 2023 by the author. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

We would like to thank all the authors for submitting their papers to the second volume of this Special Issue. We would also like to acknowledge all the reviewers for their careful and timely reviews that helped to improve the quality of this Special Issue.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Tosi, D. Editorial for the Special Issue on "Software Engineering and Data Science". *Future Internet* **2022**, *14*, 306. [CrossRef]
2. Csirmaz, E.; Csirmaz, L. Data Synchronization: A Complete Theoretical Solution for Filesystems. *Future Internet* **2022**, *14*, 344. [CrossRef]
3. Csirmaz, E.; Csirmaz, L. Synchronizing Many Filesystems in Near Linear Time. *Future Internet* **2023**, *15*, 198. [CrossRef]
4. Xu, X.; Sun, L.; Meng, F. Distributed Big Data Storage Infrastructure for Biomedical Research Featuring High-Performance and Rich-Features. *Future Internet* **2022**, *14*, 273. [CrossRef]
5. Ferretti, M.; Fiore, U.; Perla, F.; Risitano, M.; Scognamiglio, S. Deep Learning Forecasting for Supporting Terminal Operators in Port Business Development. *Future Internet* **2022**, *14*, 221. [CrossRef]
6. Bocciarelli, P.; D'Ambrogio, A.; Panetti, T. A Model Based Framework for IoT-Aware Business Process Management. *Future Internet* **2023**, *15*, 50. [CrossRef]
7. AbuKhousa, E.; El-Tahawy, M.; Atif, Y. Envisioning Architecture of Metaverse Intensive Learning Experience (MiLEx): Career Readiness in the 21st Century and Collective Intelligence Development Scenario. *Future Internet* **2023**, *15*, 53. [CrossRef]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.