

Dr.-Ing. Aurore Fass

Tenure-Track Faculty at CISPA

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## 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

- 2024 **Distinguished Reviewer Award**, ACSAC.
- 2024 **Noteworthy Reviewer Recognition**, EuroS&P.

- 2023 **Top Reviewer Award**, ACSAC.
- 2023 **Top Reviewer Award**, ACM CCS.
- 2022 **Best 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 30<sup>th</sup> 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.

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## Publications

Kimberly Ruth, Veronica Rivera, Gautam Akiwate, **Aurore Fass**, Kurt Thomas Patrick Gage Kelley, and Zakir Durumeric. **'Perfect is the Enemy of Good': The CISO's Role in Enterprise Security as a Business Enabler**. In *ACM CHI*, 2025.

\* Saskia Laura Schröer, Giovanni Apruzzese, Soheil Human, Pavel Laskov, Hyrum S. Anderson, Edward W.N. Bernroider, **Aurore Fass**, Ben Nassi, Vera Rimmer, Fabio Roli, Samer Salam, Ashley Shen, Ali Sunyaev, Isabel Wagner, Gang Wang, and Tim Wadhwa-Brown. **SoK: On the Offensive Potential of AI**. In *IEEE Secure and Trustworthy Machine Learning Conference (SaTML)*, 2025.

Acceptance rate: 29.4% (53 / 180 full research papers).

Dominic Troppmann, **Aurore Fass**, and Cristian-Alexandru Staicu. **Typed and Confused: Studying the Unexpected Dangers of Gradual Typing**. In *IEEE/ACM International Conference on Automated Software Engineering (ASE)*, 2024. Code repository: <https://zenodo.org/records/13760256>.

Acceptance rate: 26% (155 / 587 full research papers).

Giovanni Apruzzese, **Aurore Fass**, and Fabio Pierazzi. **When Adversarial Perturbations meet Concept Drift: an Exploratory Analysis on ML-NIDS**. In *ACM AISec (CCS Workshop on Artificial Intelligence and Security)*, 2024. Code repository: <https://github.com/hihey54/aisec24>.

Acceptance rate: 25% (18 / 72 full research papers).

Shubham Agarwal, **Aurore Fass**, and Ben Stock. **Peeking through the window: Fingerprinting Browser Extensions through Page-Visible Execution Traces and Interactions**. In *ACM CCS*, 2024. Code repository: <https://github.com/raider-ext/raider>.

Acceptance rate: 18% (129 / 710 full research papers, Cycle A).

\* Sheryl Hsu, Manda Tran, and **Aurore Fass**. **What is in the Chrome Web Store? Investigating Security-Noteworthy Browser Extensions**. In *ACM AsiaCCS*, 2024. Media coverage: <https://aurore54f.github.io/papers/hsu2024cws.media>.

Acceptance rate: 22% (65 / 301 full research papers).

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.

Acceptance rate: 25% (52 / 208 full research papers).

\* 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.

Acceptance rate: 26% (56 / 212 full research papers).

\* **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>.

Acceptance rate: 23% (131 / 564 full research papers, May cycle).

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

Acceptance rate: 16% (48 / 295 full research papers).

\* **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>.

Acceptance rate: 14% (32 / 225 full research papers, February cycle).

**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>.

Acceptance rate: 23% (60 / 266 full research papers).

**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>.

Acceptance rate: 32% (18 / 56 full research papers).

The publications are listed in reverse-chronological order. I marked the five most important ones with an \*.

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## Community Services

<b>Organizing Role</b>	USENIX Security <b>Artifact Evaluation Committee Co-Chair</b> 2026 & 2025, <b>ACM CCS Workshop General Co-Chair</b> 2024, <b>Associate Editor</b> of the ACM Transactions on Security and Privacy (TOPS) 2024, MADWeb (workshop co-located with NDSS) 2024 & 2023 <b>PC Co-Chair</b> and <b>MADWeb 2025– Steering Committee</b>
<b>PC Member</b>	USENIX Security 2025 & 2024, ACM CCS 2025–2021, ACSAC 2025–2023, IEEE EuroS&P 2024 & 2023, IEEE S&P 2023, TheWebConf 2023 & 2022, ARES 2023 & 2022, SecWeb 2024–2021
<b>Doctoral Committee</b>	Jean Luc Intumwayase (Ph.D., Computer Science, Université de Lille, December 2024) Romain Fouquet (Ph.D., Computer Science, Université de Lille, May 2023)
<b>Project Proposal</b>	Reviewed projects for several European funding organizations (2023)
<b>Artifact Committee</b>	USENIX Security 2021, ACSAC 2018
<b>External Reviewer</b>	IEEE S&P 2024, TWEB 2024, ESORICS 2023, ICCCN 2023, NDSS 2022–2020, USENIX Security 2022–2020, IEEE EuroS&P 2019, ACSAC 2019 & 2018, ACM CCS 2018
<b>Misc</b>	IMC Travel Grants 2023, CISPA Faculty Hiring Committee 2021

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## Teaching

WS 2024–2025	<b>Guest Lectures</b> on Web Security & Security of Browser Extensions: <ul style="list-style-type: none"><li>◦ <b>University of Bologna</b></li><li>◦ <b>University of Modena and Reggio Emilia</b></li></ul>
WS 2024–2025	<b>The Web Security Seminar</b>
SS 2024	<b>The Web Security Seminar</b>

- 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

## Advising and Mentoring

### Ph.D. Students

- Apr 2025– **Huda Dawoud** – *Browser Extension Analysis*, CISP
- Apr 2024– **Valentino Dalla Valle** – *Browser Extension Security* → *paper under submission*, Saarland University & CISP
- Dec 2023– **Dominic Troppmann** – *Type Checks* → *ASE 2024*, co-supervised with Cristian-Alexandru Staicu, Saarland University & CISP

### Research Assistant

- Mar 2025– **Abdullah Hassan Chaudhry** (MSc student) – *Browser Extension Security*, Saarland University
- Dec 2024– **Laith Alhelwane** (MSc student) – *Browser Extension Security*, Saarland University

### Alumni

- 2023–2024 **Ben Rosenzweig** (BSc thesis) – *Machine Learning-Based Approach for Detecting Malicious Browser Extensions* → *paper under submission*, Saarland University
- 2022–2023 **Sheryl Hsu** (BSc student) – *Browser Extension Security* → *AsiaCCS 2024*, Stanford University  
**Manda Tran** (MSc student → Ph.D. student UCLA) – *Browser Extension Security* → *AsiaCCS 2024*, Stanford University  
**Liz Izhikevich** (Ph.D. student of Zakir Durumeric → Assistant Professor UCLA) – *Internet Scanning* → *IMC 2023*, Stanford University
- 2021–2023 **Shubham Agarwal** (Ph.D. student of Ben Stock) – *Browser Extension Security* → *CCS 2024*, Saarland University & CISP  
**Kimberly Ruth** (Ph.D. student of Zakir Durumeric) – *Web Browsing Behavior* → *IMC 2022 + paper under submission*, Stanford University
- 2022 **Mark Tran** (BSc student) – *Browser Extension Fingerprinting*, Stanford University  
**Vrushank Gunjur** (BSc student) – *Over-Privileged Extensions*, Stanford University  
**Nahum Maru** (BSc student) – *Browser Extension Crawler*, Stanford University  
**Fengchen (Maggie) Gong** (MSc student → Ph.D. student Princeton) – *Fingerprinting*, Stanford University
- 2021 **Liana Patel** (Ph.D. student of Zakir Durumeric) – *Crawler*, Stanford University  
**Luca Pistor & Nathan Bhak** (BSc students) – *Exam Software Security*, Stanford University  
**Paul Szymanski** (BSc thesis) – *A Study of State-of-the-Art Call Graph Creation Approaches for JavaScript*, with Cristian-Alexandru Staicu, Saarland University & CISP
- 2020 **Anne Christin Deutschen & Luc Seyler** (BSc students) – *Browser Extension Vulnerability*, with Dolière Francis Somé, Saarland University & CISP

- 2019–2020 **Marvin Moog & Markus Demmel** (BSc students) – *Analysis of JavaScript Obfuscation Techniques* → [DSN 2021](#), Saarland University & CISP
- 2019 **Maximilian Zöllner & Niklas Kempf** (BSc students) – *Intelligent Fuzzing System for JavaScript*, Saarland University & CISP
- 2018 **Nils Glörfeld** (BSc student) – *Malicious JavaScript Deobfuscation*, Saarland University & CISP  
**Dennis Salzmann** (BSc student) – *Malicious JavaScript Detection*, Saarland University & CISP

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## Invited Talks

### Dos and Don'ts of Reviewing

- Nov 2024 [Keynote at the Winter School, WinterHack 2024](#). Bochum, Germany.

### Browser Extension (In)Security

- Jan 2025 Seminar at Inria Sophia Antipolis. Sophia Antipolis, France.  
Dec 2024 [Spirals Seminar at Inria Lille](#). Lille, France.  
Jun 2024 [GDR Information Security](#). Rennes, France.

### 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

- Apr 2024 [PEPR Cyber – Project DefMal Webinar](#) (France). Remote (extended version).  
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.

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## Publicly Available Software

All the software I developed is publicly available on my GitHub account:

- [static-pdg-js](#) Static analysis of JavaScript code (AST, control & data flows, pointer analysis)
- [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
- [reimpl-cujo](#) Reimplementation of [Cujo](#), static malicious JavaScript detector
- [reimpl-zozzle](#) Reimplementation of [Zozzle](#), static malicious JavaScript detector

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## 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*