

# CURRICULUM VITAE

## PERSONAL INFORMATION

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Name	<b>Cristian-Alexandru STAICU</b>
Nationality	Romanian
Address	Schuknechtstraße 56, 64289 Darmstadt, Germany
Telephone	+40767273885 / +4915780213641
E-mail	cris.staicu@gmail.com
Date of Birth	22 <sup>nd</sup> of June 1988
Research Page	<a href="https://www.staicu.org">https://www.staicu.org</a>

## WORK AND RESEARCH EXPERIENCE

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### **CISPA – Helmholtz Center for Information Security, Germany**

*Tenure-Track Faculty*

October 2020 - present

My core research interest is in system security, at the intersection of software/web security, software engineering and programming languages. One of the central goals of my research group is to directly contribute to the open-source ecosystem: either by building tools that can be used by practitioners or by uncovering security vulnerabilities in real systems/projects.

### **Technical University of Darmstadt, Germany**

*Research Assistant*

October 2014 - July 2020

I was a member of the Software Lab group, performing cross-disciplinary research. My main interest during this time was in analyzing the security and privacy of JavaScript code, mostly using language-based techniques, e.g., static and dynamic program analysis, test generation. In particular, I investigated novel ways of finding and preventing vulnerabilities specific to server-side JavaScript programs and libraries. My research uncovered tens of previously unknown vulnerabilities in server-side libraries, i.e., npm modules.

### **Semmler Inc Oxford (now GitHub), United Kingdom**

*Intern*

May 2018 - August 2018

My internship project was to improve a JavaScript static taint analysis by considering the semantics of third-party libraries. I reported multiple vulnerabilities as a result of my internship (see hackerone profile: `cris_semmler`).

### **Philips Research Eindhoven, Netherlands**

*Intern*

January 2014 - July 2014

My responsibilities included understanding HIMMO, an identity-based key agreement scheme developed by Philips, implementing two variations of the scheme and analyzing the impact of these modifications both from a security perspective and also from a resource consumption point of view.

### **acp-IT AG Timișoara, Romania**

*Software Developer*

October 2010 - July 2012

I was part of a team that developed an airport passenger flow simulation tool for an important European airport. My contribution to this project was to implement a state-of-the-art algorithm (Social Force Model) as well as to optimize, parallelize and adapt it to the project's needs. I also helped developing a Manufacturing Execution System (>100K LOC) using an existing framework developed on the Java EE platform. My responsibilities included implementing and testing parts of the system. I was also part of the team performing acceptance tests on the client site.

## **Alcatel-Lucent Timișoara, Romania**

*Junior Developer*

January 2010 - October 2010

My main contribution was to automatize the existing testing infrastructure by developing a Java tool for creating bootable USB devices.

## **Continental Automotive Timișoara, Romania**

*Intern*

July 2009 - October 2009

I designed and implemented a Java / Swing application which manipulates C source code. It is used internally as an easy way to modify huge source code files and keep them consistent.

## **Dream Production Timișoara, Romania**

*Programmer*

August 2008 - March 2009

I was part of a team that implemented web applications in PHP, JavaScript, and Flex. I mainly contributed to the development of a platform where people can take actions against day-to-day issues.

## **EDUCATION**

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### **Technical University of Darmstadt, Germany**

**Department of Computer Science**

*Doctoral Degree*

October 2014 - March 2020

I completed my PhD under the supervision of Prof. Dr. Michael Pradel. My doctoral thesis with the title *Enhancing the Security and Privacy of Full-Stack JavaScript Web Applications* argues for a holistic approach to hardening an important, emerging class of web applications, which use JavaScript both on the server-side and on the client-side. The thesis consists of several peer-reviewed papers, published at top-tier academic conferences, mainly in the areas of security and privacy, software engineering and programming languages.

### **EIT Digital Master School - Double Degree Program**

**University of Trento, Italy / University of Twente, Netherlands**

*Master Degree, Major in Computer Security and Privacy*

September 2012 - August 2014

- March 2013** I worked with Dr. Mariano Ceccato on a project within the FBK research center.
- July 2013** We investigated ways of selecting a high diversity subset from a large population of obfuscated versions of a program. My contribution was to study the existing search-based techniques and to apply them to our problem.
- October 2012** I worked in Prof. Dr. Massimiliano Sala's team to develop a double authentication prototype for a banking service provider company. My contribution was to implement the server-side logic of the application using JEE technologies and cryptographic primitives like RSA, AES, PKCS12.
- February 2013**

### **Polytechnic University Timișoara, Romania**

**Faculty of Automation and Computer Science**

*Bachelor Degree in Computers and Information Technology*

October 2007 - July 2011

- 2011** I completed my thesis with the title *SherlockJ, Statistical Debugging Tool*, supervised by Prof. Dr. Marius Minea. I designed and implemented an Eclipse plugin which uses existing unit tests and well-known automatic debugging algorithms, i.e., dynamic analysis techniques, to locate bugs inside Java projects.
- 2009** Won 1<sup>st</sup> place in "Alexandru Rogojanu" Programming Contest and qualified for "ACM ICPC SouthEastern European Region" representing the university.

## PUBLICATIONS LIST

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- ICSE 2020 **C.-A. Staicu**, M. T. Torp, M. Schäfer, A. Møller, M. Pradel, *Extracting Taint Specifications for JavaScript Libraries*, International Conference on Software Engineering (ICSE'20), 2020.
- USENIX SEC 2019 **C.-A. Staicu**, M. Pradel, *Leaky Images: Targeted Privacy Attacks in the Web*, USENIX Security Symposium, 2019.
- USENIX SEC 2019 M. Zimmermann, **C.-A. Staicu**, C. Tenny, M. Pradel, *Small World with High Risks: A Study of Security Threats in the npm Ecosystem*, USENIX Security Symposium, 2019.
- WWW 2019 P. Skolka, **C.-A. Staicu**, M. Pradel, *Anything to Hide? Studying Minified and Obfuscated Code in the Web*, The Web Conference, 2019.
- PLAS@CCS 2019 **C.-A. Staicu**, D. Schoepe, M. Balliu, M. Pradel, A. Sabelfeld, *An Empirical Study of Information Flows in Real-World JavaScript*, The Workshop on Programming Languages and Analysis for Security (PLAS'19), 2019.
- USENIX SEC 2018 **C.-A. Staicu**, M. Pradel, *Freezing the Web: A Study of ReDoS Vulnerabilities in JavaScript-based Web Servers*, USENIX Security Symposium, 2018.
- NDSS 2018 **C.-A. Staicu**, M. Pradel, B. Livshits, *Synode: Understanding and Automatically Preventing Injection Attacks on Node.js*, Annual Network and Distributed System Security Symposium (NDSS'18), 2018.
- ASE 2017 L. Della Toffola, **C.-A. Staicu**, M. Pradel, *Saying "Hi!" Is Not Enough: Mining Inputs for Effective Test Generation*, International Conference on Automated Software Engineering (ASE'17), 2017.
- CSUR 2017 E. Andreasen, L. Gong, A. Møller, M. Pradel, M. Selakovic, K. Sen, **C.-A. Staicu**, *A Survey of Dynamic Analysis and Test Generation for JavaScript*, ACM Computing Surveys, 2017.
- ICSE 2016 H. Liu, Q. Liu, **C.-A. Staicu**, M. Pradel, Y. Luo, *Nomen est Omen: Exploring and Exploiting Similarities between Argument and Parameter Names*, International Conference on Software Engineering (ICSE'16), 2016.
- SSBSE 2016 M. Ceccato, P. Falcarin, A. Cabutto, Y. W. Frezghi, **C.-A. Staicu**, *Search Based Clustering for Protecting Software with Diversified Updates*, International Symposium on Search Based Software Engineering (SSBSE'16), 2016.

## TALKS AND POSTER SESSIONS

excluding conference talks

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- 2020 Blekinge Institute of Technology, *Host: Nurul Momen*  
IMDEA Software Institute *Host: Manuel Carro*  
CISPA – Helmholtz Center for Information Security, *Host: Andreas Zeller*
- 2019 Katholieke Universiteit Leuven, Belgium, *Host: Wouter Joosen*  
Google Compiler and Programming Language Summit, Germany  
Stanford University, USA, *Host: Giancarlo Pellegrino*
- 2018 University of Maryland, USA, *Host: Tudor Dumitras*  
University of Pennsylvania, USA, *Host: Nikos Vasilakis*  
University of California San Diego, USA, *Host: Deian Stefan*  
Karlstad University, Sweden, *Host: Nurul Momen*  
Budapest University of Technology and Economics, Hungary, *Host: Levente Buttyán*
- 2015 PLDI 2015 Student Research Competition

## TEACHING, MENTORING AND SERVICE

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Teaching assistant	<i>Program Testing and Analysis</i> , course at TU Darmstadt: Fall 2015, Fall 2016, Fall 2017. For 2017, we were awarded the "Feedbackpreis für gute Betreuung" together with my fellow teaching assistants.
Master thesis adviser	<b>Markus Zimmermann</b> , <i>An Empirical Study of the Npm Ecosystem</i> , 2018 (see USENIX 2019 publication) <b>Philippe Skolka</b> , <i>An Empirical Study of Obfuscation and Minification of Client-Side Web Code</i> , 2018 (see WWW 2019 publication)
Bachelor thesis adviser	<b>Patrick Mell</b> , <i>Detecting Parallelization Opportunities in JavaScript Programs</i> , 2016
PC member	ARES 2021, SecureComm 2021, EuroSec 2021, MADWeb 2021, CANS 2020, IEEE Security and Privacy 2019 Student PC
Reviewer	TOPS 2020
Student volunteer	Programming Language Design and Implementation (PLDI) 2015

## SKILLS AND INTERESTS

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I am a curious person and I enjoy pushing my limits. I love long-distance running, cycling, cooking and reading. In February 2012 I passed the TOEFL iBT exam with a score of 106 points. I am currently working on improving my German (B2 level) and Hungarian (A1 level) language skills.

## REFERENCES

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Available on request.