

Dr. Thomas Barber - CV

Experienced Security Researcher and Software developer with a passion for digging into, understanding and solving problems in complex systems.

[LinkedIn](#) / [GitHub](#) / [Google Scholar](#)



Professional Experience

Product Security Expert @ SAP SE (Sep 2024 - Present)

- Vulnerability management and incident response.
- Expert in scanning technologies for web applications.
- Technical analysis of vulnerabilities and cyber threats.
- Penetration testing and white hat hacking.
- Compliance with cybersecurity certifications and regulations.

Research Expert @ SAP SE (Feb 2019 - Aug 2024)

- Industrial research into novel techniques in the field of vulnerability detection, active defense and threat monitoring for web applications.
- Developed methods for the detection and prevention of cybersecurity vulnerabilities for interpreted languages (e.g. JavaScript, Java).
- Applied techniques to privacy use-cases such as automating GDPR compliance for legacy applications, and high-accuracy detection of browser fingerprinting.
- Publication of results in top security conferences and transfer of prototypes into SAP Lines of Business.
- Active involvement in public funded projects: Principle investigator @ [ENCOPIA](#) and researcher @ [TESTABLE](#).
- Supervision of PhD and Master's students and international collaboration with external partners from industry and academia.

Senior Software Developer @ Intel (May 2014 - Feb 2019)

- Designed security software for next-generation automotive infotainment and software-defined cockpit platforms.
- Developed key storage solutions in trusted execution environments such as the Linux kernel and Intel SGX.
- Digital Rights Management solutions such as Widevine and HDCP.
- Security Champion for the Transportation Solutions Division.
- Scrum master for the Automotive Security team.

Software Developer @ Vector (Jan 2013 - Apr 2014)

- Automotive firmware developer with a focus on the XCP remote calibration protocol over ethernet.
- Designed and implemented an automated continuous regression test system to provide continuous integration of new features.

Postdoctoral Researcher @ [University of Freiburg](#) (Nov 2010 - Dec 2012)

- Analysed the first particle collision data from the ATLAS experiment at CERN to search for new Supersymmetric particles beyond the current Standard Model.
- Engaged in Research and Development activities for the next generation of silicon-based particle detectors, including novel radiation detection systems.

Open Source Projects

- **Lead developer and maintainer** of [Project Foxhound](#), an instrumented fork of the Firefox browser for security testing (Listen to the [podcast!](#)).
- **Developer** of [Fontus](#), a bytecode rewriting engine for security and privacy policy enforcement.
- **Lead developer** of the [Sanitizer Checker](#), a symbolic string analysis framework to evaluate the security of sanitization functions.

Education

PhD Experimental Particle Physics @ [University of Cambridge](#) (2006-2010)

- Topic: [New physics searches in the ZZ sector with the ATLAS experiment](#)
- Wrote C++/Python algorithms to process and analyze data from the LHC @ [CERN](#)
- Development of embedded readout software for the Data Acquisition System of the ATLAS Semiconductor Tracker

MSc. Natural Sciences @ [University of Cambridge](#) (2001-2005)

- Subjects: Maths, Advanced Physics
- Result: **First** (*Outstanding*)

GCE A-Levels @ [King Edward VI Grammar School](#) (1994-2001)

- Maths, Physics, Chemistry, Music, General Studies
- Results: **All grade A** (*Outstanding*)

Patents

- [Taint tracking via non-intrusive bytecode instrumentation](#): US11526600B2
- [Security Vulnerability Detection](#): US20230177166A1
- [String Sanitizer Modeling](#): US20230252159A1

Publications

A selected list of publications is shown below. A full list is available on [Google Scholar](#).

- **FP-tracer: Fine-grained Browser Fingerprinting Detection via Taint-tracking and Entropy-based Thresholds**, Soumaya Boussaha et al. *Proceedings on Privacy Enhancing Technologies, 2024 (PoPETS '24)* ([pdf](#))
- **The Great Request Robbery: An Empirical Study of Client-side Request Hijacking Vulnerabilities on the Web**, Soheil Khodayari, Thomas Barber and Giancarlo Pellegrino. *Proceedings of 45th IEEE Symposium on Security and Privacy, 2024 (S&P '24)* ([pdf](#), [video](#))
- **General Data Protection Runtime: Enforcing Transparent GDPR Compliance for Existing Applications**, David Klein, Benny Rolle, Thomas Barber, Manuel Karl, and Martin Johns. *Proceedings of the 2023 ACM SIGSAC Conference on Computer and Communications Security (CCS '23)* ([pdf](#))
- **Hand Sanitizers in the Wild: A Large-scale Study of Custom JavaScript Sanitizer Functions**, David Klein, Thomas Barber, Souphiane Bensalim, Ben Stock, Martin Johns, *7th IEEE European Symposium on Security and Privacy (EuroS&P 2022)* ([pdf](#))

Skills and Expertise

- Programming Skills: C/C++, Python, Java, JavaScript, C#
- Environments: Linux, Windows, Docker, Git, Jenkins
- Languages: English (*native*), German (*working proficiency*), French (*basic*)

Awards

- **Distinguished Paper Award @ IEEE S&P (2024)** for our paper on Client-Side Request Hijacking
- **Spot Awards @ SAP (2020, 2021, 2023)** for outstanding performance.
- **Divisional Recognition Awards @ Intel (2018)** for designing and implementing a software solution to meet strict customer deadlines.
- **Doncaster Prize @ University of Cambridge (2005)** for exam results in Natural Sciences.
- **Cormack Scholarship @ University of Edinburgh (2004)** for best summer student project in astrophysics.

Hobbies

- Triathlon (Running, Cycling, Swimming)
- Music (Singer @ [Bachchor](#), Piano)

THOMASBARBER

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GOOGLE SCHOLAR

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