

DANIEL BALOUEK-THOMERT

Researcher in Computer Science

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EDUCATION

- 2016 **Ph.D. – Computer Science**, Ecole Normale Supérieure de Lyon, France
2010 **Masters – Computer Science**, Université Pierre et Marie Curie, Paris, France
2007 **B.S. – Math. & Computer Science**, Université Rene Descartes, Paris, France

EXPERIENCE

- 2017 **Postdoctoral Research Associate**, Rutgers University, NJ, USA Advisor: Manish Parashar
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present Orchestration of analytics over the next generation of cloud/edge datacenters with regards to data content, cost of computation and urgency of results.
Performance models for decomposition and adaptation of end-to-end services.
Application to stream processing and data-driven workflows for Internet of Things and scientific computing.
- 2013 **Research & Development Engineer**, NewGeneration, Paris, France
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2016 Design of an energy-aware scheduler for virtual machines and underused servers.
Implementation of consolidation and shutdown policies within a national-wide federation of datacenters using Openstack software stack.
- 2013 **Ph.D. Candidate**, ENS Lyon and INRIA, France Advisors: Eddy Caron, Laurent Lefevre
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2016 Topic: Scheduling on Clouds considering energy consumption and performance trade-offs: from modelization to industrial applications
- 2015 **Visiting Researcher**, Mahindra Ecole Centrale (MEC), Hyderabad, India
Multi-objective optimization for Cloud clusters using evolutionary algorithms
- 2011 **Research Engineer**, INRIA (LIP laboratory), Lyon, France
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2013 Analysis of the shortcomings of scientific applications regarding virtualization and network capabilities for multi-site deployments.
Release and Tutorials of a library for scalable virtual machine management
Engineering on Grid5000, the largest distributed testbed in Europe dedicated to CS research
- 2009 **Research Intern**, National Institute of Informatics, Tokyo, Japan Advisor: Shin Nakajima
Masters Thesis. Parallelization techniques for clustering algorithms in Machine Learning.

PUBLICATIONS

International Conferences and Workshops with Selection Panels and Proceedings

- [AAAI 2020] Fauvel, K., Balouek-Thomert, D., Melgar, D., Silva, P., Simonet, A., Antoniu, G., ... & Termier, A. (2020, April). **A Distributed Multi-Sensor Machine Learning Approach to Earthquake Early Warning**. In *Proceedings of the AAAI Conference on Artificial Intelligence* (Vol. 34, No. 01, pp. 403-411). [Outstanding paper award: Special Track on Artificial Intelligence for Social Impact.](#)
- [DCC 2020] Balouek-Thomert, D., Rodero, I., & Parashar, M. (2020). **Harnessing the Computing Continuum for Urgent Science**. *ACM SIGMETRICS Performance Evaluation Review*, 48(2), 41-46.
- [CCGRID 20] Houmani Z., Balouek-Thomert D., Caron E., Parashar M., **Enhancing microservices architectures using data-driven discovery and QoS guarantees** In *CCGRID 2020: The 20th IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing*, Melbourne, Australia
- [CCGRID 20] Rais I., Anshus O., Bjørndalen JM., Balouek-Thomert D., Parashar M. **Trading Data Size and CNN Confidence Score for Energy Efficient CPS Node Communications** In *CCGRID 2020: The 20th IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing*, Melbourne, Australia
- [CCGRID 19] Renart E., Veith A., Balouek-Thomert D., Assunção M., Lefèvre L. and Parashar M. **Distributed Operator Placement for IoT Data Analytics Across Edge and Cloud Resources** In *CCGRID 2019: 19th IEEE/ACM International Symposium in Cluster, Cloud, and Grid Computing*
- [HPCS 19] Rais I., Balouek-Thomert D., Orgerie AC., Lefèvre L., Parashar M. **Leveraging energy-efficient non-lossy compression for data-intensive applications** In *HPCS 2019 – 17th International Conference on High Performance Computing & Simulation*, Jul 2019, Dublin, Ireland. pp.1-7.
- [PAISE 2019] Renart, E. G., Balouek-Thomert, D., & Parashar, M. (2019, May). **An edge-based framework for enabling data-driven pipelines for iot systems**. In *2019 IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW)* (pp. 885-894).
- [ICFEC 2018] Ali, M., Anjum, A., Yaseen, M. U., Zamani, A. R., Balouek-Thomert, D., Rana, O., & Parashar, M. (2018, May). **Edge enhanced deep learning system for large-scale video stream analytics**. In *2018 IEEE 2nd International Conference on Fog and Edge Computing (ICFEC)* (pp. 1-10).
- [UCC 2018] Petri, I., Zamani, A. R., Balouek-Thomert, D., Rana, O., Rezgui, Y., & Parashar, M. (2018, December). **Ensemble-based network edge processing**. In *2018 IEEE/ACM 11th International Conference on Utility and Cloud Computing (UCC)* (pp. 133-142). IEEE. [Best Paper Candidate.](#)
- [eScience 17] Renart, E., Balouek-Thomert, D., Hu, X., Gong, J., & Parashar, M. (2017, October). **Online decision-making using edge resources for content-driven stream processing**. In *2017 IEEE 13th International Conference on e-Science (e-Science)* (pp. 384-392). IEEE.
- [eScience 17] Zamani, A. R., AbdelBaky, M., Balouek-Thomert, D., Rodero, I., & Parashar, M. (2017, October). **Supporting data-driven workflows enabled by large scale observatories**. In *2017 IEEE 13th International Conference on e-Science (e-Science)* (pp. 592-595).
- [FASW 2017] Renart, E., Balouek-Thomert, D., & Parashar, M. (2017, September). **Pulsar: Enabling dynamic data-driven IoT applications**. In *2017 IEEE 2nd International Workshops on Foundations and Applications of Self* Systems (FAS* W)* (pp. 357-359). IEEE.
- [CEC 2016] Balouek-Thomert, D., Bhattacharya, A. K., Caron, E., Gadireddy, K., & Lefevre, L. (2016, July). **Parallel differential evolution approach for cloud workflow placements under simultaneous optimization of multiple objectives**. In *2016 IEEE Congress on Evolutionary Computation (CEC)*
- [CLOUDTECH 15] Balouek-Thomert, D., Caron, E., Gallard, P., & Lefevre, L. (2015, June). **Nu@ge: Towards a solidary and responsible cloud computing service**. In *2015 International Conference on Cloud Technologies and Applications (CloudTech)* (pp. 1-8). IEEE. [Best paper award](#)
- [HPPAC 15] Balouek-Thomert, D., Caron, E., & Lefevre, L. (2015, May). **Energy-aware server provisioning by introducing middleware-level dynamic green scheduling**. In *2015 IEEE International Parallel and Distributed Processing Symposium Workshop* (pp. 855-862). IEEE.

- [TRUSTCOM 2013] Quesnel, F., Lebre, A., Pastor, J., Südholt, M., & Balouek, D. (2013, July). **Advanced validation of the dvms approach to fully distributed vm scheduling**. In *2013 12th IEEE International Conference on Trust, Security and Privacy in Computing and Communications* (pp. 1249-1256).
- [SCALE 2013] Balouek, D., Lebre, A., & Quesnel, F. (2013, May). **Flaucher and DVMS--Deploying and Scheduling Thousands of Virtual Machines on Hundreds of Nodes Distributed Geographically**. In *IEEE International Scalable Computing Challenge (SCALE 2013), held in conjunction with CCGrid'2013*.

International Journals

- [IEEE Internet Computing 20] Petri, I., Rana, O., Bittencourt, L. F., Balouek-Thomert, D., & Parashar, M. (2020). **Autonomics at the Edge: Resource Orchestration for Edge Native Applications**. *IEEE Internet Computing*.
- [FGCS 20] Zamani, A. R., Balouek-Thomert, D., Villalobos, J. J., Rodero, I., & Parashar, M. (2020). **An edge-aware autonomic runtime for data streaming and in-transit processing**. *Future Generation Computer Systems*, 110, 107-118.
- [CCPE 20] Zamani, A. R., AbdelBaky, M., Balouek-Thomert, D., Villalobos, J. J., Rodero, I., & Parashar, M. (2020). **Submarine: A subscription-based data streaming framework for integrating large facilities and advanced cyberinfrastructure**. *Concurrency and Computation: Practice and Experience*, 32(16), e5256.
- [Transactions 20] Ali, M., Anjum, A., Rana, O., Zamani, A. R., Balouek-Thomert, D., & Parashar, M. (2020). **RES: Real-time video stream analytics using edge enhanced clouds**. *IEEE Transactions on Cloud Computing*.
- [JPDC 19] Chuah, E., Jhumka, A., Alt, S., Balouek-Thomert, D., Browne, J. C., & Parashar, M. (2019). **Towards comprehensive dependability-driven resource use and message log-analysis for HPC systems diagnosis**. *Journal of Parallel and Distributed Computing*, 132, 95-112.
- [IJHPCA 19] D Balouek-Thomert, EG Renart, AR Zamani, A Simonet, M Parashar **Towards a computing continuum: Enabling edge-to-cloud integration for data-driven workflows** *The International Journal of High-Performance Computing Applications*
- [CCPE 17] Balouek-Thomert, Daniel and Caron, Eddy and Gallard, Pascal and Lefèvre, Laurent **Nu@ge : A container-based cloud computing service federation** *Concurrency and Computation: Practice and Experience (CCPE)*, John Wiley and Sons, Ltd, USA, 2017

Book chapters

Balouek Daniel, Alexandra Carpen Amarie, Ghislain Charrier, Frédéric Desprez, Emmanuel Jeannot, Emmanuel Jeanvoine, Lèbre A., David Margery, Nicolas Niclausse, Lucas Nussbaum, Olivier Richard, Christian Pérez, Quesnel F., Cyril Rohr, Luc Sarzyniec **Adding Virtualization Capabilities to the Grid'5000 Testbed** *Cloud Computing and Services Science, vol 367, pp 3-20, Springer International Publishing, 2013*

PhD Thesis

Balouek-Thomert D. **Scheduling on Clouds considering energy consumption and performance trade-offs: from modelization to industrial applications**
defended on 05-12-2016 in Lyon, under the authority of École doctorale en Informatique et Mathématiques de Lyon, in a partnership with École normale supérieure de Lyon, LIP laboratory and AVALON research group

PATENTS/INVENTIONS

- Manish Parashar, Daniel Balouek-Thomert, Eduard Gibert Renart. "Edge-based Stream Processing Middleware for Programming and Managing Data-Driven Applications Between the Edge and the Cloud and Method of Use Thereof (rPulsar)", Provisional Patent Filed, Full Patent Pending, 2020.

TEACHING

Rutgers University, NJ, USA

- Principles of Data Management. Undergraduate Course. Fall19 (Instructor, 150 students)
- Intro to Computer Science. Undergraduate Course. Fall18, Spring19 (Instructor, 400 students)

Université Lyon 1 – Claude Bernard, Lyon, France

- Parallel Computing. Graduate course. Spring16. (Teaching Assistant, 40 students)
- Operating Systems. Undergraduate course. Spring14. Fall15. (Teaching Assistant, 40 students)
- Software Engineering. Graduate course. Spring14. Fall15. (Teaching Assistant, 40 students)
- Database systems. Undergraduate course. Spring14. Fall15. (Teaching Assistant, 40 students)
- Project Management/Software Engineering. Graduate course. AY15. AY16. (TA, 40 students)

SERVICE

Program Committee Chair

- IEEE InterCloud-HPC 2019

Program Committee Member

- IEEE CCGRID 2021, HPBench 2019, IEEE Big Data 2018
- IEEE ICDCS 2020: Distributed Green Computing and Industry Experimentation tracks

GRANTS AND FELLOWSHIPS

- Horizon 2020 program (European flagship initiative) for Disruptive Technologies, 2015.
- Raman Charpak Scholarship for Indo-French collaborations, 2015.

INVITED TALKS

- “**Harnessing the Computing Continuum for Urgent Science**”. PennState Institute for Computational and Data Sciences, United States, March 2021
- “**Urgent Analytics Across the Computing Continuum**”. HPC for Urgent decision making (UrgentHPC) Workshop, ACM SuperComputing, November 2020
- “**Knowledge Discovery and Data Driven Decisions**”. Rutgers Center for Critical Intelligence, Rutgers University, May 2019
- “**Energy consumption and performance trade-offs on large scale platforms**”. British Columbia University, Canada, July 2016
- “**Modulating Cloud Computing Dynamics for maximizing Service Quality and minimizing Environmental Impact**”. Mahindra Ecole Centrale, Hyderabad, India, October 2015.

OUTREACH

Diving into Big Data and Large-Scale Computing Workshop. Rutgers University, NJ

One-day workshop for High School Audience. Presentations / Hands-on sessions / Panel.

Attendees: Hunderton County Vocational School (2018), National Center for Girls Leadership Stuart (2018), Camden County Technical School (2018)

LANGUAGES

 French
Native

 English
Fluent

 Spanish ● Japanese
Conversational

