# Sebastien VARRETTE, PhD

## Research Scientist
## Management, Security and Performance of HPC systems

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Born on November 27th, 1979 (in France)
Married (2004), two children (2007,2010)

*Short bio:* Dr. Sebastien Varrette is an experienced Research Scientist within the Parallel Computing and Optimization Group (PCOG) group led by Prof. Pascal Bouvry at the University of Luxembourg. Expert in the deployment and management of High Performance Computing (HPC) systems, he is leading since that time the development of the University's HPC platform, as well as the associated expert team of system administrators managing and supporting it. His main research interests lie in the domains of the security and performance of parallel and distributed computing platforms, such as HPC or Cloud Computing infrastructures.

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| TECHNICAL / MANAGEMENT EXPERTISE: | High Performance Computing (HPC) [45] , Grid, Cluster & Cloud Platforms. |
| | I'm administrating cluster-based HPC systems since 2003 (Linux environment) |
| | **Leader of an expert team of HPC system administrator since 2008.** |
| MAIN RESEARCH DOMAINS: | Security and Evaluation of Distributed Computing Platforms |
| | *Relevant contributions per domains*: |
| | Crash/cheating faults tolerance [74, 73, 69, 88, 65, 26, 51, 41, 35] |
| | Code Obfuscation [53, 52] , Secure IaaS Cloud [59, 77, 25] |
| | Perf. & Energy efficiency of HPC/Cloud platforms [68, 63, 55, 47, 43, 40, 33, 31] |

## Education

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|---|---|---|
| 2007 | PH.D. IN COMPUTER SCIENCE, | with honours (*Excellent/Outstanding*) |
| | University of Luxembourg (UL) & Institut National Polytechnique de Grenoble (INPG) | |
| | Thesis: *Security in Large Scale Distributed Systems: Authentication and Result Checking* | |
| | Advisors: Franck Leprévost (UL) & Jean-Louis Roch (INPG) | |
| 2003 | M.SC. IN COMPUTER SCIENCE (Univ. de Grenoble, France) | with honours (*TB/First Class*) |
| | Speciality: Cryptology, Security and Information Coding (CSCI), | rank: 1st |
| 2003 | MASTER'S DEGREE IN ENGINEERING (Telecoms ENSIMAG, Grenoble) | with honours (*B/2.1*) |
| | Speciality: Applied Mathematics, Computer Sciences & Telecommunications | rank: top 10% |

## Employment

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|---|---|---|
| 2007 – now | RESEARCH SCIENTIST (UL, Luxembourg) | |
| 2004 – 2007 | RESEARCH ASSISTANT (UL, Luxembourg) | |
| 2003 | SYSTEM ADMINISTRATOR (ID-IMAG, Grenoble, France) | |

## Awards

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|---|---|---|
| 2018 | IEEE ICOIN 2018: Best Paper Award | [31] |
| 2014 | IEEE NSS 2014: Best Student Paper Award | [41] |

## Teaching Experience

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|---|---|---|
| 2014 – now | UL HPC SCHOOLS | https://hpc.uni.lu/hpc-school/ |
| 2008 – now | PARALLEL & GRID COMPUTING | Master MICS2 (UL) |
| 2004 – 2007 | PROGRAMMING TECHNIQUES I | Bachelor I1/CUT1 (UL) |
| | ADVANCED PROGRAMMING IN C, C++ AND JAVA | Bachelor I2 (UL) |
| | SYSTEM ADMINISTRATION AND NETWORK SECURITY | Master CSCI2 (UJF) |
| 2006 | CRYPTOLOGY AND NETWORK SECURITY | Master (Univ. of Yaoundé I, Cameroon) |

## Additional Information

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| **Languages** | FRENCH (native language), ENGLISH (fluent) and GERMAN (basic knowledge) |
| **Sports** | Karate (Black belt – 3rd DAN, Federal Instructor Diploma (DIF)), Running, Ski... |

## Graduate Students Supervision

| | | |
|---|---|---|
| **PostDocs.** | ALBAN ROUSSET (2016 – 2018) | Large scale parallel simulation for Discrete Element Method |
| | JOSEPH EMERAS (2014 – 2016) | Workload Analysis and Characterization of HPC Platforms for the Study of Virtualization Service |
| **PhD.** | ABDALLAH A.Z.A. IBRAHIM (2017 – 2019) | PRESENCE: Toward a Novel Approach for Performance Evaluation of Mobile Cloud SaaS Web Services |
| | ABDOUL-WAHID C. MAINASSARA (2017 – 2019) | Large scale parallel simulation for Discrete Element Method |
| | CHAO LIU (2017 – 2019) | Pricing strategies for cloud brokers at the Software-as-a-Service (SaaS) level |
| | JAKUB MUSZYŃSKI (2011 – 2015) | Cheating-Tolerance of Parallel and Distributed Evolutionary Algorithms in Desktop Grids and Volunteer Computing Systems |
| | BENOÎT BERTHOLON (2010 – 2013) | CertiCloud & JShadObf: Toward Integrity and Software Protection in Cloud Computing Platforms |
| **Master** | CLÉMENT PARISOT (2017 –) | System administrator of the UL HPC facility |
| | MAXIME SCHMITT (2014–2015) | RESIF and OpenStack Deployment |
| | SARAH PETER (BORN DIEHL) (2014 –) | System administrator of the UL HPC facility |
| | LUDOVIC SCHOEPPS (2014) | Design a REST API service to Monitor UL HPC Resources |
| | ANNA GIANNAKOU (2013) | Energy Efficiency in HPC environments |
| | VALENTIN PLUGARU (2012 –) | Energy Efficiency of Hypervisors and Cloud middleware |
| | SÉBASTIEN MARTINEZ (2012) | Source Code Obfuscation by mean of Evolutionary Algorithms |
| | FOTIS GEORGATOS (2012 – 2014) | System administrator of the UL HPC facility |
| | MATEUSZ GUZEK (2011) | System administration of cluster-based HPC systems |
| | BENOÎT BERTHOLON (2009) | Integrity issues in distributed executions |
| | CHRISTOPHE WEIS (2009) | Optimizing hash functions and S-Box by GEP |
| | DOMINIC DUNLOP (2008 – 2009) | Using GAs to tune benchmarks for HPCs |
| | ROMAIN CAVAGNA (2007 – 2008) | Deployment of a GForge platform |
| **Bachelor** | DESISLAVA MARINOVA (2018) | Cloud Computing Security |
| | ANTHONY MATHIEU (2016) | Syslogd and centralized log management |
| | DERICK A. L. RAMIREZ (2016) | Energy monitoring on the UL HPC facility |
| | HYACINTHE CARTIAUX (2011 –) | System administrator of the UL HPC facility |
| | BERNARD REICHERT (2008) | Collision detection implementation using CUDA |

## Participation to Ph.D Boards

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| Oct. 2016 | ALBAN ROUSSET, Institut FEMTO-ST, Université de Franche-Comté. *Contribution à la distribution et à la synchronisation des Systèmes Multi-Agents sur les super-calculateurs*, Examinateur |
| Sept. 2018 | GABRIELE POZZETTI, University of Luxembourg *A dual-grid multiscale approach to CFD-DEM couplings for multiphase flow*, Jury member |
| Dec. 2018 | DAVID GUYON, University of Rennes I *Energy-efficient Cloud Elasticity for Data-driven Applications* (pending exact title), Jury Member |

## Research Projects

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|---|---|
| 2007 – now | UL High Performance Computing (HPC), co-PI (UL cumulative contribution: **10,436,151 €**) |
| 2019 - 2022 | EU H2020 PRACE 6th Implementation Phase Project (PRACE-6IP) |
| 2014 – 2018 | EU COST ACTION IC1305: Network for Sustainable Ultrascale Computing (NESUS) |
| 2016 – 2019 | co-PI, UL LSDEM (UL contribution: 332 k€) |
| 2014 – 2016 | AFR PostDoc J. EMERAS (EVALIX; Co-Supervisor; Total/AFR contribution: 56 k€) Workload Analysis & Characterization of HPC Platforms for the Study of Virtualization Service |
| 2011 – 2013 | UL EVOPERF (UL contribution: 373 k€) |
| 2010 – 2012 | FNR CORE GREENIT (Total: 1,5 M€, FNR contribution: 432 k€) |
| 2010 – 2012 | AFR PhD B. BERTHOLON (PHD-09-142; Scientific Advisor; Total/AFR contribution: 110 k€) Confidentiality and Integrity Issues over Cloud Computing Platforms |
| 2009 – 2013 | EU COST ACTION IC0804: Energy efficiency in large scale distributed systems |
| 2009 – 2013 | EU CoreGrid |
| 2006 – 2008 | ANR SafeScale-BGPR (ANR-05-SSIA-0005; ANR contribution: 68 k€) |
| 2005 – now | Grid'5000 (technical committee) |
| 2005 – 2007 | FNR-SECOM TeseGrad (FNR contribution: 300 k€) |
| 2004 – 2007 | CryptAlpes |
| 2004 – 2006 | RagTime (Total: 545 k€, Rhône-Alpes Region contribution: 217 k€) |

## Professional Development

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|          | IEEE Computer and Computational Intelligence society member |
|          | Junior *Autorisation à Diriger des Recherches* (ADR) granted on July, 2015 |
|          | **Various editorial responsibilities** |
|          | Reviewer for International Projects: National Science Center (Poland) |
|          | Reviewer for several journals and international (IEEE, ACM) conferences |
|          | Member of several international Technical Program Committee, |
|          | Organizer of various conferences, either as *general*, *program* or *track* chair |
| 2018 – now | National ICT standardization delegate: ISO/TC 307: Blockchain and DLTs |
| 2017 – now | Management committee member: **advisor representing Luxembourg within PRACE** (Partnership for Advanced Computing in Europe) |
| 2016 – now | Management committee member: ETP4HPC |
| 2016 | **General Chair**, 8th IEEE Intl. Conf. Cloud Computing Technology & Science (CloudCom'16) |
| 2009 – 2018 | Delegate representing Luxembourg in EU COST Actions IC1305 and IC0804 |
| 2009 – now | Technical advisor for LCSB and the MECO Ministry on HPC projects |
| **2007 – now** | **UL HPC** Manager and Team leader. |
| | **Cumulative Project Investment: 10,436,151 €** (as of 2018). |
| | 662 computing nodes, 10132 cores, $R_{\mathrm{peak}} = 346.652$ TFlops |
| | 201 servers (74,6% are Xen/KVM VMs) |
| | NFS, GPFS/Spectrumscale, Lustre Storage (Total capacity: 9852.4 TB) |
| | Management of the expert IT team sustaining the facility |
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| 2007 – now | Manager of various IT services (Gitlab @ Uni.lu, Gforge @ Uni.lu...) |
| 2006 | EGIDE mission for 3 weeks in Cameroon (master lecture – Univ. of Yaoudé I) |
| 2005 | Editorial Committee for the definition of new UL master and bachelor degrees |
| 2005 – 2006 | Editorial Committee, UL website (CMS selection & management) |
| 2005 – 2006 | Faculty Council, elected member (assistant representative) |
| 2000 – 2002 | Ensimag Junior Enterprise, developer member |

## Publications

| Publication category | Quantity |
|----------------------|:--------:|
| Books | 6 |
| Magazine | 1 |
| Book Chapters | 11 |
| Edited Books / Proceedings | 1 |
| International journals | 8 |
| International conferences with proceedings and reviews | 49 |
| (French) national conferences with proceedings and reviews | 4 |
| International conferences with reviews (no proceedings) | 7 |
| PhD Thesis | 1 |
| Masters Thesis | 1 |
| Technical Reports and Presentations | 37 |
| Miscellaneous / Poster | 1 |
| **Total:** | **127** |

| Publish or Perish | Papers:121 | Citations:534, Years:15 | **h-index:12**, g-index:20 | Cites/year: 35.60 |
|---|---|---|---|---|
| | Cites/paper: 4.41 | Cites/author: 166.46 | Papers/author: 43.62 | Query date: **2018-04-07** |
| Orbi^lu | DBLP | Google Scholar | | |

**Books** (6)

[1] J.-G. Dumas, P. Lafourcade, A. Tichit, and S. Varrette. *Les blockchains en 50 questions: comprendre le fonctionnement et les enjeux de cette technologie innovante.* Dunod, 1er edition, September 2018. 296 pages, in French.

[2] J.-G. Dumas, J.-L. Roch, E. Tannier, and S. Varrette. *Théorie des Codes : Compression, Cryptage et Correction.* Collection Sciences Sup. Dunod, 3rd edition, August 2018. 416 pages, in French.

[3] J.-G. Dumas, J.-L. Roch, E. Tannier, and S. Varrette. *Foundations of Coding: Compression, Encryption, Error-Correction.* Wiley & Sons, February 2015. 376 pages.

[4] J.-G. Dumas, J.-L. Roch, E. Tannier, and S. Varrette. *Théorie des Codes : Compression, Cryptage et Correction.* Collection Sciences Sup. Dunod, 2nde edition, March 2014. 384 pages, in French.

[5] J.-G. Dumas, J.-L. Roch, E. Tannier, and S. Varrette. *Théorie des Codes : Compression, Cryptage et Correction.* Collection Sciences Sup. Dunod, 1st edition, March 2007. 352 pages, in French.

[6] S. Varrette and N. Bernard. *Programmation avancée en C (avec exercices et corrigés).* Collection Informatique et Systèmes d'Informations. Hermès, Fev. 2007. 416 pages, in French.

**Magazine** (1)

[7] S. Varrette and S. Gautier. Cryptographie et Signatures Eléctoniques. In *I-mag – Magazine de l'AAE ENSIMAG*, number 37 in Numéro spécial : La sécurité des systèmes d'information numérique, pages 12–19. Association des anciens élèves de l'ENSIMAG, May 2006.

**Book Chapters** (11)

[8] P. Bouvry, S. Varrette, M. U. Wasim, A. A.Z.A. Ibrahim, X. Besseron, and T. A. Trinh. *Ultrascale Computing Systems*, chapter Security, reliability and regulation compliance in Ultrascale Computing System. IET, October 2018. accepted, pending publication details.

[9] A.-C. Orgerie and S. Varrette. *Ultrascale Computing Systems*, chapter A Full-Cost Model for Estimating the Energy Consumption of Computing Infrastructures. IET, October 2018. accepted, pending publication details.

[10] P. Bouvry, G. L. T. Chetsa, G. Da Costa, E. Jeannot, L. Lefèvre, J.-M. Pierson, F. Pinel, P. Stolf, and S. Varrette. *Large-scale Distributed Systems and Energy Efficiency: A Holistic View*, volume 94 of *Wiley Series on Parallel and Distributed Computing*, chapter Energy Efficiency and High-Performance Computing, pages 197–224. John Wiley & Sons, February 2015.

[11] S. Varrette, P. Bouvry, M. Jarus, and A. Oleksiak. *Handbook on Data Centers*, chapter Energy efficiency in HPC Data Centers: Latest Advances to Build the Path to Exascale. Springer, February 2015.

[12] B. Bertholon, C. Cérin, C. Coti, J.-C. Dubacq, and S. Varrette. *Distributed Systems (volume 1); Design and Algorithms*, volume 1, chapter Practical Security in Distributed Systems, pages 237–300. Wiley, 2011.

[13] C. Cérin, J.-C. Dubacq, T. Hérault, R. Keryell, J.-L. Pazat, J.-L. Roch, and S. Varrette. *Systèmes répartis en action : de l'embarqué aux systèmes à large échelle*, chapter Sécurité dans les grilles de calcul, pages 153–180. IC2 Informatique et systèmes d'information. Hermès, November 2008. 184 pages, in French.

[14] P. Bouvry, J.-G. Dumas, R. Gillard, J.-L. Roch, and S. Varrette. *Sécurité Multimédia: Cryptographie et Sécurité Systèmes et Réseaux*, volume 2 of *Traités IC2 Informatique - Commande - Communication*, chapter Cryptographie à Clé Secrète, pages 23–101. Hermès, Fev 2006. In French.

[15] J.-G. Dumas, F. Leprevost, J.-L. Roch, V. Savin, and S. Varrette. *Sécurité Multimédia: Cryptographie et Sécurité Systèmes et Réseaux*, volume 2 of *Traités IC2 Informatique - Commande - Communication*, chapter Cryptographie à Clé Publique, pages 103–196. Hermès, Fev 2006. In French.

[16] J-G Dumas, F. Leprevost, J-L Roch, and S. Varrette. *Sécurité Multimédia: Cryptographie et Sécurité Systèmes et Réseaux*, volume 2 of *Traités IC2 Informatique - Commande - Communication*, chapter Architectures PKI, pages 187–210. Hermès, Fev 2006. In French.

[17] N. Bernard, Y. Denneulin, and S. Varrette. *Sécurité Multimédia: Cryptographie et Sécurité Systèmes et Réseaux*, volume 2 of *Traités IC2 Informatique - Commande - Communication*, chapter Sécurite UNIX, pages 211–245. Hermès, Fev 2006. In French.

[18] N. Bernard, Y. Denneulin, and S. Varrette. *Sécurité Multimédia: Cryptographie et Sécurité Systèmes et Réseaux*, volume 2 of *Traités IC2 Informatique - Commande - Communication*, chapter Sécurité Réseau, pages 247–298. Hermès, Fev 2006. In French.

**Edited Books / Proceedings** (1)

[19] S. Varrette, P. Bouvry, A. Zomaya, G. Danoy, and S. Gopalakrishnan, editors. *8th IEEE International Conference on Cloud Computing Technology and Science (ClouCom 2016)*, Luxembourg, December 2016. IEEE Computer Society. 583 pages.

**International journals** (8)

[20] A. A. Z. A. Ibrahim, M. U. Wasim, S. Varrette, and Pascal Bouvry. PRESENCE: Monitoring and Modelling the Performance Metrics of Mobile Cloud SaaS Web Services. *J. Mobile Information Systems*, 2018(1351386), August 2018. Extended journal version of our IEEE ICoin 2018 paper.

[21] M. Bagein, J. Barbosa, V. Blanco, I. Brandic, S. Cremer, S. Fremal, H. Karatza, L. Lefevre, T. Mastelic, A. Oleksiak, A.-C. Orgerie, G.L. Stavrinides, and S. Varrette. Energy Efficiency for Ultrascale Systems: Challenges and Trends from Nesus Project. *Intl. J. on Supercomputing Frontiers and Innovations*, 2(2):105–131, 2015. See http://superfri.org/superfri/article/view/48.

[22] P. Bouvry, R. Mayer, J. Muszyński, D. Petcu, A. Rauber, G. Tempesti, T. Trinh, and S. Varrette. Resilience within Ultrascale Computing System: Challenges and Opportunities from Nesus Project. *Intl. J. on Supercomputing Frontiers and Innovations*, 2(2):46–63, 2015. See http://superfri.org/superfri/article/view/46.

[23] M. Guzek, S. Varrette, V. Plugaru, J. E. Pecero, and P. Bouvry. A Holistic Model of the Performance and the Energy-Efficiency of Hypervisors in an HPC Environment. *Intl. J. on Concurrency and Computation: Practice and Experience (CCPE)*, 26(15):2569–2590, October 2014.

[24] F. Caldeira, T. Schaberreiter, S. Varrette, E. Monteiro, P. Simões, D Khadraoui, and P. Bouvry. Trust Based Interdependency Weighting for On-line Risk Monitoring in Interdependent Critical Infrastructures. *Intl. J. of Secure Software Engineering (IJSSE)*, 4(4):47–69, October 2013.

[25] B. Bertholon, S. Varrette, and P. Bouvry. CertiCloud: une plate-forme Cloud IaaS sécurisée. *Technique et Science informatiques (2012)*, 31(8-10)(2592):1121–1152, December 2012.

[26] J. Muszyński, S. Varrette, P. Bouvry, F. Seredyński, and S. U. Khan. Convergence Analysis of Evolutionary Algorithms in the Presence of Crash-Faults and Cheaters. *Intl. Journal. of Computers and Mathematics with Applications (CAMWA)*, 64(12):3805–3819, December 2012.

[27] F. Leprevost, J. Monnerat, S. Varrette, and S. Vaudenay. Generating anomalous elliptic curves. *Information Processing Letters*, 93(5):225–230, March 2005.

**International conferences with proceedings and reviews** (49)

[28] A. W. M. Checkaraou, A. Rousset, X. Besseron, S. Varrette, and B. Peters. Hybrid mpi+openmp implementation of extended discrete element method. In *Proc. of the 9th Workshop on Applications for Multi-Core Architectures (WAMCA'18), part of 30th Intl. Symp. on Computer Architecture and High Performance Computing (SBAC-PAD 2018)*, Lyon, France, September 2018. IEEE Computer Society.

[29] A. A.Z.A. Ibrahim, U. Wasim, S. Varrette, and P. Bouvry. PRESENCE: Performance Metrics Models for Cloud SaaS Web Services. In *Proc. of the 11th IEEE Intl. Conf. on Cloud Computing (CLOUD 2018)*, San Francisco, USA, July 2018. IEEE Computer Society.

[30] A. A.Z.A. Ibrahim, S. Varrette, and P. Bouvry. On verifying and assuring the cloud SLA by evaluating the performance of saas web services across multi-cloud providers. In *48th Annual IEEE/IFIP Intl. Conf. on Dependable Systems and Networks Workshops (DNS'18)*, pages 69–70, Luxembourg, June 2018. IEEE Computer Society. Extended Abstract.

[31] A. A.Z.A. Ibrahim, S. Varrette, and P. Bouvry. PRESENCE: Toward a Novel Approach for Performance Evaluation of Mobile Cloud SaaS Web Services . In *Proc. of the 32nd IEEE Intl. Conf. on Information Networking (ICOIN 2018)*, Chiang Mai, Thailand, January 2018. IEEE Computer Society. **Best Paper Award**.

[32] A. Rousset, A. W. Mainassara Chekaraou, Y. Liao, X. Besseron, S. Varrette, and B. Peters. Comparing Broad-Phase Interaction Detection Algorithms for Multiphysics DEM Applications. In *Proc.of the 15th Intl. Conf. of Numerical Analysis and Applied Mathematics (ICNAAM'17)*, Thessaloniki, Greece, September 2017. American Institute of Physics (AIP)).

[33] J. Emeras, S. Varrette, and P. Bouvry. Amazon Elastic Compute Cloud (EC2) vs. in-House HPC Platform: a Cost Analysis. In *Proc. of the 9th IEEE Intl. Conf. on Cloud Computing (CLOUD 2016)*, San Francisco, USA, June 2016. IEEE Computer Society.

[34] J. Emeras, X. Besseron, S. Varrette, P. Bouvry, and B. Peters. HPC or the Cloud: a cost study over an XDEM Simulation. In *Proc. of the 7th International Supercomputing Conference in Mexico (ISUM 2016)*, Puebla, México, April 2016.

[35] J. Muszyński, S. Varrette, and P. Bouvry. Reducing Efficiency of Connectivity-Splitting Attack on Newscast via Limited Gossip. In *Proc. of the 19th European Event on Bio-Inspired Computation, EvoCOMNET 2016*, LNCS, Porto, Portugal, March 2016. Springer Verlag.

[36] J. Emeras, S. Varrette, M. Guzek, and P. Bouvry. Evalix: Classification and Prediction of Job Resource Consumption on HPC Platforms. In *Proc. of the 19th Intl. Workshop on Job Scheduling Strategies for Parallel Processing (JSSPP'15), part of the 29th IEEE/ACM Intl. Parallel and Distributed Processing Symposium (IPDPS 2015)*, Hyderabad, India, May 2015. IEEE Computer Society.

[37] J. Muszyński, S. Varrette, B. Dorronsorro, and P. Bouvry. Distributed Cellular Evolutionary Algorithms in a Byzantine Environment. In *Proc. of the 18th Intl. Workshop on Nature Inspired Distributed Computing (NIDISC 2015), part of the 29th IEEE/ACM Intl. Parallel and Distributed Processing Symposium (IPDPS 2015)*, Hyderabad, India, May 2015. IEEE Computer Society.

[38] X. Besseron, V. Plugaru, A. H. Mahmoudi, S. Varrette, B. Peters, and P. Bouvry. Performance Evaluation of the XDEM framework on the OpenStack Cloud Computing Middleware. In *Proc. of the 4th Intl. Conf. on Parallel, Distributed and Grid Computing for Engineering (PARENG 2015)*, Dubrovnik, Croatia, March 2015. Civil-Comp Press.

[39] M. Guzek, X. Besseron, S. Varrette, G. Danoy, and P. Bouvry. ParaMASK: a Multi-Agent System for the Efficient and Dynamic Adaptation of HPC Workloads. In *Proc. of the 14th IEEE Intl. Symp. on Signal Processing and Information Technology (ISSPIT'14)*, Noida, India, December 2014. IEEE Computer Society.

[40] V. Plugaru, S. Varrette, and P. Bouvry. Performance Analysis of Cloud Environments on Top of Energy-Efficient Platforms Featuring Low Power Processors. In *Proc. of the 6th IEEE Intl. Conf. on Cloud Computing Technology and Science (CloudCom'14)*, Singapore, December 2014. IEEE Computer Society.

[41] J. Muszyński, S. Varrette, J.L. Jiménez Laredo, and P. Bouvry. Exploiting the Hard-wired Vulnerabilities of Newscast via Connectivity-splitting Attack. In *Proc. of the IEEE Intl. Conf. on Network and System Security (NSS 2014)*, volume 8792 of *LNCS*, pages 152–165, Xi'an, China, October 2014. Springer Verlag. **Best Student Paper Award**.

[42] V. Plugaru, S. Varrette, and P. Bouvry. Performance tuning of applications in HPC environments employing Simulated Annealing. In *Proc. of the Intl. Conf. on Metaheuristics and Nature Inspired Computing (META'14)*, Sousse, Tunisia, October 2014.

[43] S. Varrette, V. Plugaru, M. Guzek, X. Besseron, and P. Bouvry. HPC Performance and Energy-Efficiency of the OpenStack Cloud Middleware. In *Proc. of the 43rd Intl. Conf. on Parallel Processing (ICPP-2014), Heterogeneous and Unconventional Cluster Architectures and Applications Workshop (HUCAA'14)*, Minneapolis, MN, US, September 2014. IEEE.

[44] J. Muszyński, S. Varrette, J.L. Jiménez Laredo, and P. Bouvry. Analysis of the Data Flow in the Newscast Protocol for Possible Vulnerabilities. In *Proc. of Intl. Conf. on Cryptography and Security System (CSS'14)*, volume 448 of *Communications in Computer and Information Sciences (CCIS)*, pages 89–99, Lublin, Poland, September 2014. Springer.

[45] S. Varrette, P. Bouvry, H. Cartiaux, and F. Georgatos. Management of an Academic HPC Cluster: The UL Experience. In *Proc. of the 2014 Intl. Conf. on High Performance Computing & Simulation (HPCS 2014)*, pages 959–967, Bologna, Italy, July 2014. IEEE.

[46] B. Bertholon, S. Varrette, and P. Bouvry. Comparison of Multi-objective Optimization Algorithms for the JShadObf JavaScript Obfuscator. In *Proc. of the 17th Intl. Workshop on Nature Inspired Distributed Computing (NIDISC 2014), part of the 28th IEEE/ACM Intl. Parallel and Distributed Processing Symposium (IPDPS 2014)*, Phoenix, Arizona, USA, May 2014. IEEE Computer Society.

[47] S. Varrette, M. Guzek, V. Plugaru, X. Besseron, and P. Bouvry. HPC Performance and Energy-Efficiency of Xen, KVM and VMware Hypervisors. In *Proc. of the 25th Symposium on Computer Architecture and High Performance Computing (SBAC-PAD 2013)*, pages 89–96, Porto de Galinhas, Brazil, October 2013. IEEE Computer Society.

[48] V. Delplace, P. Manneback, F. Pinel, S. Varrette, and P. Bouvry. Comparing the Performance and Power Usage of GPU and ARM Clusters for Map-Reduce. In *Proc. of the 3rd Intl. Conf. on Cloud and Green Computing (CGC'13)*, pages 199–200. IEEE Computer Society, October 2013.

[49] T. Schaberreiter, S. Varrette, P. Bouvry, J Röning, and D Khadraoui. Dependency Analysis for Critical Infrastructure Security Modelling: A Case Study within the Grid'5000 Project. In *Proc. of the 3th IFIP Intl. SeCIHD'2013 Workshop, part of the 8th Intl. Conf. on Availability, Reliability and Security (ARES'13)*, volume 8128 of *LNCS*, pages 269–287, Regensburg, Germany, September 2013. Springer Verlag.

[50] S. Varrette, G. Danoy, M. Guzek, X. Besseron, and P. Bouvry. Using Data-flow analysis in MAS for power-aware HPC runs. In *Proc. of the IEEE Intl. Conf. on High Performance Computing and Simulation (HPCS'13)*, pages 158–160. IEEE Computer Society, July 2013.

[51] J. Muszynski, S. Varrette, and P. Bouvry. Expected Running Time of Parallel Evolutionary Algorithms on Unimodal Pseudo-Boolean Functions over Small-World Networks. In *Proc. of the IEEE Congress on Evolutionary Computation (CEC'2013)*, pages 2588–2594, Cancún, Mexico, June 2013. IEEE.

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