



Ruben De Smet

Education

- 2018–now **Doctor of Philosophy**, *Vrije Universiteit Brussel, Brussel, Engineering Science: PhD Electronics and Information Technology*
applied cryptography, security, privacy, telecommunication.
- 2016–2018 **Master of Science**, *Vrije Universiteit Brussel, Brussel, Engineering Science: Master computer science: multimedia*
computer vision, image and video technology, digital speech and audio processing, cryptography and security.
- 2013–2017 **Bachelor of Science**, *Vrije Universiteit Brussel, Brussel, Engineering Science: Electronics and Information Technology, computer science*
basic electronics, computer networks and protocols, algorithms, data structures, computer architectures
- 2006–2013 **ASO**, *Sint-Ritacollege, Kontich, Wetenschappen-Wiskunde*

Master thesis

- Glycos an extensible, resilient and private peer-to-peer online social network
development and implementation of an abstract tool set for building performant decentralised online social networks.
- promotors prof. dr. Ann Dooms and prof. dr. Jo Pierson

Experience [references on request](#)

- 2018–now **Teaching assistant**, *Vrije Universiteit Brussel, Brussels*
As a teaching assistant, I am co-responsible for the first bachelor Informatica (“programming 101”) course and a part of the third bachelor electronics course at the Engineering Sciences faculty. I am also involved in several research projects, see below.
- 2015–now **Freelance ICT integration**, *Freelance, Brussels / Antwerp*
General IT, implementation and integration for SMBs. I work for SMB customers, integrating network services (backup, file sharing, security) and workstations.

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1/7

Research and technology projects

- 2022–2024 **RustIEC**, *Vrije Universiteit Brussel*, Brussels
Under the promotorship of prof. Kris Steenhaut, prof. An Braeken, prof. Jorn Lapon and prof. Stijn Volckaert, I am co-leading the RustIEC project. RustIEC is a VLAIO TETRA project (grant HBC.2021.0066) with the goal of teaching Flanders' companies proficiency in the Rust programming language. The project has a specific focus on secure IoT systems, secure edge computing, and secure cloud computing. – <https://rustiec.be>

Freelance

- 2016–now **Tutoring secondary education**
Long term tutoring mathematics and physics for 5th and 6th secondary education. Tutoring computer science topics for 1st Bachelor.
- 2015–2018 **Freelance Linux system administrator**, *BruWind/Vrije Universiteit Brussel*
Deploying, testing, administrating a CentOS 7 cluster using Ansible. System monitoring. Continuous integration, complex continuous deployment of Docker based micro service architecture.

Student work

- July 2015 **ETL implementation**, *Vrije Universiteit Brussel*, Brussels
Implemented ETL software using Python3 and SOS-Berlin Job-Scheduler. Loading vast amounts of windturbine sensor data into a PostgreSQL 9.4 database.
Worked on npTDMS and TDMSpp, of which the latter improves the performance of the former with a factor 5
- 2010–2014 **IT specialist**, *NetLogic*, Duffel
General IT and server administration for a small company

Personal projects

- 2023–now **rust-phonenumbers**
Together with the Whisperfish team, I took over the maintenance of this widely used phonenumbers parsing library. <https://github.com/whisperfish/rust-phonenumbers>
- 2019–now **Whisperfish**
The Whisperfish client for Signal messaging on SailfishOS was left unmaintained, and I took over development. Whisperfish is rapidly growing in users, and has gotten the attention of several other communities. Whisperfish is becoming the go-to community for third-party Signal client development. <https://gitlab.com/whisperfish>

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2/7

- 2019–now **Belgium Rust user group Organiser**
 I have become the official “Organiser” of the Belgium Rust user group, since 2019. Due to the COVID-19 pandemic, we only started organising physical events again in February 2022. We organise events for Rust enthusiasts and engineers all around Belgium, at different locations, typically centrally reachable in Brussels.
- 2017–now **Belgium Rust user group member**
 Having spoken about a plethora of topics at all Meetups until now, I have been an active member of the Belgium Rust user group until the start of the pandemic.
- 2016–now **Official L^AT_EX assets for the Vrije Universiteit Brussel**
 Both `beamer` and `article` class templates for the new VUB style, compatible with most L^AT_EX distributions. <https://gitlab.com/rubdos/texlive-vub>
- 2014–2019 **TheBounty Renderer**
 A free software fork of the famous *YafaRay* raytracer, mostly working on documentation using L^AT_EX and GNU Make and optimising the Blender Exporter by porting Python 3 code to C++. I also maintain its custom (Ruby on Rails) website and forum.
- 2013–now **Glycos**
 Development of a private, performant, and extensible peer-to-peer online social network. Heavy use of modern cryptography (elliptic curve signatures, zero-knowledge systems). Prof. dr. Ann Dooms made it possible to work on this on an academic level for my master thesis together with digital privacy expert prof. dr. Jo Pierson, which is now continued in my PhD study under supervision of prof. dr. An Braeken and prof. dr. ir. Kris Steenhaut.

Languages

Dutch	Native	
English	Proficient	<i>Mostly IT-related</i>
French	Conversational	

Computer skills (bold items signify more expertise)

Server technologies	nginx , Jenkins, SOS-Berlin JobScheduler, GitLab CI , DNS and email servers, Ansible
Cloud technologies	Kubernetes, Docker
Miscellaneous	LibreOffice, L^AT_EX , vim, GIMP, systemd, cross compiling, Git

Development related skills

Programming languages	Rust , C, C++17, HTML 5, Bash/Shell scripting, Java 8, Python 2/3
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3/7

Linux distributions

- Red Hat family Most of the time, my workstations consist of **Fedora**; I worked with Fedora as of version 17. On servers, I deploy **CentOS 7**. I have experience with CentOS 6
- Debian family I tend to give family and friends Ubuntu (I worked with versions 9.10 to 18.04, including on an Odroid C2). I also used Debian on PowerPC G4, Raspberry PI.
- Others I tend to like Arch Linux on my most used personal systems, although I revert to the Red Hat family for professional use.

Certifications

- LPI LPIC-1 Februari 2014 (*verification on request*)

Hobbies and Interests

- Chess I teach chess to the youth of the Schaakkring Oude God in Mortsel. I participate in the national interclub competition.
- Free software I strongly believe in the Free Software Philosophy; users must have the right to modify software and in general open source software is better than proprietary counterparts. I actively contribute to free software projects, especially those related to the Rust programming language.
- Linux Many years (since 2009) of GNU/Linux-exclusive experience on my personal computers.
- Home Automation I have an extensive home automation and domotics system based on Home Assistant and other free software.
- Rust I believe that having concurrent programming experience in Rust makes one a better programmer. Rust teaches the user to think about ownership, and in general about code architecture.
- Cryptography I have a strong interest in cryptography and its applications. I am active on <https://crypto.stackexchange.com>. Special interest in key-exchange protocols and elliptic curve cryptography.
- Digital privacy Privacy is a human right, but is often neglected in technologies. I closely follow development of privacy enhancing tools (PETs), and I contribute to the world of PETs myself through Glycos and Whisperfish

Publications

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4/7

- 2023 **De Smet, R.** (2023, September 8). *Cryptography for private electronic traffic pricing* (Conference presentation). Brussels, Belgium.
- De Smet, R.**, Steenhaut, K., & Braeken, A. (2023). Private Electronic Road Pricing using Bulletproofs with Vector Commitments. *IEEE Transactions on Dependable and Secure Computing*, 1–13. <https://doi.org/10.1109/TDSC.2023.3314867>
- 2022 **De Smet, R.**, Thielemans, S., Lemeire, J., Braeken, A., & Steenhaut, K. (2022). Educational software-as-a-service based on JupyterHub and nbgrader running on Kubernetes. *2022 IEEE 9th International Conference on E-Learning in Industrial Electronics (ICELIE)*, 1–6. <https://doi.org/10.1109/ICELIE55228.2022.9969419>
- Godden, T., **De Smet, R.**, Debruyne, C., Vandervelden, T., Steenhaut, K., & Braeken, A. (2022). Circuitree: A Datalog Reasoner in Zero-Knowledge. *IEEE Access*, 10, 21384–21396. <https://doi.org/10.1109/ACCESS.2022.3153366>
- Thielemans, S., **De Smet, R.**, Benedetti, P., Reali, G., Braeken, A., & Steenhaut, K. (2022). Experiences with on-premise open source cloud infrastructure with network performance validation. *IECON 2022 – 48th Annual Conference of the IEEE Industrial Electronics Society*, 1–6. <https://doi.org/10.1109/IECON49645.2022.9968898>
- Vandervelden, T., **De Smet, R.**, Steenhaut, K., & Braeken, A. (2022a). SHA3 and Keccak variants computation speeds on constrained devices. *Future Generation Computer Systems*, 128, 28–35. <https://doi.org/10.1016/j.future.2021.09.042>
- Vandervelden, T., **De Smet, R.**, Steenhaut, K., & Braeken, A. (2022b). Symmetric-Key-Based Authentication among the Nodes in a Wireless Sensor and Actuator Network. *Sensors*, 22(4), 1403. <https://doi.org/10.3390/s22041403>
- 2020 **De Smet, R.**, Vandervelden, T., Steenhaut, K., & Braeken, A. (2020). Lightweight PUF based authentication scheme for fog architecture. *Wireless Networks*. <https://doi.org/10.1007/s11276-020-02491-0>
- 2019 **De Smet, R.**, Dooms, A., Braeken, A., & Pierson, J. (2019). Glycos: The Basis for a Peer-to-Peer, Private Online Social Network. In E. Kosta, J. Pierson, D. Slamanig, S. Fischer-Hübner & S. Krenn (Eds.), *Privacy and Identity Management. Fairness, Accountability, and Transparency in the Age of Big Data*

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5/7

(pp. 123–136, Vol. 547). Springer International Publishing. https://doi.org/10.1007/978-3-030-16744-8_9

- 2018 **De Smet, R.** (2018, November 12). *Cryptography for peer-to-peer online social media* (Conference presentation). Ghent, Belgium.

Appearance in media

- 2023 Braeken, A., Steenhaut, K., **De Smet, R.**, & Deac, D. (2023, April 10). *Standaarden voor de beveiliging van IoT*. Cybersecurity Bites. <https://cybersecurity-bites.be/technologie/standaarden-voor-de-beveiliging-van-iot/>

- 2022 **De Smet, R.** (2022, April 15). *End-to-end encryption is not the end*. Ruben De Smet. <https://www.rubdos.be/2022/04/15/about-secure-messengers.html>

De Smet, R., Vandervelden, T., Steenhaut, K., & Braeken, A. (2022a, January 18). *Cryptografische technieken voor dataminimalisatie*. Cybersecurity Bites. <https://cybersecurity-bites.be/beveiligingsinfrastructuur/cryptografische-technieken-voor-dataminimalisatie/>

De Smet, R., Vandervelden, T., Steenhaut, K., & Braeken, A. (2022b, February 17). *End-to-end encryptie is niet het einde*. Cybersecurity Bites. <https://cybersecurity-bites.be/cybersecuritybydesign/end-to-end-encryptie-is-niet-het-einde/>

De Smet, R., Vandervelden, T., Steenhaut, K., & Braeken, A. (2022c). *End-to-end encryptie is niet het einde* [magazine]. *MinistryTalks*, 2022(3), 5–8.

- 2021 **De Smet, R.**, Vandervelden, T., Steenhaut, K., & Braeken, A. (2021, December 21). *Back-ups als ultieme gemoedsrust*. Cybersecurity Bites. <https://cybersecurity-bites.be/ict-beheer/back-ups-als-ultieme-gemoedsrust/>

Vandervelden, T., **De Smet, R.**, Steenhaut, K., & Braeken, A. (2021, December 21). *Beveiligingsoverwegingen voor het uitrollen van IoT-applicaties*. Cybersecurity Bites. <https://cybersecurity-bites.be/beveiligingsinfrastructuur/beveiligings-overwegingen-voor-het-uitrollen-van-iot-applicaties/>

Public speaking

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6/7

- 2022 **De Smet, R.** (2022a, April 6). *Attribute-based Encryption and A Portable Data Format* (Talk). Brussels, Belgium. <https://lumosql.org/talks.html>
- De Smet, R.** (2022b, February 3). *How Rust won us a second place in a Hackathon/Flickr.rs: Creating Hogwarts' Flickr without magic*. Leuven, Belgium. <https://video.rubdos.be/w/bhhMctgLXTX5hrVARw3eu?start=30m31s>
- De Smet, R.** (2022c, February 3). *Qt5 in an asynchronous runtime/qmeta-async: How to run Qt and Tokio together*. Leuven, Belgium. <https://video.rubdos.be/w/bhhMctgLXTX5hrVARw3eu?start=51m45s>
- De Smet, R.** (2022d, October 22). *Signal and Sailfish OS*. Renens, Switzerland. <https://fixme.ch/node/219>

CVE's

- 2023 Whisperfish Team. (2023a, September 8). *CVE-2023-42444: Panic on parsing crafted RFC3966 phonenummer inputs* (Common Vulnerability Enumeration No. CVE-2023-42444). Common Vulnerability Enumeration. MITRE. <https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2023-42444>
- Whisperfish Team. (2023b, September 8). *CVE-2023-42447: Panic on parsing crafted blurhash inputs* (Common Vulnerability Enumeration No. CVE-2023-42447). Common Vulnerability Enumeration. MITRE. <https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2023-42447>

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7/7