

# Daniele Antonioli

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Google scholar: RkX4eFsAAAAJ, Last CV update: November 22, 2017

## Summary

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- 3rd year PhD student at SUTD, working on Industrial Control Systems security
- Main interests (last update: November 22, 2017):
  - Applied security for Cyber-Physical Systems [1, 2, 3]
  - Hardware security for Embedded Systems [4, 5]
  - Physical-layer Security of Wireless Systems [6]

## Education

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<b>PhD in CS at Singapore University of Technology and Design (SUTD)</b> <i>Cyber-Physical Systems Security, Wireless Security, Adv: N.O. Tippenhauer</i>	<b>Sept 2015–Present</b> GPA: 4.90/5.00
<b>MS in Electronics and Telecom Engineering at University of Bologna</b> <i>Thesis: Hardware Testing of RNG, Adv: R. Rovatti, W. Burleson</i>	<b>Sept 2010–Mar 2013</b> Grade: 110/110
<b>BS in Electronics and Telecom Engineering at University of Bologna</b> <i>Thesis: Principles and Evolution of Radio Imaging, Adv: C. Lamberti</i>	<b>Sept 2006–Mar 2010</b> Grade: 91/110
<b>High School Diploma at Liceo Scientifico G. Marconi, Italy</b> <i>Science specialisation</i>	<b>Sept 2000–Jul 2006</b> Grade: 98/100

## Research Experience

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<b>RA for iTrust Research Centre at SUTD, Singapore</b> <i>Cyber-Physical Systems Security, Adv: N.O. Tippenhauer</i> <ul style="list-style-type: none"><li>○ Design Implementation and Maintenance of MiniCPS [3].</li><li>○ Collaborate on scy-phy related projects and events.</li></ul>	<b>Feb 2015–Sept 2015</b>
<b>RA for VLSI Circuits and Systems Group at UMass, Amherst</b> <i>Hardware Testing and Security, Adv: W. Burleson, V. Suresh</i> <ul style="list-style-type: none"><li>○ Work on Master thesis and related e-book [7].</li><li>○ Publish lightweight on-chip implementation of reduced NIST randomness test suite [5]</li></ul>	<b>Oct 2012–Dec 2012</b>

## Teaching Experience

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<b>TA for 50.012 Networks at SUTD, Singapore</b> <i>Instructor: Prof. N.O. Tippenhauer</i> <ul style="list-style-type: none"><li>○ Manage weekly lab session, grading of homeworks, office hours for 30 students.</li><li>○ Topics: Internet, TCP/IP, UDP, BGP, SDN, HTTP, REST API, TLS, tunnels, NAT, embedded networks</li></ul>	<b>Fall 2017</b>
<b>TA for 50.020 Security at SUTD, Singapore</b> <i>Instructor: Prof. N.O. Tippenhauer</i> <ul style="list-style-type: none"><li>○ Manage weekly lab session, grading of homeworks, office hours for 30 students.</li><li>○ Topics: sym/asym crypto, BOF, TLS, CTF, hashing, XSS, input validation, code injection, MitM.</li></ul>	<b>Spring 2017</b>
<b>Private Teacher, Italy</b> <i>Audience: Grad, Undergrad, and High school students</i> <ul style="list-style-type: none"><li>○ Grad/undergrad: linear algebra, calculus, programming (C, Pascal).</li><li>○ High school: math, physics, programming (C++).</li></ul>	<b>Jan 2013–Jan 2015</b>

**CS External Commissioner Prof for High School Final Exams, Italy****Jun 2013–Jul 2013***Institutes: ITIS Urbino, ITI Don Orione*

- Grade written exams prepared by MIUR, oral interviews and grade assignment for 40 students.
- Topics: LAMP stack, SQL, design and implementation of relational DB, MVC paradigm, HTTP(S).

## Industry Experience

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**Chief of Transportation and Logistics for FIG World Cup, Italy****Apr 2013***Adv: Colombo F, Porfiri P*

- Plan and manage transportation services for 43 International Delegations and Press.
- Coordinate a senior team of drivers, MGMT of facilities, cash fund, lost property and meals plan.

**Intern Clinical Engineer at Infermi Hospital Rimini, Italy****Apr 2010–Jul 2010***Adv: Camillini R.*

- Study and measurement about the safety of optical radiations [8].
- Lab activity, Logistics, Electrical Checks and inspections in various departments of the hospital.

## Self Learning

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**Unix tools by University of Cambridge****2017***Instructor: Kuhn M. Topics***Learning How to Learn by UCSD (Coursera)****2014***Instructors: Sejnowsky T., Oakley B. Topics***Hardware/Software Interface by Washington University (Coursera)****2014***Instructors: Borriello G., Ceze L. Certificate with Distinction***Entrepreneurship 101: Who is your customer? by MITx (edX)****2014***Instructor: Aulet B.,***Cryptography Part 1 by Stanford University (Coursera)****2013***Instructor: Boneh D. Topics Certificate with Distinction***Algorithms Part 1 by Princeton University (Coursera)****2013***Instructors: Wayne K., Sedgewick R Topics***Quantum Mechanics and Quantum Computation by BerkleyX (edx)****2013***Instructor: Vazirani U. Topics Certificate Notes*

## Languages

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**Italian:** Native**English:** Professional proficiency: TOEFL iBT: 94 (2013). B-2 CEFR (2012)**Spanish:** Elementary proficiency

## Skills

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**Programming:** object-oriented, procedural, trait-oriented, test-driven**Langs:** Pythons, C, Rust, SQL, bash, C++, Java, Octave/MATLAB, Mathematica, VHDL, spice**Architectures:** x86, amd64, ARM**Pentest:** SQLi, Fuzzing, MitM, BOF, ROP**Tools:** unix, vim, git, tmux, make, inkscape, ranger, tig, gpg**Markup:** md,  $\LaTeX$ , rst, toml

## Events and Talks

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**Invited talk by Prof Conti's SPRITZ group at the University of Padova****Summer 2017***Towards high-interaction virtual honeypots in-a-box and MiniCPS.*

<b>SMART MIT/ETH/NUS/SUTD Workshop at NUS CREATE Tower (Singapore)</b>	<b>2017</b>
<i>Mentoring six grad students for the track of cyber-security policies. ADAPT research paper.</i>	
<b>SGCSC Cybersecurity Camp at NUS (Singapore)</b>	<b>2017</b>
<i>Instructors: Liang Z., Roychoudhury A. Directed fuzzing LibPNG with peach and Binutils with afl</i>	
<b>SCy-Phy Systems Week at SUTD (iTrust, Singapore)</b>	<b>2015, 2016, 2017</b>
<i>SWaT Security Showdown (S3) CTF organizer. Technical talk about MiniCPS.</i>	
<b>FOSAD International Summer School at Bertinoro (Italy)</b>	<b>Summer 2016</b>
<i>Foundations of Security Analysis and Design. Selected with scholarship.</i>	

## Misc

<b>Membership:</b> Singapore Rust meetup organizer, Co-founder of SUTD Kopipacket CTF team	<b>Awards:</b> Singapore PGF scholarship, UniBO overseas scholarship, EU Erasmus scholarship
<b>Sports:</b> Soccer, Swimming, Basketball	<b>Hobbies:</b> Dog owner, Traveling, Nature, Food
<b>Events:</b> Concerts, Museums, Art performance	<b>Music:</b> R&R, Guitar player, Vinyl collector

## Publications

- [1] Daniele Antonioli, Hamid Reza Ghaeini, Sridhar Adepu, Martín Ochoa, and Nils Ole Tippenhauer. Gamifying ics security training and research: Design, implementation, and results of s3. In *Proceedings of Workshop on Cyber-Physical Systems Security & Privacy (SPC-CPS)*, co-located with CCS, November 2017.
- [2] Daniele Antonioli, Anand Agrawal, and Nils Ole Tippenhauer. Towards high-interaction virtual ICS honeypots-in-a-box. In *Proceedings of the 2nd ACM Workshop on Cyber-Physical Systems Security and Privacy*, (co-located with ACM CCS), pages 13–22. ACM, 2016. <https://dl.acm.org/citation.cfm?id=2994493> **Research excellence award by ST Electronics FIRST workshop 2017.**
- [3] Daniele Antonioli and Nils Ole Tippenhauer. Minicps: A toolkit for security research on CPS networks. In *Proceedings of the First ACM Workshop on Cyber-Physical Systems-Security and/or Privacy* (co-located with ACM CCS), pages 91–100. ACM, 2015. <https://arxiv.org/pdf/1507.04860>, Repo: <https://github.com/scy-phy/minicps>.
- [4] John Henry Castellanos, Daniele Antonioli, Nils Ole Tippenhauer, and Martín Ochoa. Legacy-compliant data authentication for industrial control system traffic. In *Proceedings of the Conference on Applied Cryptography and Network Security (ACNS)*, July 2017.
- [5] Vikram B Suresh, Daniele Antonioli, and Wayne P Burleson. On-chip lightweight implementation of reduced NIST randomness test suite. In *IEEE International Symposium on Hardware-Oriented Security and Trust (HOST)*, pages 93–98. IEEE, 2013. <http://sharps.org/wp-content/uploads/SURESH-HOST13.pdf>.
- [6] Daniele Antonioli, Sandra Siby, and Nils Ole Tippenhauer. Practical evaluation of passive COTS eavesdropping in 802.11b/n/ac WLAN. In *Proceedings of Conference on Cryptology And Network Security (CANS)*, November 2017.
- [7] Daniele Antonioli. Design and testing of RNG. Master's thesis, University of Bologna and University of Massachusetts Amherst, Italy and US, 2013. <http://www.lulu.com/shop/daniele-antonioli/design-and-testing-of-rng/ebook/product-20965725.html>.
- [8] Daniele Antonioli. Artificial optical radiation management, risk and safety in the hospital environment. *Tecnica Ospedaliera (Italian Technical Magazine)*, 2010.