

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

**DOTTORATO DI RICERCA / PHD PROGRAM IN
INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING**

Seminar announcement

Friday, March 28 2025, Time: 10:00 - 11:00

Meeting Room (sala riunioni), Floor III, Building 3/A, DIETI

Via Claudio, 21 - NAPOLI



Prof. Jens Dietrich

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On the Notion of Binary Equivalence in Software Supply Chain Security

Abstract: In response to challenges in software supply chain security, organisations including Google, RedHat and Oracle have created infrastructures to independently build commodity open source projects and release the resulting binaries. Build platform variability can strengthen security as it facilitates the detection of compromised build environments. By improving the security posture of the build platform and collecting provenance information during the build, the resulting artifacts can be used with greater trust. The availability of multiple binaries built from the same sources creates new challenges and

opportunities, and raises questions such as: 'Does build A confirm the integrity of build B?' or 'Can build A reveal a compromised build B?'. To answer such questions requires a notion of equivalence between binaries. We demonstrate that the obvious approach based on bitwise equality has significant shortcomings in practice, and that there is value in opting for alternative notions. We conceptualise this by introducing levels of equivalence, inspired by clone detection types. We demonstrate the value of these new levels through several experiments.

Lecturer short bio: *Jens Dietrich is an Associate Professor at Victoria University of Wellington (Te Herenga Waka) in New Zealand since 2018. He has a MSc in Mathematics and a PhD in Computer Science, both from the University of Leipzig. Prior to his current position, he worked as consultant in various roles in Germany, Switzerland, the UK and Namibia, and has held academic positions at Massey University in New Zealand. His research interests are mainly in automated program analyses, software ecosystems, software evolution and software supply chain security.*

For information: Prof. Roberto Natella (DIETI, UniNA) - roberto.natella@unina.it (organizer)

Attendance at the seminar is in-person