

# Sebastien VARRETTE, PhD

## Research Associate

specialized in Distributed Platforms Security and HPC/Cloud systems.

**10 years of experience in Linux HPC systems**

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Born on November 27th, 1979 (in France)

Married (2004), two children (2007,2010)

ENGINEER EXPERTISE: High Performance Computing (HPC) [6], Grid, Cluster & Cloud Platforms.  
I'm administrating cluster-based HPC systems since 2003 (Linux environment)  
*Keywords:* HPC, Debian, Xen, Puppet, OpenLDAP, git

MAIN RESEARCH DOMAINS: Security and Evaluation of Distributed Computing Platforms (clusters, grids or clouds).  
Relevant contributions per domains:

- Code Obfuscation , CERTICLOUD, a Cloud IaaS secure platform
- Crash/cheating faults analysis in grid platforms
- Performance & Energy efficiency of HPC/Cloud platforms
- Design of the authentication system of Grid'5000
- Developing security awareness by education

## Education

2007	PH.D. IN COMPUTER SCIENCE, University of Luxembourg ( <a href="#">UL</a> ) & Institut National Polytechnique de Grenoble ( <a href="#">INPG</a> ) Thesis: <i>Security in Large Scale Distributed Systems: Authentication and Result Checking</i> Advisors : Franck Leprévost ( <a href="#">UL</a> ) & Jean-Louis Roch ( <a href="#">INPG</a> )	with honours ( <i>Excellent/Outstanding</i> )
2003	M.SC. IN COMPUTER SCIENCE Speciality: Cryptology, Security and Information Coding (CSCI), Institut National Polytechnique de Grenoble ( <a href="#">INPG</a> ) & University Joseph Fourier ( <a href="#">UJF</a> )	with honours ( <i>TB/First Class</i> ) rank: 1st
2003	MASTER'S DEGREE IN ENGINEERING ( <a href="#">Telecoms ENSIMAG</a> ) Speciality: Computer Sciences and Telecommunications	with honours ( <i>B/2.1</i> ) rank: top 10%
1997 – 2000	ADVANCED MATHEMATICS AND PHYSICS STUDIES For the competitive entrance to the French engineering schools	
1997	SCIENTIFIC "BACCALAURÉAT" (French "A" levels)	with honours ( <i>B/2.1</i> )

## Employment

2011 – now	RESEARCH ASSOCIATE ( <a href="#">UL</a> , Luxembourg)
2007 – 2010	SCIENTIFIC COLLABORATOR ( <a href="#">UL</a> , Luxembourg)
2004 – 2007	RESEARCH ASSISTANT ( <a href="#">UL</a> , Luxembourg)
2003	SYSTEM ADMINISTRATOR ( <a href="#">ID-IMAG</a> , Grenoble, France)

## Teaching Experience

2008 – now	PARALLEL & GRID COMPUTING, MIDDLEWARE	Master MICS2 ( <a href="#">UL</a> )
2004 – 2007	PROGRAMMING TECHNIQUES I	Bachelor I1/CUT1 ( <a href="#">UL</a> )
	ADVANCED PROGRAMMING IN C, C++ AND JAVA	Bachelor I2 ( <a href="#">UL</a> )
	SYSTEM ADMINISTRATION AND NETWORK SECURITY	Master CSCI2 ( <a href="#">UJF</a> )
2006	CRYPTOLOGY AND NETWORK SECURITY	
	Master in Computer Science ( <a href="#">Univ. of Yaoundé I</a> , Cameroon)	

## Additional Information

Languages	FRENCH (native language), ENGLISH (fluent) and GERMAN (basic knowledge)
Sports	Karate (Black belt – 2nd DAN, Federal Instructor Diploma ( <a href="#">DIF</a> )), Jogging, Badminton, Ski etc.

## Graduate Students Supervision

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PhD.	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	MAXIME SCHMITT (2014–2015)	RESIF and OpenStack Deployment
	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 <a href="#">UL HPC facility</a>
	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
Bachelor	ROMAIN CAVAGNA (2007 – 2008)	Deployment of a GForge platform
	HYACINTHE CARTIAUX (2011 – )	System administrator of the <a href="#">UL HPC facility</a>
	BERNARD REICHERT (2008)	Collision detection implementation using CUDA

## Research Projects

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2007 – now	<a href="#">UL HPC</a> (UL cumulative contribution: <b>6.4 M€</b> )
2014 – now	EU <a href="#">COST ACTION IC1305</a> : Network for Sustainable Ultrascale Computing (NESUS)
2011 – 2013	UL EvoPERF (UL contribution: 373 k€)
2010 – 2012	FNR CORE <a href="#">GREENIT</a> (Total: 1,5 M€, FNR contribution: 432 k€)
2010 – 2012	AFR PhD BERTHOLON (PHD-09-142; Scientific Advisor; Total/AFR contribution: 110 k€) Confidentiality and Integrity Issues over Cloud Computing Platforms
2009 – 2013	EU <a href="#">COST ACTION IC0804</a> : Energy efficiency in large scale distributed systems
2009 – 2013	EU <a href="#">COREGRID</a>
2006 – 2008	ANR <a href="#">SAFESCALE-BGPR</a> (ANR-05-SSIA-0005; ANR contribution: 68 k€)
2005 – now	<a href="#">GRID'5000</a> (technical committee)
2005 – 2007	FNR-SECOM TESEGRAD (FNR contribution: 300 k€)
2004 – 2007	<a href="#">CRYPTALPES</a>
2004 – 2006	<a href="#">RAGTIME</a> (Total: 545 k€, Rhône-Alpes Region contribution: 217 k€)

## Professional Development

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	IEEE Computer and Computational Intelligence society member Organizer of various conferences
2009 – now	TECHNICAL ADVISOR for <a href="#">LCSB</a> and the <a href="#">MECO</a> Ministry on HPC projects
2007 – now	<a href="#">UL HPC</a> MANAGER. <b>Cumulative Project Investment: 6.3 M€</b> (as of 2015). 400 computing nodes, 4284 cores, $R_{\text{peak}} = 49.92$ TFlops 150 servers (74,6% are Xen VMs) NFS, GPFS, Lustre Storage (Total capacity: 4268 TB) Management of a team of 4 system administrators
2007 – now	Manager of various IT services ( <a href="#">Gforge @ Uni.lu</a> , Jabber etc.)
2006	<a href="#">EGIDE</a> mission for 3 weeks in Cameroon (master lecture – Univ. of Yaoundé I)
2005	EDITORIAL COMMITTEE for the definition of new <a href="#">UL</a> master and bachelor degrees
2005 – 2006	EDITORIAL COMMITTEE, <a href="#">UL</a> website (CMS selection & management)
2005 – 2006	FACULTY COUNCIL, elected member (assistant representative)
2000 – 2002	ENSIMAG JUNIOR ENTERPRISE, developer member

## Publications

Publication category	Quantity
PhD Thesis	1
Books	4
Magazine	1
Book Chapters	9
International journals	5
International conferences with proceedings and reviews	40
(French) national conferences with proceedings and reviews	4
International conferences with proceedings	1
International conferences with reviews	7
Masters Thesis	1
Technical Reports	8
Miscellaneous	1
<b>Total:</b>	<b>82</b>

<a href="#">Publish or Perish</a>	Papers:107	Citations:261,Years:12	<b>h-index:9</b> ,g-index:13	hc-index:8,hI-index:2,79,hI-norm:4
<a href="#">DBLP</a>	Cites/year: 21.75	Cites/paper: 2.44/0.0/0	Cites/author: 93.18	Papers/author: 38.22
	<a href="#">Google Scholar</a>			Query date: <b>2015-07-06</b>

## Selected Publications

- [1] J.-G. Dumas, J.-L. Roch, E. Tannier, and S. Varrette. *Foundations of Coding: Compression, Encryption, Error-Correction*. Wiley & Sons, Feb 2015. 376 pages.
- [2] 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, Oct. 2014.
- [3] 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, Dec 2012.
- [4] 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, Dec. 15–18 2014. IEEE Computer Society.
- [5] 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, Oct 2014. Springer Verlag. **Best Student Paper Award**.
- [6] 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)*, Bologna, Italy, July 2014. IEEE.
- [7] 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)*, Cancún, Mexico, June 2013. IEEE.
- [8] B. Bertholon, S. Varrette, and P. Bouvry. CertiCloud: a Novel TPM-based Approach to Ensure Cloud IaaS Security. In *Proc. of the 4th IEEE Intl. Conf. on Cloud Computing (CLOUD 2011)*, Washington DC, USA, July 4–9 2011. IEEE Computer Society.
- [9] D. Dunlop, S. Varrette, and P. Bouvry. Deskillig HPL - Using an Evolutionary Algorithm to Automate Cluster Benchmarking. In *Proc. of 8th Intl. Conf. on Parallel Processing and Applied Mathematics - Part II (PPAM 2009)*, volume 6068 of *LNCS*, pages 102–114, Wroclaw, Poland, Sept. 13–16 2009. Springer Verlag. Publication appeared in 2010.
- [10] J.-L. Roch and S. Varrette. Probabilistic Certification of Divide & Conquer Algorithms on Global Computing Platforms. Application to Fault-Tolerant Exact Matrix-Vector Product. In *Proc. of the ACM Intl. Workshop on Parallel Symbolic Computation'07 (PASCO'07)*, pages 88–92, London, Ontario, Canada, July 27–28 2007. ACM.