

Daniele Antonioli

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Google scholar: RkX4eFsAAAAJ, Last CV update: July 12, 2018

Summary

- 3rd year PhD student at SUTD, working on Industrial Control Systems security
- Main interests (last update: July 12, 2018):
 - Applied security for Cyber-Physical Systems [1, 2, 3, 4]
 - Hardware security for Embedded Systems [5, 6]
 - Physical-layer Security of Wireless Systems [7]

Service

- IEEE Transactions on Information Forensics and Security (T-IFS) since 2017

Education

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

Research Experience

RA for Dept of Computer Science University of Oxford, UK <i>Systems Security, Adv: K.B. Rasmussen</i>	Jan 2018-Jul 2018
RA for iTrust Research Centre at SUTD, Singapore <i>Cyber-Physical Systems Security, Adv: N.O. Tippenhauer</i> <ul style="list-style-type: none">○ Design Implementation and Maintenance of MiniCPS [3].○ Collaborate on scy-phy related projects and events.	Feb 2015–Sept 2015
RA for VLSI Circuits and Systems Group at UMass, Amherst <i>Hardware Testing and Security, Adv: W. Burlison, V. Suresh</i> <ul style="list-style-type: none">○ Work on Master thesis and related e-book [8].○ Publish lightweight on-chip implementation of reduced NIST randomness test suite [6]	Oct 2012–Dec 2012

Teaching Experience

TA for Security Principles (SPR) at University of Oxford, UK <i>Instructor: Prof. K.B. Rasmussen</i> <ul style="list-style-type: none">○ Responsible for the exercises and presentation of Scyther○ Topics: CIA, Authentication, Cryptography, RSA, Protocols	Summer 2018
TA for 50.012 Networks at SUTD, Singapore <i>Instructor: Prof. N.O. Tippenhauer</i>	Fall 2017

- o Manage weekly lab session, grading of homeworks, office hours for 30 students.
- o Topics: Internet, TCP/IP, UDP, BGP, SDN, HTTP, REST API, TLS, tunnels, NAT, embedded networks

TA for 50.020 Security at SUTD, Singapore

Spring 2017

Instructor: Prof. N.O. Tippenhauer

- o Manage weekly lab session, grading of homeworks, office hours for 30 students.
- o Topics: sym/asym crypto, BOF, TLS, CTF, hashing, XSS, input validation, code injection, MitM.

Private Teacher, Italy

Jan 2013–Jan 2015

Audience: Grad, Undergrad, and High school students

- o Grad/undergrad: linear algebra, calculus, programming (C, Pascal).
- o High school: math, physics, programming (C++).

CS External Commissioner Prof for High School Final Exams, Italy

Jun 2013–Jul 2013

Institutes: ITIS Urbino, ITI Don Orione

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

Industry Experience

Chief of Transportation and Logistics for FIG World Cup, Italy

Apr 2013

Adv: Colombo F, Porfiri P

- o Plan and manage transportation services for 43 International Delegations and Press.
- o 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.

- o Study and measurement about the safety of optical radiations [9].
- o Lab activity, Logistics, Electrical Checks and inspections in various departments of the hospital.

Self Learning

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

Italian: Native

English: Professional proficiency: TOEFL iBT: 94 (2013). B-2 CEFR (2012)

Spanish: Elementary proficiency

Skills

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

Events and Talks

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.

SMART MIT/ETH/NUS/SUTD Workshop at NUS CREATE Tower (Singapore) 2017
Mentoring six grad students for the track of cyber-security policies. ADAPT research paper.

SGCSC Cybersecurity Camp at NUS (Singapore) 2017
Instructors: Liang Z., Roychoudhury A. Directed fuzzing LibPNG with peach and Binutils with afl

SCy-Phy Systems Week at SUTD (iTrust, Singapore) 2015, 2016, 2017
SWaT Security Showdown (S3) CTF and testbed experiments. Technical talks.

FOSAD International Summer School at Bertinoro (Italy) Summer 2016
Foundations of Security Analysis and Design. Selected with scholarship.

Misc

Membership: Singapore Rust meetup organizer, Co-founder of SUTD Kopipacket CTF team
Sports: Soccer, Swimming, Basketball
Events: Concerts, Museums, Art performance
Awards: Singapore PGF scholarship, UniBO overseas scholarship, EU Erasmus scholarship
Hobbies: Dog owner, Traveling, Nature, Food
Music: 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 (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 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 CCS)*, pages 91–100. ACM, 2015. <https://arxiv.org/pdf/1507.04860>, Repo: <https://github.com/scy-phy/minicps>.
- [4] Hamid Reza Ghaeini, Daniele Antonioli, Ferdinand Brasser, Ahmad-Reza Sadeghi, and Nils Ole Tippenhauer. State-aware anomaly detection for industrial control systems. In *Proceedings of Symposium on Applied Computing(SAC)*, 2018.
- [5] 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.
- [6] Vikram B Suresh, Daniele Antonioli, and Wayne P Bursleson. 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>.

- [7] 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.
- [8] 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>.
- [9] Daniele Antonioli. Artificial optical radiation management, risk and safety in the hospital environment. *Tecnica Ospedaliera (Italian Technical Magazine)*, 2010.