

# Daniel Ricardo dos Santos, PhD

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## CONTACT INFORMATION

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## WORK EXPERIENCE

### Eindhoven University of Technology

Eindhoven, The Netherlands

*Researcher*

Apr/2017 - Current

- Working on the design and development of network intrusion detection for industrial control systems.

### SAP Labs

Sophia Antipolis, France

*Visiting researcher*

Feb-Jun/2014; Apr-Jun/2015; Feb-Jun/2016

- Designed and developed a tool to test web application exploits in multiple environments, using Selenium and Docker.
- Integrated research prototypes for run-time workflow monitoring into SAP platforms.

### Fondazione Bruno Kessler

Trento, Italy

*Researcher*

Sep/2013 - Mar/2017

- Designed and developed techniques and tools based on formal methods for security enforcement of workflows and web applications.
- Tested the security of Android apps and web applications, in collaboration with PosteItaliane.

### SecPlus

Florianópolis, Brazil

*Security consultant*

Oct/2012 - Jul/2013

- Conducted penetration testing and security assessments for several companies.
- Contributed to open source projects for the analysis of Linux malware and for secure development in PHP.

### AltoQi

Florianópolis, Brazil

*C++ developer*

Oct/2011 - Apr/2012

- Implemented parts of the graphics and database modules of a CAD software for civil engineering, using the Windows API and SQLite.
- Worked as part of a Scrum team using agile methodology.

### Federal University of Santa Catarina

Florianópolis, Brazil

*Research assistant*

Jul/2010 - Jul/2011; May/2012 - Jul/2013

- Implemented identity management, access control, and security monitoring systems for cloud computing, using technologies such as SAML, OpenStack, and Nessus.

## EDUCATION

### University of Trento

Trento, Italy

PhD. in Computer Science (ICT)

Nov/2013 - Mar/2017

### Federal University of Santa Catarina

Florianópolis, Brazil

MSc. in Computer Science

Oct/2011 - Aug/2013

BSc. in Computer Science

Mar/2007 - Jul/2011

SKILLS	<b>Programming languages:</b> Python, Java, C/C++, PHP, JavaScript.		
	<b>Technical expertise:</b> Agile methodology (TDD, Scrum, XP), Linux/UNIX systems, databases (MySQL, HANA, SQLite), version control (SVN, Git), penetration testing (network, web, and mobile), formal methods (model checking, SMT).		
	<b>Soft skills:</b> Quick learner with good communication skills (verbal and written). Capable of working independently and in teams. Efficient project manager.		
	<b>Languages:</b> Portuguese (Native), English (Fluent), Italian (Intermediate).		
FURTHER EDUCATION	<b>Summer/Winter Schools:</b>		
	Executive School on Post-Quantum Cryptography		2017
	European Summer School in Logic, Language, and Information		2016
	SECENTIS Winter School - Security of Enterprise Information Systems		2016
	IEEE Italy Section School of Career Boosting		2015
	Marktoberdorf Summer School - Dependable Software Systems Engineering		2014
	UFSC Mathematics Summer School - Axiomatic Set Theory, Real Analysis		2011
	<b>Online:</b>		
	Machine Learning (Coursera - Andrew Ng, Stanford)		2015
OTHER INTERESTS	<b>Martial arts:</b> Wado-ryu Karate black belt (1st dan)		
	<b>Volunteering:</b> Boy Scout leader (2010-2013)		
	<b>Others:</b> Reading, traveling		

## List of publications

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### STATISTICS (GOOGLE SCHOLAR)

- Refereed publications: **21** (6 journals, 15 conferences and workshops)
- Citations: **158**
- h-index: **6**

### JOURNALS

- J1. **D.R. dos Santos**, S. Ranise, L. Compagna, S.E. Ponta. “*Automatically Finding Execution Scenarios to Deploy Security-Sensitive Workflows*” in Journal of Computer Security, vol. 25, no. 3, 2017
- J2. **D.R. dos Santos**, R. Marinho, G.R. Schmitt, C.M. Westphall, C.B. Westphall. “*A Framework and Risk Assessment Approaches for Risk-based Access Control in the Cloud*” in Journal of Network and Computer Applications, vol. 74, October, 2016
- J3. E.A. Rigon, C.M. Westphall, **D.R. dos Santos**, C.B. Westphall. “*A Cyclical Evaluation Model of Information Security Maturity*” in Information Management and Computer Security, vol. 22, no. 3, 2014
- J4. **D.R. dos Santos**, T.J. Nascimento, C.M. Westphall, M.A.P Leandro, C.B. Westphall. “*Privacy-preserving identity federations in the cloud: a proof of concept*” in International Journal of Security and Networks, vol. 9, no. 1, 2014
- J5. C.B. Westphall, C.M. Westphall, F.L. Koch, G.A. Geronimo, J. Werner, R.S. Mendes, P.F. Silva, **D.R. dos Santos**, R.F. Souza, M.M. Mattos, S.R. Villareal, R. Weingartner, L. Defenti, A.A. Flores, R.R. Freitas, G.B. Brascher. “*Operation, Management, Security and Sustainability for Cloud Computing*” in Revista de Sistemas de Informação da FSMA, vol. 2014, no. 13, 2014
- J6. R.F. de Souza, C.B. Westphall, **D.R. dos Santos**, C.M. Westphall. “*A Review of PACS on Cloud for Archiving Secure Medical Images*” in International Journal of Privacy and Health Information Management, vol. 1, no. 1, 2013

### CONFERENCES AND WORKSHOPS

- C1. **D.R. dos Santos**, S. Ranise. “*On Run-time Enforcement of Authorization Constraints in Security-Sensitive Business Processes*” in Proceedings of the 15th International Conference on Software Engineering and Formal Methods (SEFM), 2017
- C2. L. Compagna, **D.R. dos Santos**, S.E. Ponta, S. Ranise. “*Aegis: Automatic Enforcement of Security Policies in Workflow-driven Web Applications*” in Proceedings of the 7th ACM Conference on Data and Applications Security and Privacy (CODASPY), 2017
- C3. **D.R. dos Santos**, S.E. Ponta, S. Ranise. “*Modular Synthesis of Enforcement Mechanisms for the Workflow Satisfiability Problem: Scalability and Reusability*” in Proceedings of the 21st ACM Symposium on Access Control Models and Technologies (SACMAT), 2016
- C4. L. Compagna, **D.R. dos Santos**, S.E. Ponta, S. Ranise. “*Cerberus: Automated Synthesis of Enforcement Mechanisms for Security-sensitive Business Processes*” in Proceedings of the 22nd International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS), 2016
- C5. **D.R. dos Santos**, S. Ranise, L. Compagna, S.E. Ponta. “*Assisting the Deployment of Security-Sensitive Workflows by Finding Execution Scenarios*” in Proceedings of the 29th Annual IFIP WG 11.3 Conference on Data and Applications Security and Privacy (DBSec), 2015. **Best Student Paper Award**
- C6. C. Bertolissi, **D.R. dos Santos**, S. Ranise. “*Automated Synthesis of Run-time Monitors to Enforce Authorization Policies in Business Processes*” in Proceedings of the 10th ACM Symposium on Information, Computer and Communications Security (ASIACCS), 2015

- C7. S. Dashevskiy, **D.R. dos Santos**, F. Massacci, A. Sabetta. *“TESTREX: a Testbed for Repeatable Exploits”* in Proceedings of the 7th Workshop on Cyber Security Experimentation and Test (CSET), 2014
- C8. P.A.F. Vitti, **D.R. dos Santos**, C.B. Westphall, C.M. Westphall, K.M.M. Vieira. *“Current Issues in Cloud Computing Security and Management”* in Proceedings of the 8th International Conference on Emerging Security Information, Systems and Technologies (SECURWARE), 2014
- C9. **D.R. dos Santos**, C.M. Westphall, C.B. Westphall. *“A dynamic risk-based access control architecture for cloud computing”* in Proceedings of the IEEE/IFIP Network Operations and Management Symposium (NOMS), 2014
- C10. P. Silva, C.B. Westphall, C.M. Westphall M. Mattos, **D.R. dos Santos**. *“An Architecture for Risk Analysis in Cloud”* in Proceedings of the 10th International Conference on Networking and Services (ICNS), 2014
- C11. **D.R. dos Santos**, C.M. Westphall, C.B. Westphall. *“Risk-based Dynamic Access Control for a Highly Scalable Cloud Federation”* in Proceedings of the 7th International Conference on Emerging Security Information, Systems and Technologies (SECURWARE), 2013
- C12. R.F. de Souza, C.B. Westphall, **D.R. dos Santos**, C.M. Westphall. *“Challenges of Operationalizing PACS on Cloud Over Wireless Networks”* in Proceedings of the 9th International Conference on Wireless and Mobile Communications (ICWMC), 2013
- C13. R.B. Brinhosa, C.M. Westphall, C.B. Westphall, **D.R. dos Santos**, F. Grezele. *“A Validation Model of Data Input for Web Services”* in Proceedings of the 12th International Conference on Networks (ICN), 2013
- C14. M.A.P. Leandro, T.J. Nascimento, **D.R. dos Santos**, C.M. Westphall, C.B. Westphall. *“Multi-Tenancy Authorization System with Federated Identity for Cloud-Based Environments Using Shibboleth”* in Proceedings of the 11th International Conference on Networks (ICN), 2012
- C15. **D.R. dos Santos**, C.M. Westphall, *“Uma aplicação de privacidade no gerenciamento de identidades em nuvem com uApprove”* in Workshop de Trabalhos de Iniciação Científica e Graduação (WTICG), Anais do Simpósio Brasileiro em Segurança da Informação e de Sistemas Computacionais (SBSEG), 2011

#### THESES

- T1. **D.R. dos Santos**, *“Automatic Techniques for the Synthesis and Assisted Deployment of Security Policies in Workflow-based Applications”*, PhD. thesis, University of Trento, 2017
- T2. **D.R. dos Santos**, *“Uma Arquitetura de Controle de Acesso Dinâmico Baseado em Risco para Computação em Nuvem”*, MSc. thesis, Federal University of Santa Catarina, 2013
- T3. **D.R. dos Santos**, *“Gerenciamento de Identidades e Privacidade em Ambientes de Computação em Nuvem”*, BSc. thesis, Federal University of Santa Catarina, 2011

#### TECHNICAL REPORTS

- R1. **D.R. dos Santos**, S. Ranise. *“A Survey on Workflow Satisfiability, Resiliency, and Related Problems”*, 2017

#### PATENTS

- P1. S.E. Ponta, L. Compagna, **D.R. dos Santos**, S. Ranise, *“Secure and Compliant Execution of Processes”*. Filed on 13/04/2016 (under USPTO review)
- P2. A. Sabetta, L. Compagna, S.E. Ponta, S. Dashevskiy, **D.R. dos Santos**, F. Massacci. *“Multi-context Exploit Test Management”*. United States Patent 20160314302

#### VULNERABILITIES

- V1. CVE-2013-2618, Network Weathermap 0.97a Cross Site Scripting
- V2. CVE-2013-2619, Aspen 0.8 Directory Traversal

## Academic activities

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RESEARCH PROJECTS	<ul style="list-style-type: none"><li>• <a href="#">CITADEL</a> - Critical Infrastructure Protection Using Adaptive MILS 2017 - 2019</li><li>• <a href="#">SECENTIS</a> - Security and Trust of Next Gen. Enterprise Inf. Systems 2013 - 2016</li><li>• <a href="#">AutoManSec4Cloud</a> - Autonomic Management and Security for Cloud 2010 - 2013</li></ul>
TEACHING ASSISTANCE	<ul style="list-style-type: none"><li>• Offensive Security (MSc., University of Trento) 2014</li><li>• Operating Systems (BSc., University of Santa Catarina) 2013</li><li>• Computer Networks (BSc., University of Santa Catarina) 2013</li></ul>
REVIEWER FOR JOURNALS	<ul style="list-style-type: none"><li>• <a href="#">Computer Networks</a></li><li>• <a href="#">Journal of Networks and Systems Management</a></li><li>• <a href="#">Security and Communication Networks</a></li></ul>
EXTERNAL REVIEWER FOR CONFERENCES	<ul style="list-style-type: none"><li>• 19th International Conference on Formal Engineering Methods <a href="#">ICFEM 2017</a></li><li>• 21st ACM Symposium on Access Control Models and Technologies <a href="#">SACMAT 2017</a></li><li>• 4th International Conference on Tools and Methods of Program Analysis <a href="#">TMPA 2017</a></li><li>• 6th ACM Conf. on Data and Application Security and Privacy <a href="#">CODASPY 2016</a></li><li>• 11th International Workshop on Data Privacy Management <a href="#">DPM 2016</a></li><li>• 11th International Workshop on Security and Trust Management <a href="#">STM 2015</a></li><li>• 29th IFIP Conference on Data and Applications Security and Privacy <a href="#">DBSec 2015</a></li><li>• 8th Int. Conf. on Language and Automata Theory and Applications <a href="#">LATA 2014</a></li></ul>
MEMBER OF THESIS COMMITTEES	<ul style="list-style-type: none"><li>• Gustavo Roecker Schmitt, “<i>Utilização do Modelo de Controle de Acesso RAdAC (Risk-Adaptive Access Control) em um Ambiente de Computação em Nuvem</i>”, BSc. thesis, Federal University of Santa Catarina, 2014.</li><li>• Max Alexandre Zanelato, “<i>Proposta de um modelo de biblioteca cliente para o Shibboleth: Facilitando a adaptação das aplicações</i>”, BSc. thesis, Federal University of Santa Catarina, 2014.</li></ul>
SCIENTIFIC AND PROFESSIONAL ASSOCIATIONS	<ul style="list-style-type: none"><li>• Association for Computing Machinery (ACM) 2015 - Current</li><li>• IFIP Data and Applications Security and Privacy (WG11.3) 2015 - Current</li><li>• Marie Curie Alumni Association (MCAA) 2014 - Current</li><li>• IEEE Communications Society (ComSoc) 2014 - 2015</li></ul>