The 4th International Workshop on Autonomic Solutions for Parallel and Distributed Data Stream Processing (Auto-DaSP 2021)

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ABSTRACT

The organizers of the 4th International Workshop on Autonomic Solutions for Parallel and Distributed Data Stream Processing (Auto-DaSP 2021) are delighted to welcome you to the workshop proceedings as part of the ICPE 2021 conference companion.

CCS CONCEPTS

• **Computing methodologies**; • **Information systems**;

1 WORKSHOP SUMMARY

It is our great pleasure to welcome you to the 4th International Workshop on Autonomic Solutions for Parallel and Distributed Data Stream Processing (Auto-DaSP 2021), held online as a half-day workshop on April 19 or April 20 2021, in conjunction with the 12th ACM/SPEC International Conference on Performance Engineering (ICPE 2021).

The workshop aims to collect scientific contributions from the community working in the Data Stream Processing (DSP) domain at different levels, both experts in streaming algorithms and applications and researchers working on stream processing frameworks and support tools. The focus is on parallel and autonomic models and practical implementations of DSP applications on parallel hardware and distributed systems, performance management and optimization with autonomic runtime in parallel/distributed settings. The focus on integrating autonomic mechanisms, strategies, and runtime supports in parallel/distributed data stream processing distinguishes Auto-DaSP from the other workshops in the field. At the same time, the cross-cutting goals of Auto-DaSP allow a strong connection with more general aspects of parallel and distributed programming and with ICPE 2021 interest on performance engineering of modern application domains. Auto-DaSP 2021 builds

upon the successful three editions held in conjunction with the 2017, 2018, and 2019 Euro-Par conferences.

The outcome of Auto-DaSP 2021 has a twofold nature: stimulating scientific questions on the interrelations among the three core parts of the workshop, i.e. autonomic computing, high-performance, and data stream processing; cross-fertilizing the parallel/distributed computing and performance engineering domains with the DSP research area.

This year, after a thorough review process, Auto-DaSP 2021 features two full papers. Furthermore, we are proud to open the workshop with two invited talks given by Vincenzo Gulisano, associate professor at Chalmers University of Technology in Sweden, and Marcos Assunção, researcher at the French Institute for Research in Computer Science and Automation. The workshop will conclude with a discussion session.

From the Auto-DaSP 2021 program, two new scenarios of increasing interest for the DSP and ICPE communities clearly emerge. The first regards the convergence of real-time data analytics with the edge/fog computing paradigm, that enables performing processing close to where data is generated and consumed, thereby reducing both the latency time and deployment cost. The latter is related to the next frontier in the evolution of cloud computing offered by serverless computing or Function-as-a-Service, which represents an attractive platform for a variety of applications, including DSP ones, due to its promise of elasticity, low cost, and fast deployment.

We first thank the authors who submitted their work and the invited speakers for providing the content of the program. We are grateful to the program committee members. Finally, we thank the ICPE 2021 organizers and the ICPE 2021 workshop chairs Alessandro Pellegrini and Weiyi Shang for their support.

We hope that you will find the Auto-DaSP 2021 program interesting and thought-provoking and that this workshop will provide you with a valuable opportunity to share ideas with other researchers and practitioners from institutions around the world. If you are not able to attend our workshop, we hope you will find the papers and invited talks stimulating.

2 ORGANIZING COMMITTEE

Auto-DaSP 2021 has been organized by the following three co-chairs:

- Valeria Cardellini, Associate Professor at the Department of Civil Engineering and Computer Science Engineering, University of Rome Tor Vergata, Italy.
- Gabriele Mencagli, Assistant Professor at the Department of Computer Science, University of Pisa, Italy.

- Massimo Torquati, Assistant Professor at the Department of Computer Science, University of Pisa, Italy.

3 PROGRAM COMMITTEE

- Hamidreza Arkian (University of Rennes 1, France)
- Marcos Assunção (Inria, France)
- Daniele De Sensi (ETH Zurich, Switzerland)
- Dalvan Griebler (PUCRS/SETREM, Brazil)
- Vincenzo Gulisano (Chalmers University of Technology, Sweden)
- Shuhao Zhang (National University of Singapore, Singapore)