

# Sebastien VARRETTE, PhD

## Research Associate

specialized in Distributed Platforms Security and HPC/Cloud systems.

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

Phone: +33(0)6 74 57 90 05

E-mail: [Sebastien.Varrette@uni.lu](mailto:Sebastien.Varrette@uni.lu)

Home page: <http://varrette.gforge.uni.lu>



Born on November 27th, 1979 (in France)

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

ENGINEER EXPERTISE: High Performance Computing (HPC), 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 in which I'm involved:

- Code Obfuscation , CERTICLOUD, a Cloud IaaS secure platform
- Crash/cheating faults analysis in grid platforms
- Performance evaluation & Energy efficiency of HPC/Cloud platforms
- Design of the authentication system of Grid5000
- Developing security awareness by education

## Education

2007	PH.D. IN COMPUTER SCIENCE, with honours ( <i>Excellent/Outstanding</i> ) 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> )
2003	M.SC. IN COMPUTER SCIENCE with honours ( <i>TB/First Class</i> ) Speciality: Cryptology, Security and Information Coding (CSCI), rank: 1st Institut National Polytechnique de Grenoble ( <a href="#">INPG</a> ) & University Joseph Fourier ( <a href="#">UJF</a> )
2003	MASTER'S DEGREE IN ENGINEERING ( <a href="#">Telecoms ENSIMAG</a> ) with honours ( <i>B/2.1</i> ) Speciality: Computer Sciences and Telecommunications 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

<b>PhD.</b>	JAKUB MUSZYŃSKI (2011 –) BENOÎT BERTHOLON (2010 –)	Integrity aspects on grid and cloud platforms Confidentiality & Integrity Issues over Cloud Computing Platforms
<b>Master</b>	ANNA GIANNAKOU (2013 –) VALENTIN PLUGARU (2012 –) FOTIS GEORGATOS (2012 –) MATEUSZ GUZEK (2011) BENOÎT BERTHOLON (2009) CHRISTOPHE WEIS (2009) DOMINIC DUNLOP (2008 – 2009) ROMAIN CAVAGNA (2007 – 2008)	Energy Efficiency in HPC environments. Energy Efficiency of Hypervisors and Cloud middleware. System administrator of the <a href="#">UL HPC facility</a> System administration of cluster-based HPC systems Integrity issues in distributed executions Optimizing hash functions and S-Box by GEP Using GAs to tune benchmarks for HPCs Deployment of a GForge platform
<b>Bachelor</b>	HYACINTHE CARTIAUX (2011 –) BERNARD REICHERT (2008)	System administrator of the <a href="#">UL HPC facility</a> Collision detection implementation using CUDA

## Research Projects

2007 – now	<a href="#">UL HPC</a> (UL cumulative contribution: <b>5.6 M€</b> )
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

	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: 5.6 M€</b> (as of 2013). 291 computing nodes, 2944 cores, $R_{\text{peak}} = 27.36$ TFlops 132 servers (74,6% are Xen VMs) NFS and Lustre Storage (Total raw capacity: 1044TB) 3 system administrators + 1 student assistant
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	7
International journals	4
International conferences with proceedings and reviews	27
(French) national conferences with proceedings and reviews	4
International conferences with proceedings	1
International conferences with reviews	6
Masters Thesis	1
Technical Reports	8
Miscellaneous	1
<b>Total:</b>	<b>65</b>

<a href="#">Publish or Perish</a>	Papers:48 Cites/year: 13.55	Citations:149,Years:11 Cites/paper: 3.10/2.0/0	<b>h-index:8</b> ,g-index:10 Cites/author: 58.98	hc-index:4,hI-index:2.56,hI-norm:4 Papers/author: 20.25	Query date: <b>2013-05-20</b>
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## Selected Publications

- [1] S. Varrette. *Sécurité des Architectures de Calcul Distribué: Authentification et Certification de Résultats*. PhD thesis, INP Grenoble and Université du Luxembourg, Sept. 2007. 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, Mars 2007. 352 pages, in French.
- [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] 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.
- [5] M. Jarus, S. Varrette, A. Oleksiak, and P. Bouvry. Performance Evaluation and Energy Efficiency of High-Density HPC Platforms Based on Intel, AMD and ARM Processors. In *Proc. of the Intl. Conf. on Energy Efficiency in Large Scale Distributed Systems (EE-LSDS'13)*, LNCS, Vienna, Austria, Apr 2013. Springer Verlag.
- [6] 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.
- [7] 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.
- [8] 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.
- [9] S. Varrette, S. Georget, J. Montagnat, J.-L. Roch, and F. Leprevost. Distributed Authentication in GRID5000. In *Proc. of OTM Confederated Int. Workshops on Grid Computing and its Application to Data Analysis (GADA'05)*, volume 3762 of *LNCS*, pages 314–326, Agia Napa, Cyprus, Nov. 1 2005. Springer Verlag.
- [10] A.Krings, J.-L. Roch, S. Jafar, and S. Varrette. A Probabilistic Approach for Task and Result Certification of Large-scale Distributed Applications in Hostile Environments. In *Proc. of the European Grid Conference (EGC2005)*, volume 3470 of *LNCS*, pages 323–333, Amsterdam, Netherlands, Feb. 14–16 2005. Springer Verlag.