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Nicolas Badoux

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Education

PhD candidate in Computer Science *2020-2025*
École Polytechnique Fédérale de Lausanne (EPFL) - Switzerland
- Supervisor: Prof. Mathias Payer @ HexHive
- Topic: Compiler-based defenses and testing, system security

Master of Science ETH in Computer Science *2016-2019*
Eidgenössische Technische Hochschule Zürich (ETHZ) - Switzerland
- Specialization in Information Security, GPA: 5.39/6

Bachelor in Communication Sciences *2013-2016*
École Polytechnique Fédérale de Lausanne (EPFL) - Switzerland
- Exchange program @ **Carnegie Mellon University** - USA, GPA: 5.26/6 *2015-2016*

Research Experience

`type++`: prohibiting type confusion with inline type information *NDSS'25*
- *Distinguished Paper Award (top 5%).*
- By inlining the type in each C++ object, we create a compiler-based mitigation against type confusion attacks allowing derived cast to be checked at runtime while requiring minimal code adaptations. We evaluate our prototype against the state-of-the-art.
- Built on top of LLVM, `type++` protects from type confusions with less than 3% overhead.

libErator: Balancing library fuzzing without consumer code *Submitted @ FSE'25*
- We automate the generation of library fuzzing drivers and allow for balancing resources between driver generation and fuzzing.
- From insights gathered through LLVM passes, we build valid C drivers using API functions.

Bypassing LLVM-CFI cast protection *Ongoing*
- We present a novvel attack against LLVM-CFI, bypassing the cast protection for C++.

Skills

Programming Languages: Python, C++, LaTeX, Bash
Software: LLVM, GDB, libfuzzer, Linux, Docker
Spoken Languages: French (native), English, Swiss-German, German

Industry Experience

Software Engineer - Fondation Digger, NGO - Tavannes, CH *Aug' 2019 - March 2020*
- Developed a virtual overlay for remotely removing explosives with the help of OpenCV and Unity in an Agile environment as part of mandatory civil service.

Software Engineer - Compassion Suisse, NGO - Yverdon, CH *Mar' - May 2018*
- As part of my mandatory Swiss civil Service, contributed to opensource Python modules for the Odoo ERP.

Security Engineer Intern - Ergon Informatik - Zürich, CH *60% - Sept' 2017 - Mar' 2018*
- Developed a blackbox fuzzer in Python to find bugs in Ergon's Web Application Firewall.

Technology Summer Analyst - Morgan Stanley - London, UK *June - Aug' 2016*
- Developed charts in AngularJS for statistics of the Architecture Security team.

Teaching Assistant

CS-119 - Information, Calcul & Communication *2022 & 2024*
CS-323 - Operating System *2021*
CS-412 - Software Security *2021 & 2023*
COM-402 - Information Security & Privacy *2023*

Activities

Board Member, Treasurer - Groupes Bibliques des Écoles et Universités *2023 - present*
- Define the vision, hiring of the general secretary, and budget planning ($\simeq$ 500kCHF).

Camp Leader - Interjeunes & Ligue pour la Lecture de la Bible *2014, 2017, 2021, 2022*
- Lead camps with up 110 kids/young adults for a week. Built a team, prepared the event, managed the team and was the authority in charge during the week.

As of March 12, 2025. Latest: bit.ly/cvNicolas