

Dr.-Ing. Aurore Fass

Tenure-Track Faculty at CISPA

✉ fass@cispa.de
aurore54f.github.io



Research Overview

My research work revolves around designing practical approaches to protect the security and privacy of Web users. I build systems to proactively detect malicious JavaScript code and suspicious browser extensions. I analyze data to understand how people spend time on the Web, and I want to use the resulting perspective to prioritize defense strategies.

Scientific Career

- 2023– **Tenure-Track Faculty**, *CISPA Helmholtz Center for Information Security*, Germany
- 2021–2023 **Visiting Assistant Professor**, *Stanford University*, U.S
 - Host: [Zakir Durumeric](#)
- 2021 **Postdoctoral Researcher**, *CISPA Helmholtz Center for Information Security*, Germany
- 2017–2021 **Ph.D. Student**, *Saarland University & CISPA Helmholtz Center for Information Security*, Germany
 - Ph.D. thesis: *Studying JavaScript Security Through Static Analysis*
 - Advisors: [Michael Backes](#) and [Ben Stock](#)

Education

- 2014–2017 **Grande École** (similar to a Master Degree), *TELECOM Nancy*, France, valedictorian
 - Major: Telecommunication, Network, and Security
 - Master thesis: German Federal Office for Information Security (BSI), Germany
Automated clustering of JS samples for the detection of malware contained in obfuscated code
 - Industrial project: French Ministry of Defense, France
Implemented an Xposed module to monitor Android devices; group of 4 persons (6 months)
 - Internship: Fraunhofer IOSB, Germany
Implemented a passive asset detection system (8 weeks)
- 2012–2014 **Preparation for the highly competitive nationwide entrance examination to the French Grandes Écoles**, France
 - Major: Mathematics, Physics, and Computer Science
- 2012 **High school graduation**, France, graduated with distinction (“mention très bien”), European section
 - Major: Mathematics, Physics & Chemistry, Biology, and German

Awards and Honors

- 2022 **Top Reviewer Award**, *ACM CCS*
- 2022 **PC Member Honorable Mention**, *TheWebConf*

- 2021 **Inspiring Career Recognition**, 1 of 3 invited alumni (out of 2,300 alumni) for the 30th anniversary of the French Grande École TELECOM Nancy, Remote
- 2019–2022 **Program of Excellence**, Saarland University, Germany
- 2017 **Valedictorian**, French Grande École TELECOM Nancy, France
- 2016 **Best Student Recognition Event**, IBM, UK

Publications

Liz Izhikevich, Manda Tran, Michalis Kallitsis, **Aurore Fass**, and Zakir Durumeric. **Cloud Watching: Understanding Attacks Against Cloud-Hosted Services**. In *ACM Internet Measurement Conference (IMC)*, 2023.

Kimberly Ruth, **Aurore Fass**, Jonathan J. Azose, Mark Pearson, Emma Thomas, Caitlin Sadowski, and Zakir Durumeric. **A World Wide View of Browsing the World Wide Web**. In *ACM Internet Measurement Conference (IMC)*, 2022.

Aurore Fass, Dolière Francis Somé, Michael Backes, and Ben Stock. **DOUBLEX: Statically Detecting Vulnerable Data Flows in Browser Extensions at Scale**. In *ACM CCS*, 2021. Code repository: <https://github.com/Aurore54F/DoubleX>.

Marvin Moog, Markus Demmel, Michael Backes, and **Aurore Fass**. **Statically Detecting JavaScript Obfuscation and Minification Techniques in the Wild**. In *Dependable Systems and Networks (DSN)*, 2021. Code repository: <https://github.com/MarM15/js-transformations>.

Aurore Fass, Michael Backes, and Ben Stock. **HIDENOSEEK: Camouflaging Malicious JavaScript in Benign ASTs**. In *ACM CCS*, 2019. Code repository: <https://github.com/Aurore54F/HideNoSeek>.

Aurore Fass, Michael Backes, and Ben Stock. **JSTAP: A Static Pre-Filter for Malicious JavaScript Detection**. In *ACSAC*, 2019. Code repository: <https://github.com/Aurore54F/JStap>.

Aurore Fass, Robert P. Krawczyk, Michael Backes, and Ben Stock. **JAST: Fully Syntactic Detection of Malicious (Obfuscated) JavaScript**. In *DIMVA*, 2018. Code repository: <https://github.com/Aurore54F/JaSt>.

Community Services

PC Co-Chair **MADWeb 2024 & 2023** (co-located with NDSS)

PC Member IEEE EuroS&P 2024 & 2023, IEEE S&P 2023, ACM CCS 2023–2021, ACSAC 2023, TheWebConf 2023 & 2022, ARES 2023 & 2022, SecWeb 2023–2021

Artifact Committee USENIX Security 2021, ACSAC 2018

External Reviewer IEEE S&P 2024, ESORICS 2023, ICCCN 2023, NDSS 2022–2020, USENIX Security 2022–2020, IEEE EuroS&P 2019, ACSAC 2019 & 2018, ACM CCS 2018

Hiring Committee CISPA faculty hiring committee 2021

Doctoral Committee Romain Fouquet (Ph.D., Computer Science, Université de Lille, May 2023)

Project Proposal Reviewed projects for several European funding organizations

Teaching

- WS 2023–2024 **The Web Security Seminar**
- Malicious JavaScript Analysis
 - Beyond Malicious Extensions: How can Extensions put User Security & Privacy at Risk?
 - User Browsing Behavior vs. Top Lists
- WS 2020–2021 **Lecturer at TELECOM Nancy** (Université de Lorraine, France)
- Browser Extensions: Architecture and Security Consideration (lectures and practicals for MSc students)
- WS 2019–2020 **Seminar: Joint Advances in Web Security**
- Browser Extensions: Security and Vulnerabilities
 - Overview of Malicious JavaScript Detection Techniques and Attacks
- WS 2018–2019 **Seminar: Joint Advances in Web Security**
- Overview of Malicious JavaScript Detection Techniques
 - Cryptojacking: Definition, Detection, and Dimensions

Student Advising and Mentoring

Ph.D. Students

- Winter 2022– **Liz Izhikevich** – *Internet Scanning*, with Zakir Durumeric, Stanford University
- Fall 2021– **Kimberly Ruth** – *Browsing Behavior*, with Zakir Durumeric, Stanford University
- Fall 2021– **Shubham Agarwal** – *Browser Extension Security*, with Ben Stock, CISPA

Master Students

- Fall 2023– **Dominic Troppmann** – *Type Checks*, with Cristian-Alexandru Staicu, Saarland University
- Fall 2022– **Manda Tran** – *Browser Extension Security*, Stanford University

Bachelor Students

- Fall 2023– **Ben Rosenzweig** – *Browser Extension Security*, Saarland University
- Spring 2022– **Sheryl Hsu** – *Browser Extension Security*, Stanford University

Alumni

- 2022 **Mark Tran** (BSc student) – *Browser Extension Fingerprinting*
Basheerah Abdus-Shakur (BSc student) – *Vulnerability Patching*, with Zakir Durumeric
Vrushank Gunjur (BSc student) – *Over-Privileged Extensions*
Nahum Maru (BSc student) – *Browser Extension Crawler*
Fengchen (Maggie) Gong (MSc student → Princeton Ph.D.) – *Fingerprinting*
- 2021 **Liana Patel** (Ph.D. student) – *Web Crawler*, with Zakir Durumeric
Luca Pistor & Nathan Bhak (BSc students) – *Exam Software Security*

Paul Szymanski (BSc thesis) – *A Study of State-of-the-Art Call Graph Creation Approaches for JavaScript*, with Cristian-Alexandru Staicu

2020 **Anne Christin Deutschen & Luc Seyler** (BSc students) – *Browser Extension Vulnerability*, with Dolière Francis Somé

2019–2020 **Marvin Moog & Markus Demmel** (BSc students) – *Analysis of JavaScript Obfuscation Techniques* → DSN 2021

2019 **Maximilian Zöllner & Niklas Kempf** (BSc students) – *Intelligent Fuzzing System for JavaScript*

2018 **Nils Glörfeld** (BSc student) – *Malicious JavaScript Deobfuscation*

Dennis Salzmann (BSc student) – *Malicious JavaScript Detection*

Selected Talks

[DOUBLEX: Statically Detecting Vulnerable Data Flows in Browser Extensions](#)

Nov 2023 Workshop at INRIA. Paris, France

Jul 2022 [Berkeley Security Seminar](#). Berkeley, CA, U.S.

May 2022 [RuhrSec](#). Bochum, Germany (extended version).

Apr 2022 [Stanford Computer Forum](#) – Security Workshop. Stanford, CA, U.S.

Nov 2021 [Stanford Security Lunch](#). Stanford, CA, U.S.

[Studying JavaScript Security Through Static Analysis](#)

Mar 2022 Palo Alto Networks (CA, U.S.). Remote (extended version).

Jun 2021 Spirals Webinar at Inria Lille (France). Remote.

[Statically Analyzing Malicious JavaScript in the Wild](#)

Mar 2021 Webinar at LORIA (France). Remote.

Dec 2020 BINSEC Webinar at CEA (France). Remote.

[HIDENOSEEK: Camouflaging Malicious JavaScript in Benign ASTs](#)

May 2020 [RuhrSec](#) (Germany). Remote (extended version).

Mar 2019 Grande Region Security and Reliability Day (GRSRD). Nancy, France.

Feb 2019 [MADWeb](#). San Diego, CA, U.S.

[JAST: Fully Syntactic Detection of Malicious \(Obfuscated\) JavaScript](#)

Nov 2018 [Blackhoodie](#). Berlin, Germany.

Jun 2018 Malware Meeting at LORIA. Nancy, France.

Mar 2018 Grande Region Security and Reliability Day (GRSRD). Saarbrücken, Germany.

Publicly Available Software

DOUBLEX Static browser extension analyzer: detection of suspicious external data flows

HIDENOSEEK Static analyzer to detect syntactic clones in JavaScript inputs

JSTAP Static and modular malicious JavaScript detector

JAST Static malicious JavaScript detector

Additional Skills – Languages

French Mother tongue

English Trilingual proficiency *TOEIC score: 910 (2014); lived in the U.S. 2021–2023*

German Trilingual proficiency *C1 Certificate (2016); lived in Germany 2017–2021 & 2023 onwards*