

CONTACT INFORMATION	<p><i>Affiliation:</i> Associate Professor in Computer Science, École Polytechnique Fédérale de Lausanne (EPFL)</p> <p><i>Address:</i> Mathias Payer</p> <p><i>Phone:</i> [REDACTED]</p> <p><i>E-mail:</i> [REDACTED]</p> <p><i>WWW:</i> https://www.nebelwelt.net/</p> <p><i>Group:</i> https://hexhive.epfl.ch/</p>
RESEARCH INTERESTS	<p>My research focuses on <i>software security</i> and <i>system security</i>. Systems continue to have exploitable bugs. On one hand, we discover and remove bugs. On the other hand, we make systems resilient against the exploitation of unknown or unpatched vulnerabilities. To discover bugs we propose (i) sanitization techniques that enforce a security property such as memory, type safety, or API flow safety; given concrete program input, our sanitizers flag property violations and (ii) fuzzing techniques that leverage static and dynamic analysis to create program inputs to explore program areas that are not yet covered through existing test cases. To mitigate exploitable vulnerabilities, we focus on control-flow integrity using specific language semantics, enforcing type integrity, and protecting selective data.</p> <p>Our research builds on and expands binary and compiler-based hardening, dynamic enforcement of security policies, language-based security, fault isolation, and binary analysis. All research prototypes are released as open-source.</p>
TOP TIER PUBLICATIONS	<p>SEC'22 (2x) [C65, C68], NDSS'22 (2x) [C66, C67]; ASPLOS'21 [C57], CCS'21 [C61], ICSE'21 [C53], ISCA'21 [C58], ISSTA'21 (2x) [C60, C63], NDSS'21 [C55], MICRO'21 [C54], SIGMETRICS'21 [C59], SEC'21 [C64]; ATC'20 [C50], NDSS'20 [C45], SEC'20 (3x) [C47, C49, C51], SP'20 [C48]; CCS'19 [C40], SEC'19 [C44], SP'19 [C41], RTSS'19 [C43]; CCS'18 [C36, C38] (2x), NDSS'18 [C33], SEC'18 [C35], SP'18 [C37]; CCS'17 [C31], NDSS'17 [C29], SEC'17 [C25], SP'17 [C27]; CCS'16 [C21, C22] (2x), NDSS'16 [C24]; SEC'15 [C15]; SEC'14 [C14], IMC'14 [C11], OSDI'14 [C12]; ATC'13 [C9], SP'13 [C10]; SP'12 [C6]; PLDI'07 [C1].</p>
AFFILIATION	<p>HexHive group, EPFL, Switzerland. Sep. 2018 – now Associate Professor in Computer Science (since May 2021). Tenure Track Assistant Professor in Computer Science (until May 2021).</p> <p>HexHive group, Purdue University, USA. Aug. 2014 – Aug. 2018 Adjunct Associate Professor in Computer Science (since Nov. 2019). Tenure Track Assistant Professor in Computer Science.</p> <p>BitBlaze group, UC Berkeley, USA. Sept. 2012 – July 2014 Post doctoral scholar in Dawn Song's BitBlaze group.</p> <p>Google Inc., Mountain View, USA. May – July 2010 Software engineer in the anti-malware/anti-phishing team.</p> <p>Laboratory for Software Technology, ETH Zurich, Switzerland Oct. 2006 – Aug. 2012 Research assistant and PhD student.</p>
EDUCATION	<p>ETH Zurich, Switzerland</p> <p>Doctor of Science ETH in Computer Science Oct. 2006 – May 2012</p> <ul style="list-style-type: none"> • Thesis title: <i>Safe Loading and Efficient Runtime Confinement: A Foundation for Secure Execution</i> [T4] • Advisor: Thomas R. Gross (ETH Zurich) • Co-advisors: Steven Hand (Google) and Srdjan Capkun (ETH Zurich) <p>Diploma/Master of Science ETH in Computer Science Oct. 2001 – Feb. 2006</p> <ul style="list-style-type: none"> • Thesis title: <i>Adaptive Optimization using Hardware Performance Monitors</i> [T3, C1] • Area of study: System Software [T1], Software Engineering; Minor: Robotics [T2]

GRANTS

- We are incredibly grateful for the generous support from our sponsors.
- Total funding: \$15,711,781, 1,499,970 €, 6,430,179 CHF (\approx **\$23,641,930**).
- My group's share: \$3,608,777, 1,499,970 €, 2,692,963 CHF (\approx **\$7,801,710**).
- Intel TSA: Virtual Memory for Post-Moore Servers (\$1,187,310.00, co-PI jointly with Babak Falsafi, David Atienza, Abhishek Bhattacharjee, and Boris Grot, my share is \$237,400.00, 2021).
- Oracle: Triangle Fuzzing (CHF 70,000, *sole PI*, 2021).
- Oracle: Automatic generation of deserialisation gadgets via fuzzing (CHF 70,500, *sole PI*, 2021).
- CYD Fellowship (CHF 12,000, *sole PI*, 2021).
- IBM Fellowship (\$40,000, *supporting Atri Bhattacharyya*, 2020).
- Huawei: ProtoFuzz (CHF 94,371.20, *sole PI*, 2020).
- **Botnar Foundation**: COVID-19 Real Time Epidemiology I-DAIR Pathfinder (CHF 4,997,768.00, co-PI, jointly with Carmela Troncoso, Jim Larus, Edouard Bugnion, Marcel Salathé, Martin Jaggi, Srdjan Capkun, Seda Gürses, Michael Veale, Klaus Schönenberger, and Boris Danev, my share is CHF 575,634, 2020).
- **US Air Force Research Lab**: Cross-Abstraction Analysis for Complex Embedded Systems (\$735,436, co-PI, jointly with Aurélien Francillon and Davide Balzarotti, my share is \$322,538, 2020).
- Facebook AI infrastructure gift (61,000 CHF, *sole PI*, 2020).
- **DARPA AMP DICER**: Directed Compilation for Assured Patching (\$3,869,729, co-PI at EPFL, jointly with Antonio Bianchi, Giovanni Vigna, Chris Kruegel, Machiry Kumar, my share is \$684,918, 2020).
- **ONR Grant 12523149** IoT-D: Towards Internets of Dialect-Speaking Things (\$976,000 sub contract at EPFL, 2020).
- Huawei Shield Lab gift (99,968 CHF, *sole PI*, 2020).
- **SNFS Eccellenza MultiSan**: Software Security through Multi-dimensional, Input-guided Sanitization (1'024'572 CHF, acceptance rate: 45/229, *sole PI*, 2019).
- **ERC H2020 Starting Grant 850868** CodeSan: Code Sanitization for Vulnerability Pruning and Exploitation Mitigation (1,499,970 €, acceptance rate 178/1363, *sole PI*, 2019).
- **NSF CNS-1801601** SaTC: CORE: Medium: Collaborative: Threat-Aware Defense: Evaluating Threats for Continuous Improvement (\$1,199,849, *lead PI*, jointly with Trent Jaeger and Gang Tan at PSU, my share is \$399,849, 2018)
- **ONR Grant 12523149** IoT-D: Towards Internets of Dialect-Speaking Things (\$6,000,000, jointly with Dongyan Xu, Xiangyu Zhang, Byoungyoung Lee, and Jason Li (IAI), my share is \$1,250,000, 2018)
- PRF XR Research Grant: Effective Protection From Type Safety Violations. (\$29,526, jointly with Byoungyoung Lee, 2017).
- Purdue CS Corp. Partners Funding Program: Compiler-based Control-Flow Safety (1 RA, about \$30,000, 2017).
- **ONR Grant 12338602** Towards Transformation-Based Legacy Software Fitness: Usage-Driven Binary Debloating and Hardening (\$1,049,028, *lead PI*, jointly with Dongyan Xu, 2017)
- Intel CERIAS grant (1 50% RA, about \$15,000), 2017.
- Purdue CERIAS seed grant, (2 RA for 1 semester, about \$30,000), 2017.
- Intel SSG gift (\$75,000, *sole PI*, 2016).
- Sponsored supplement to NFS grant CNS-1513783 (\$46,820, *sole PI*, 2016).
- PRF XR Research Grant: Program Analysis for Security and Privacy of Embedded Devices. (\$29,130, jointly with Patrick Eugster, 2016).
- **NSF CNS-1513783**: SaTC: ENCORE ENhanced program protection through COmpiler- REwriter cooperation (\$1,199,953, jointly with Michael Franz, UC Irvine and Kevin Hamlen, UT Dallas, my share is \$404,000, 2015).
- **NSF CNS-1464155**: CISE CRII: SaTC: Lockdown: Guarded Control-Flow and Data Privacy for Sensitive Data (\$175,000, *sole PI*, 2015).
- PRF XR: PrivData: Enforcing Data Confidentiality for C/C++ (\$25,838, *sole PI*, 2015).

AWARDS

Best paper awards and prestigious grants

- **Usenix WOOT'20** best paper award [W12], 2020.
- **SNFS Eccellenza Grant MultiSan**, 2019.
- **ERC H2020 Starting Grant 850868 CodeSan**, 2019.
- **IEEE LangSec'15** best paper award [W6], 2015.
- **ACM IMC'14** best paper award [C11], 2014.
- **IEEE PST'13** best paper award [C8], 2013.

Other awards, patents, and CVEs

- **10th place at DefCon 29 CTF** (team Organizers), 2021.
- **DINAcon'20** Open Government Award for DP3T [TR25], 2020.
- **CSAW MENA '20** Best Applied Research Award for uRAI [C45], 2020.
- **CSAW US '20** Best Applied Research Runner Up for BLESAs [W12], 2020.
- **IEEE SSP'19** Distinguished PC Reviewer Award, 2019.
- **IEEE SSP'19** Distinguished Service Award, 2019.
- **Purdue College of Science Team Award** for work on the information security master program, 2016.
- Finalist for the Cor Baayen PhD award, 2013.
- European patent application 12003967.2/GP161299CH00 *Safe Loading - A Foundation for Secure Execution of Untrusted Programs*, May 2013.
- CVE-2015-2877, CVE-2017-0858, CVE-2017-13187, CVE-2018-20169, CVE-2018-19824, CVE-2019-15098, CVE-2019-15098, CVE-2018-19985, CVE-2018-20344, CVE-2019-2106, CVE-2019-2107, CVE-2019-2108, CVE-2019-2176, CVE-2019-8359, CVE-2019-9183, CVE-2019-15117, CVE-2019-15118, CVE-2019-15504, CVE-2019-15505, CVE-2020-9770, CVE-2020-15802.

SERVICE

Program Committee chair and General chair

2015 – now

Program committee chair: WOOT'21 (co-chair with Fangfei Liu); WoSSCA'18 (co-chair with Eric Jul and Jan Vitek; ECOOP/ISSTA workshop on speculative side channel analysis); ESSoS'18 (co-chair with Awais Rashid); IEEE ICDCS'18 (co-chair of security track with Herbert Bos); Usenix CSET'17 (co-chair with José Fernandez); ESSoS'17 (co-chair with Eric Bodden); Usenix CSET'16 (co-chair with Eric Eide). Steering committee: RAID'17 – now.

Other committees: Software Security Summer School (SSSS'21) organization, Software Security Summer School (SSSS'20) organization, IEEE SP'19 40 celebration chair, ACM CCS'19 publicity co-chair with Emiliano de Cristofaro, ISOC NDSS'19 workshops co-chair with Giulia Fanti, ISOC NDSS'18 workshops co-chair with Matthew Smith, ACM CCS'16 workshops co-chair with Stefan Mangard.

Program committee member

2012 – now

2022: **NDSS'22, SEC'22**

2021: **LangSec'21, NDSS'21, Oakland'21, SEC'21**, WiSec'21;

2020: **NDSS'20, Oakland'20, SEC'20**, WOOT'20;

2019: **CCS'19, EuroSYS'19** (heavy PC), **NDSS'19, Oakland'19**, PRiSC'19, **SEC'19**, WOOT'19;

2018: **AsiaCCS'18, CCS'18, EuroSYS'18** (heavy PC, awards), **NDSS'18, SEC'18** (PC, awards), WOOT'18;

2017: **ACISP'17, ACSAC'17, AsiaCCS'17, CCS'17, DSN'17, EuroSec'17, NSS'17, SEC'17**, SecDev'17;

2016: **ACISP'16, CCS'16, DSN'16, ESSoS'16, EuroSec'16, NSS'16, SEC'16, SSPREW'16, TRUST'16, WIFS'16, WWW'16**;

2015: **ACNS'15, AsiaCCS'15, CCS'15, EuroSYS'15, PLDI'15** (ERC), PPREW'15;

2014: **AsiaCCS'14, PPREW'14, PPREW'14b, VEE'14; SyStor'13**

Panelist, reviewer, and external reviewer

2006 – now

RVO reviewer, 2021. ERC H2020 reviewer, 2020. Poster reviewer for Usenix SEC, 2016. NSF review panelist for SaTC '16, CPS '16, SaTC '17, CPS '17, SaTC '18. NWO (Netherlands Organisation for Scientific Research) reviewer, 2015. Journal reviewer for ACM TACO, ACM TOPS, Elsevier COSE, IEEE TDSC, IEEE TPDS. Conference reviewer for CAV, CCS, CGO, HiPeak, PACT, PLDI, PPOPP.

INVITED
TALKS

<i>Security and Trust Summit</i> , Huawei, Germany	September 2021
<i>Cyber Alps</i> , CYD, Switzerland	July 2021
<i>Security Seminar</i> , Baidu Research, USA	April 2021
<i>CS Colloquium</i> , Chalmers University, Sweden	March 2021
<i>Huawei Trusted Computing Forum</i> , Singapore	February 2021
<i>CANS Keynote</i> , Vienna, Austria	December 2020
<i>CS Colloquium</i> , Ohio State University, USA	October 2020
<i>Systems Security Summer School</i> , Zhejiang University, China	August 2020
<i>SSSS20 RetroWrite Tutorial</i> , Purdue University, USA	August 2020
<i>Huawei Mobile Security Forum</i> , Munich, Germany	November 2019
<i>CEA/Leti</i> , Grenoble, France	October 2019
<i>EURECOM</i> , Nice, France	September 2019
<i>Security/Privacy Week</i> , TU Graz, Graz, Austria	September 2019
<i>CROSSING</i> , TU Darmstadt, Darmstadt, Germany	September 2019
<i>DIMVA keynote</i> , Gothenburg, Sweden	June 2019
<i>IC Research Day</i> , EPFL, Lausanne, Switzerland	June 2019
<i>Huawei Research Forum</i> , Singapore, Singapore	May 2019
<i>CISPA: distinguished lecture</i> , Saarbrücken, Germany	March 2019
<i>RUB: CASA distinguished lecture</i> , Bochum, Germany	March 2019
<i>UniBW FI.CODE Seminar</i> , Munich, Germany	February 2019
<i>Intel ISEC Conference</i> , Portland, USA	December 2018
<i>ISSISP: Intl. Summer School on Information Security and Protection</i> , Canberra, Australia	July 2018
<i>AsiaCCS invited talk</i> , Songdo, Korea	June 2018
<i>EPFL</i> , Lausanne, Switzerland	March 2018
<i>ETHZ</i> , Zurich, Switzerland	March 2018
<i>TUG</i> , Graz, Austria	January 2018
<i>PRiSC keynote</i> (POPL'18 workshop), Los Angeles, USA	January 2018
<i>ETH Zurich Colloquium</i> , Zurich, Switzerland	January 2018
<i>UC Irvine Colloquium</i> , Irvine, California	November 2017
<i>MILCON IoT Panel</i> , Baltimore, USA	October 2017
<i>Internet2 Workshop</i> , Indianapolis, USA	October 2017
<i>WTB Cybersecurity: System Security</i> , Online	October 2017
<i>ICARS Symposium</i> , Washington DC, USA	September 2017
<i>GA Tech Cyber Seminar</i> , Atlanta, USA	September 2017
<i>Science on Tap, Lafayette Brewing Company</i> , Lafayette, USA	September 2017
<i>KIT</i> , Karlsruhe, Germany	June 2017
<i>CERIAS Symposium</i> , West Lafayette, USA	May 2017
<i>AsiaCCS invited talk</i> , Abu Dhabi, UAE	April 2017
<i>IBM Research Seminar</i> , Zurich, Switzerland	January 2017
<i>TU Darmstadt</i> , Darmstadt, Germany	December 2016
<i>TU Wien</i> , Wien, Austria	June 2016
<i>East China Normal University Colloquium</i> , Shanghai, China	June 2016
<i>Midwest PL summit</i> , West Lafayette, USA	December 2015
<i>CS seminar, Northeastern University</i> , Boston, USA	October 2015
<i>Dagstuhl seminar 15294</i> , Dagstuhl, Germany	July 2015
<i>CS seminar, ETH Zurich</i> , Zurich, Switzerland	July 2015
<i>Greater Chicago Area Systems Research Workshop</i> , Chicago, USA	April 2015
<i>Harris Corporation</i> , Melbourne, Florida, USA	February 2015
<i>SSP'14 workshop, invited talk</i> , Phoenix, Arizona, USA	November 2014
<i>Google Security seminar</i> , San Francisco, CA, USA	June 2014
<i>ECE seminar, Virginia Tech</i> , Blacksburg, VA	March 2014
<i>CS seminar, University of Utah</i> , Salt Lake City, UT, USA	February 2014

<i>CS seminar, Purdue University</i> , West Lafayette, IN, USA	January 2014
<i>TRUST seminar, UC Berkeley</i> , Berkeley, CA, USA	December 2013
<i>EPFL invited talk</i> , Lausanne, Switzerland	June 2013
<i>SoCal PLS invited talk</i> , Santa Barbara, CA, USA	May 2013
<i>UC Irvine seminar</i> , Irvine, CA, USA	May 2013
<i>Intel invited talk</i> , Santa Clara, CA, USA	April 2013
<i>Adobe security invited talk</i> , San Francisco, CA, USA	January 2013
<i>UC Berkeley invited talk</i> , Berkeley, CA, USA	May 2012
<i>UC Irvine invited talk</i> , CA, USA	May 2012
<i>IBM Research ARL invited talk</i> , Austin, TX, USA	April 2011
<i>Swiss Cyber Storm Security Conference</i> , Rapperswil, Switzerland	March 2011
<i>UC Irvine invited talk</i> , CA, USA	March 2011
<i>Google TechTalk</i> , Mountain View, CA, USA	June 2010

ADVISING

Currently advised PhD students:

<i>Kernel Safety</i> , Derrick McKee [C33, C34, C62], PhD candidate	Advisor: 2015 – now
<i>Embedded Security Testing</i> , Prashast Srivastava [C27, C63, W11], PhD candidate	Advisor: 2016 – now
<i>Security Evaluation</i> , Bader AlBassam [C36]	Co-advised with Antonio Bianchi: 2016 – now
<i>Data-flow-based testing</i> , Adrian Herrera [C59, C60]	Co-advised with Tony Hosking: 2018 – now
<i>Arch. defenses</i> , Atri Bhattacharyya [C46, C40, C65, C58]	Co-advised with Babak Falsafi: 2018 – now
<i>Dynamic security testing</i> , Ahmad Hazimeh [C59, C61]	Advisor: 2019 – now
<i>Code-based sanitization</i> , Nicolas Badoux	Advisor: 2020 – now
<i>Crash Analysis</i> , Zhiyuan Jiang [C61]	Co-advised at NUDT: 2020 – now
<i>Language Interactions</i> , Ergys Dona	Advisor: 2020 – now
<i>Symbolic Path Synthesis</i> , Lucio Romerio	Advisor: 2021 – now
<i>Efficient Static Rewriting</i> , Luca DiBartolomeo	Advisor: 2021 – now
<i>Architectural Security</i> , Andrés Sanchez	Advisor: 2021 – now
<i>OS Security</i> , Florian Hofhammer	Advisor: 2021 – now
<i>Two-phased testing</i> , Zhiyao Feng	Advisor: 2021 – now
<i>Filesystem testing</i> , Tao Lyu	Co-advised with Sanidhya Kashyap: 2021 – now

Advised post docs:

Marcel Busch	Mar. 2021 – now
Daniele Antonioli [TR23, J7, TR25, J8, C64]	Jan. 2020 – May 2021

Graduated students:

Hui Peng , Purdue PhD [W7, C21, C51, C37, W11] Customizing coverage exploration to improve fuzzing for “hard to fuzz targets”.	Advisor: 2015 – 2021
Priyam Biswas , Purdue PhD [C56, C25, C31] Novel mitigations that enforce type-aware control-flow integrity, guarding against attacks.	Advisor: 2015 – 2020
Yuseok Jeon , Purdue PhD [C21, C31, C50, C42] Development of sanitizers for cast safety for C++ and fast memory safety, eliminating software bugs.	Advisor: 2015 – 2020
Naif Almakhdhub , Purdue PhD [C45, C39, C27] Co-advised with Saurabh Bagchi: 2016–2020 Protecting embedded systems against control-flow hijacking and assessing the impact of mitigations.	Advisor: 2015–2019
Kyriakos Ispoglou , Purdue PhD [W7, C36, C49, W8] Analyzing vulnerability threat surface discovered through fuzzing and synthesizing data-flow attacks.	Advisor: 2016–2019
Sushant Dinesh , Purdue MSc [C48] Recovering data structures through binary analysis and enabling efficient binary rewriting.	Advisor: 2015–2019
Abe Clements (ECE), Purdue PhD [C45, C39, C35, C27, C47] Co-advised with S. Bagchi: 2015–2019 Defending IoT devices against advanced threats by enforcing strong mitigations at low overhead.	Advisor: 2015–2018
Nathan Burow , Purdue PhD [C56, J5, C33, C34, C41, C50] Enforcement of low overhead memory safety mitigations for C/C++, to protect unsafe code.	Advisor: 2015–2018

Terry Ching-Hsiang Hsu, Purdue PhD [C22] **Co-advised with Patrick Eugster: 2016–2018**
 Development of memory abstractions for security, performance, and large data.

Scott A. Carr, Purdue PhD [C25, J5, C33, C34, C26, C31, C24] **Advisor: 2014–2017**
 Development of compiler-based mitigations for vulnerabilities in systems software, focusing on enforcing confidentiality and integrity on sensitive data.

Ahmed Hussein, Purdue PhD [C16, C17, C30] **Co-advised with Tony Hosking: 2014–2016**
 Development and optimization of garbage collection strategies for Android mobile systems.

EPFL Polygl0ts student Capture-the-Flag (CTF) team advisor **2018 – now**
 Founder and advisor for the polygl0ts CTF team (ranked in the top 50 of thousands of teams worldwide), founder and former adviser of the Purdue b01lers CTF team (2014–2019).

TEACHING

Lectures and classes prepared and taught

- *Software Security*, CS-412, 6 ECTS, 74 students **Spring 2021**
- *Operating Systems*, CS-323, 6 ECTS, 118 students **Fall 2020**
- *Software Security*, CS-412, 6 ECTS, 54 students **Spring 2020**
- *Operating Systems*, CS-323, 6 ECTS, 81 students (newly designed) **Fall 2019**
- *Software Security*, CS-412, 6 ECTS, 47 students **Spring 2019**
- *Topics in Language-based Software Security*, CS-725, 2 ECTS, 17 students **Fall 2018**
- *Software Security*, CS-527, 3 credits, 25 students (reworked) **Spring 2018**
- *CERIAS Seminar*, CS-591-SEC, 1 credit, 11 students **Spring 2018**
- *Systems Security Seminar*, CS-590-SYS, 1 credit, 10 students **Spring 2018**
- *Operating Systems*, CS-354, 3 credits, 148 students **Fall 2017**
- *Systems Security Seminar*, CS-590-SYS, 1 credit, 11 students, several auditors **Fall 2017**
- *Software Security*, CS-527, 3 credits, 17 students, (reworked) **Spring 2017**
- *Systems Security Seminar*, CS-590-SYS, 1 credit, 9 students, several auditors **Spring 2017**
- *Operating Systems*, CS-354, 3 credits, 123 students **Fall 2016**
- *Systems Security Seminar*, CS-590-SYS, 1 credit, 16 students, several auditors **Fall 2016**
- *Software Security*, CS-590-SWS, 3 credits, 18 students, several auditors (new, founded) **Spring 2016**
- *Systems Security Seminar*, CS-590-SYS, 1 credit, 7 students, several auditors **Spring 2016**
- *Operating Systems*, CS-503, 3 credits, 45 students **Fall 2015**
- *Informal Systems Seminar*, 15 students **Fall 2015**
- *Software Engineering*, CS-510, 3 credits, 47 students (significantly redesigned) **Spring 2015**
- *Informal Systems Seminar*, 8 students (new, founded) **Spring 2015**
- *Language-based Systems Security*, CS-590-LBS, 3 credits, 16 students **Fall 2014**
- *Introduction to C Programming*, 6 hrs., ca. 120 students (developed) **Fall 2008 and 2009**
- Exam preparation courses, Head TA, and TA for a variety of courses at ETH Zurich **2006 – 2012**

JOURNAL
ARTICLES

- [J1] Mathias Payer, Ling Huang, Neil Zhenqiang Gong, Kevin Borgolte, and Mario Frank. “What You Submit is Who You Are: A Multi-Modal Approach for Deanonimizing Scientific Publications”. In: *IEEE Transactions on Information Forensics and Security*. 2014. DOI: 10.1109/TIFS.2013.2286268.
- [J2] Laszlo Szekeres, Mathias Payer, Tao Wei, and R. Sekar. “Eternal War in Memory”. In: *IEEE Security and Privacy Magazine*. 2014. DOI: 10.1109/MSP.2013.47.
- [J3] Scott A. Carr, Francesco Logozzo, and Mathias Payer. “Automatic Contract Insertion with CCBot”. In: *IEEE Transactions on Software Engineering*. 2016. DOI: 10.1109/TSE.2016.2625248.
- [J4] Jack Reilly, Sebastien Martin, Mathias Payer, and Alexandre M. Bayen. “Creating Complex Congestion Patterns via Multi-objective Optimal Freeway Traffic Control with Application to Cyber-Security”. In: *Transportation Research Board*. 2016. DOI: 10.1016/j.trb.2016.05.017.
- [J5] Nathan Burow, Scott A. Carr, Joseph Nash, Per Larsen, Michael Franz, Stefan Brunthaler, and Mathias Payer. “Control-Flow Integrity: Precision, Security, and Performance”. In: *ACM Computing Surveys*. 2017. DOI: 10.1109/TSE.2016.2625248.
- [J6] Mathias Payer. “The Fuzzing Hype-Train: How Random Testing Triggers Thousands of Crashes”. In: *IEEE Security and Privacy Magazine*. 2019. DOI: 10.1109/MSEC.2018.2889892.
- [J7] Marcel Salathe, Christian Althaus, Nanina Anderegg, Daniele Antonioli, Talai Ballouz, Edouard Bugnion, Srdjan Capkun, Dennis Jackson, Sang-Il Kim, James Larus, Nicola Low, Wouter Lueks, Dominik Menges, Cederic Moullet, Mathias Payer, Julien Riou, Theresa Stadler, Carmela Troncoso, Effyj Vayena, and Viktor von Wyl. “Early evidence of effectiveness of digital contact tracing for SARS-CoV-2 in Switzerland”. In: *Swiss Medical Weekly*. 2020. DOI: 10.4414/smw.2020.20457.
- [J8] Carmela Troncoso, Mathias Payer, Jean-Pierre Hubaux, Marcel Salathe, James R. Larus, Wouter Lueks, Theresa Stadler, Apostolos Pyrgelis, Daniele Antonioli, Ludovic Barman, Sylvain Chatel, Kenneth G. Paterson, Srdjan Capkun, David A. Basin, Jan Beutel, Dennis Jackson, Marc Roeschlin, Patrick Leu, Bart Preneel, Nigel P. Smart, Aysajan Abidin, Seda Guerses, Michael Veale, Cas Cremers, Michael Backes, Nils Ole Tippenhauer, Reuben Binns, Ciro Cattuto, Alain Barrat, Dario Fiore, Manuel Barbosa, Rui Oliveira, and Jose Pereira. “Decentralized Privacy-Preserving Proximity Tracing”. In: *IEEE Data Engineering Bulletin*. 2020.

CONFERENCE
PROCEEDINGS

- [C1] Florian T. Schneider, Mathias Payer, and Thomas R. Gross. “Online optimization driven by hardware performance monitoring”. In: *ACM International Conference on Programming Language Design and Implementation*. 2007, (25% acceptance rate –45/178). DOI: 10.1145/1250734.1250777.
- [C2] Mathias Payer and Thomas R. Gross. “Generating low-overhead dynamic binary translators”. In: *ACM International Systems and Storage Conference*. 2010, (58% acceptance rate –18/31). DOI: 10.1145/1815695.1815724.
- [C3] Mathias Payer and Thomas R. Gross. “Fine-grained user-space security through virtualization”. In: *ACM International Conference on Virtual Execution Environments*. 2011, (29% acceptance rate –20/68). DOI: 10.1145/1952682.1952703.
- [C4] Mathias Payer and Thomas R. Gross. “Performance evaluation of adaptivity in software transactional memory”. In: *International Symposium on Performance Analysis of Systems and Software*. 2011, (30% acceptance rate –20/65). DOI: 10.1109/ISPASS.2011.5762733.

- [C5] Mathias Payer and Thomas R. Gross. “Protecting Applications Against TOCTTOU Races by User-Space Caching of File Metadata”. In: *ACM International Conference on Virtual Execution Environments*. 2012, (37% acceptance rate –20/53). DOI: 10.1145/2151024.2151052.
- [C6] Mathias Payer, Tobias Hartmann, and Thomas R. Gross. “Safe Loading - A Foundation for Secure Execution of Untrusted Programs”. In: *IEEE International Symposium on Security and Privacy*. 2012, (13% acceptance rate –40/307). DOI: 10.1109/SP.2012.11.
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