Grenoble INP Esisar

# CSAW'19

# NOVEMBER 6-8, 2019

Founded by the Department of Computer Science and Engineering at NYU Tandon School of Engineering





TANDON SCHOOL

# CSAW'19

ESISAr



# Welcome

November 6, 2019

CSAW Europe 2019

Welcome to the third edition of CSAW Europe!

The Cybersecurity Awareness Week is the largest student-run cybersecurity event in the world. This 16th contest will be held simultaneously on several continent : New-York City for North America and Canada, Kanpur for India, Israel, Abu Dhabi for Mena, Mexico for México, and Valence hosted by Grenoble INP - Esisar for Europe.

CSAW is a three-day competition and conference bringing together students passionate about cybersecurity and industrial experts.

CSAW remains a most creative force to build a community and to offer students the opportunities they need to become leading designers and managers of secure systems.

I would like to express our sincere thanks to our local authorities, industrial and academic sponsors, who made this event possible. We hope all of you will enjoy meeting our partners, attending our conferences and that you will take advantage of CSAW many networking opportunities during your journey in Valence.

During these three days, the knowledge you gain, the relationship you build and the contributions you make will benefit the cybersecurity community for years to come. Thank you for being a part of this experience.



Sincerely,

Nadine Guillemot

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Valence Romans Agglo is an administrative region that includes 56 towns and cities and nearly 215,000 inhabitants.

Easily accessible by several major rail, road, and air routes, Valence Romans Agglo enjoys a strategic geographical position that combines a highly developed transportation network with an exceptional quality of life. Nearly 2,000 companies are established here each year, and close to 65% of them are still in operation five years later, higher than the national average.

In 2016, Valence Romans Agglo was named an official green growth zero net energy region by the Ministry of Energy and Sustainable Development.

A territorial project was adopted in June 2015, for which 304 million euros in investments are projected until 2020.

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# **COMMUNICATION PARTNERS**

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The generous support of our partners makes CSAW'19 possible.

# **Master Agenda**

General

WEDNESDAY, NOVEMBER 6

at Grenoble INP – Esisar

Welcoming Reception for Capture the Flag Finalists	19:00	Room A042
Capture The Flag 36-hour Competition Start	20:00	Rooms B148 - B152

# THURSDAY, NOVEMBER 7

at Grenoble INP – Esisar

Welcome Event for Finalists & Sponsors Keynotes 18:00 Lecture Theater D030
 Incentive Policies for Coordinated Vulnerability Disclosure - Gilles Yonnet, deputy CTO & Former Head of Cyberdefense Department at YesWeHack
 How ethical hacking can contribute to cyber security-by-design in aeronautics - Nathalie Feyt,

Design Authority Cybersecurity at Thales Avionics Worldwide & Gilles Durbec, Cybersecurity Director at Thales



# FRIDAY, NOVEMBER 8

at Grenoble INP – Esisar

Capture the Flag 36-hour Competition End	08:00	Rooms B148 - B152
Welcome Reception for Sponsors, Judges, Visitors	09:00	Room A042
Women In Network Community Breakfast	09:00	Room A049
Red team 8-hour Competition Start	09:00	Rooms B141 - B145
Cybersecurity Exhibition: Career Fair,		
Cybersecurity Demos	10:00	
Applied Research Competition Presentations		
(open to visitors)	10:00	Rooms A048 - B042
Embedded Security Challenge Presentations		
(open to visitors)	10:00	Rooms A046 - B044
End of Competitions	17:00	
Awards Ceremony	17:30	Lecture Theater D030
Networking & Closing Ceremony	19:00	Rooms A048 - A049





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# Welcome to the heart of innovation

Auvergne-Rhône-Alpes, the 1<sup>st</sup> Tech Region in Europe A unique Ecosysteme

- → Dedicated to innovation
- Vibrant for incubation & acceleration

The Region, partner of the Cybersecurity contest organized by the Graduate School of Engineering in Advanced Systems and Networks



Welcome to the 3rd edition of the Cybersecurity Awareness Week! In the Auvergne-Rhône-Alpes Region, more than 98% of the local economic fabric is represented by VSEs/SMEs.

As systems are increasingly interconnected and networks intertwined, the risk of cyberthreats is therefore growing, with high potential consequences for these companies that have not yet measured them.

Therefore, to support them in their digital transformation but also to anticipate future employment and training needs and to raise users' awareness for a better understanding of the challenges, the Region has adopted an

effective public Cybersecurity policy and created the Digital Campus. The campus will be a platform to federate universities and companies and will focus on three main areas: training, digital transformation support and innovation. **Digital security is both an individual responsibility and a collective challenge. Let's take it together!** 

Juliette JARRY, Vice-Présidente de la Région Auvergne-Rhône-Alpes, déléguée aux infrastructures, à l'économie et aux usages numériques

La Région 🛆 Auvergne-Rhône-Alpes

# JUDGES

CSAW judges hail from across the industry, representing some of the most elite experts and academicians in the cyber security community. We are honored to have them participate in our competitions and we are grateful for their contributions.

#### APPLIED RESEARCH COMPETITION FINAL JUDGES

- Guillaume Bouffard, Embedded Security Research Engineer at ANSSI
- Marie-Angela Cornelie, Cryptography Evaluator at CEA
- Jérémy Dubeuf, Staff Engineer at ARM
- Nathalie Feyt, Design Authority Cybersecurity at Thales Avionics Worldwide
- Bernard Kasser, Security Roadmap and R&D Lab Director at STMicroelectronics
- Julien Kern, Software Engineer at Ponant Technologies
- Sébastien Lapique, Auvergne-Rhône-Alpes Regional Manager
- Lucas Philippe, Technical Ambassador at YesWeHack
- · Lionel Victor, Security Architect at Ingenico
- Romain Xu-Darme, Project Manager at Grenoble Alpes Cybersecurity Institute

### EMBEDDED SECURITY CHALLENGE FINAL JUDGES

- · Alexandre Damier, Manager Integration, Projects & Audit department at Digital Security
- Jean Lou Hau, Co-founder & Engineering at YesWeHack
- Ayman Khalil, Managing Partner & COO at Red Alert Labs
- Sophie Laborde, Cybersecurity Manager at Thales
- Julien Montmasson, Security Engineer at STMicroelectronics
- Bruno Morata, Engineering Manager at Ponant Technologies
- Florian Pebay Peyroula, Cybersecurity Expert at CEA

#### RED COMPETITION FINAL JUDGE

· Christophe Deleuze, Grenoble INP - Esisar

# Organizers & Supporters



# **COMPETITION ORGANIZERS**

CSAW'19 was developed through the hard work and dedication of the following Organizers and Supporters. Our sincere thanks!

> Laurent Pion & David Hély, General chairs Nadine Guillemot, Director of Grenoble INP - Esisar

#### **ESISAR GLOBAL SUPPORT TEAM**

#### LOGISTIC & SUPPORTS

Gabriel Blanchard, Partnership Raphael Benoist, Communication manager Audrey Clamecy, Communication officer Véronique Jadin, Finance coordinator Nicolas Charroud, Logistics coordinator Stéphanie Michelon, Logistics support Zina Njeh, Logistics Caroline Palisse, Logistics coordinator Romain Doleux, Logistics support Athanasios Papadimitriou, Competition coordinator Philippe Serpollet, Infrastructure Bruno Teyssier, IT coordinator

#### **STUDENTS LEAD**

Eduardo Navarro Tarján, Students coordinator Ivan Baheux, Students coordinator Louis Girard, Capture The Flag Pierre Coimbra De Brito, Capture The Flag Zoé Lagache, Applied Research Alexandre Faucquenoy, Embedded Security Challenge Anthony Magniat, Red Team competition Emilien Baty

#### **FACULTY GUIDES**

Nicolas Barbot, Embedded Security Challenge leader Vincent Beroulle, Embedded Security Challenge leader Emmanuel Brun, Capture the Flag leader Stéphanie Chollet, Applied Research competition leader Christophe Deleuze, Red Team competition leader Quentin Giorgi, Red Team competition leader

#### NYU GLOBAL SUPPORT TEAM

#### LOGISTIC & SUPPORTS

Stef Daley, Global competition Coordinator Emerald Knox, Project manager Amanda Morante, Graphic designer Ramesh Karri, Chair Nasir Memon, Founder

#### **GLOBAL CHALLENGE LEADS**

Marcus Barbu, Red Team competition Rasika Bhalerao, Applied Research competition Leon Chou, Capture the Flag Patrick Cronin, Embedded Security Challenge (U. Delaware) John Cunniff, Red Team competition Jaime Danguillecourt, Technical infrastructure co-lead Brendan Dolan-Gavitt, Capture the Flag Junaid Farooq, Applied Research competition Chaz Gouert, Embedded Security Challenge (U. Delaware) Kent Ma, Capture the Flag Marina Moore, Applied Research competition Nektarios Tsoutsos, Embedded Security Challenge (U. Delaware)

With the kind and enthusiastic support of all Grenoble INP - Esisar and LCIS employees and students.



Nicolas DARAGON Mayor of Valence Valence Romans Agglo President



I'm very happy and honored to welcome you to Valence.

Valence is a medium-sized town with several universities and an engineering school of excellence, ESISAR. Our city demonstrates once again its ability to innovate in the forefront by organizing this event every year.

Cybersecurity is one of the challenges of our century. We need researchers, engineers, scientists, to seize these questions and prepare our future in safety. We also need Valence to develop its economic exchanges and especially internationally. We already do this by hosting 6 twinnings with cities in Europe or in the Middle East (Armenia, Israel and Lebanon).

This event will contribute greatly to these two challenges and I thank all those who made it possible to organize.

Our institutions of higher education and the economic actors of our region have to go worldwide as I am pretty sure they will provide the force to prepare and build the future.

I wish you a pleasant stay in Valence and a good competition to all!







OTASQ



## LET'S GO FOR DIGITAL INDUSTRY !

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In association with eTASQ software, the eTASQ Motion robotic bench challenges the reliability of each Man-Machine Interface (MMI) fitted with displays, keys and buttons.



Plateau de Lautagne - 19 rue Pierre Mechain - 26000 VALENCE contact@ponant-technologies.com I 04 75 80 39 10 I www.ponant-technologies.com



# Competitions



# APPLIED RESEARCH COMPETITION

In the Applied Research Competition, student researchers are invited to enter the running for the CSAW Best Paper Award. Eligible submissions include papers published between September 1, 2018 and August 31, 2019, on any topic related to the application or implementation of security technologies or security systems.

### **FINALISTS**



Amber van der Heijden, Eindhoven University of Technology, The Netherlands Cognitive Triaging of Phishing Attacks Amber van der Heijden and Luca Allodi



Vladislav Mladenov, Ruhr-University Bochum, Germany 1 Trillion Dollar Refund – How To Spoof PDF Signatures Vladislav Mladenov, Christian Mainka, Karsten Meyer zu Selhausen, Martin Grothe and Jörg Schwenk



### Fernando Virdia, Royal Holloway University of London,

United Kingdom

Implementing RLWE-based Schemes Using an RSA Co-Processor Martin R. Albrecht, Christian Hanser, Andrea Hoeller, Thomas Pöppelmann, Fernando Virdia and Andreas Wallner



## Felix Fischer, Chair of Cyber Trust, Technical University of Munich,

Germany Stack Overflow Considered Helpful! Deep Learning Security Nudges Towards Stronger Cryptography Felix Fischer, Huang Xiao, Ching-Yu Kao, Yannick Stachelscheid, Benjamin Johnson, Danial Raza, Paul Fawkesley, Nat Buckley, Konstantin Böttinger, Paul Muntean and Jens Grossklags



#### Lauren De Meyer, KU Leuven, imec - COSIC, Belgium

M&M: Masks and Macs against Physical Attacks Lauren De Meyer, Victor Arribas, Svetla Nikova, Ventzislav Nikov and Vincent Rijmen



Clara Schneidewind, Vienna University of Technology, Austria Anonymous Multi-Hop Locks for Blockchain Scalability and Interoperability Giulio Malavolta, Pedro Moreno-Sanchez, Clara Schneidewind, Aniket Kate and Matteo Maffei



#### Alvise Rabitti, Ca' Foscari University of Venice, Italy

Postcards from the Post-HTTP World: Amplification of HTTPS Vulnerabilities in the Web Ecosystem Stefano Calzavara, Riccardo Focardi, Matus Nemec, Alvise Rabitti and Marco Squarcina



Jiexin Zhang, University of Cambridge, United Kingdom SensorID: Sensor Calibration Fingerprinting for Smartphones Jiexin Zhang, Alastair R. Beresford and Ian Sheret



Stephan van Schaik, Vrije Universiteit Amsterdam,

The Netherlands RIDL: Rogue In-Flight Data Load Stephan van Schaik, Alyssa Milburn, Sebastian Österlund, Pietro Frigo, Giorgi Maisuradze, Kaveh Razavi, Herbert Bos and Cristiano Giuffrida



Lucian Cojocar, Vrije Universiteit Amsterdam, The Netherlands Exploiting Correcting Codes: On the Effectiveness of ECC memory Against Rowhammer Attacks Lucian Cojocar, Kaveh Razavi, Cristiano Giuffrida and Herbert Bos

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# CAPTURE THE FLAG

Designed as an entry-level CTF, this competition requires players to integrate concepts, develop skills, and learn to hack as they go. Challenges mimic real-world scenarios modeling various computer security problems. To succeed, teams must demonstrate a profound understanding of the roles and ramifications of cyber security in these situations. Topics include Pwnable, RE, Web, Crypto, and Forensics.

### FINALISTS

# ALLES!, Saarland University & TU Dresden, Germany

Benno Fünfstück Florian Bauckholt Nico Gründel Simon Schwarz

# LOSFUZZYS, Graz University of Technology, Austria

Fabian Rauscher Ferdinand Bachman Michael Ehrenreich Vedad Hadzic

### NOPS, EURECOM, France

Andrea Possemato Emanuele Cozzi Savino Dambra Sebastian Poeplau

# PWNTHEMOLE, Polytechnic of Turin & University of Turin,

Italy Andrea Abram Angelo Delli Santi Matteo Rossi Pietro Francesco Tirenna







# REDGKROCKET, Hochschule Bonne-Rhein-Sieg

& Universität Bonn, Germany

Henrik Schnor Julian Härig Lukas Kempf Markus Kanz

# SALTEDCRHACKERS, University "La Statale"

of Milan (UniMI), Italy Altin Thartori Franco Marino Jacopo Tediosi Massimiliano Bellia

# STT, Instituto Superior Técnico, University of Lisboa,

Portugal Afonso Santos Manuel Goulão Manuel Sousa Nuno Sabino

# TOWER OF HANOI, Politecnico di Milano, Italy

Benedetto Nespoli Lorenzo Binosi Luca Massaron Nicola Ruaro

## TRX, La Spienza University of Rome, Italy

Andrea Fioraldi Daniele Tarantino Pietro Borrello Qian Matteo Chen

# WRECKTHELINE, University Politehnica of

Bucharest, Romania Filip Munteanu Fineas Florin Silaghi Octavian Guzu Silvia Elena Pripoae













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is launching today a new sequel, geared toward computer science degree students www.yeswehack.com/edu/



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# EMBEDDED SECURITY CHALLENGE

Competitors must exploit the weaknesses of a target system, assess the effectiveness of their hardware security techniques, identify vulnerabilities and implement effective defense mechanisms.

Embedded Security Challenge (ESC) is an educational, research-oriented tournament aimed at hacking into the hardware of embedded systems. First run in 2008, it is the oldest hardware security competition in the world. 2019 represents ESC's 12 year anniversary!

### FINALISTS



# ALBSOCIETY, Albstadt-Sigmaringen University, Germany Konstantin Bücheler

Lucas Becker Patrick Regenscheid Team mentor : Tobias Heer



DIRTY COWBOYS, Czech Technical University in Prague & University of Economics, Czech Republic Adam Verner

Adam Verner Eliška Kühnerová Jan Havranek Team mentor: Jaroslave Burcik



## ESIUNIPI, University of Piraeus, Greece

Kostas Mokos Kostas Nomikos Theodoros Apostolopoulos Vangelis Malamas Team mentor: Mihalis Psarakis



## FLUXFINGERS, Ruhr-University Bochum, Germany

Niklas Breitfeld Paul Gerste Tobias Scharnowski Team mentor: Thorsten Holz

# LES JAPLATIS, IUT de Valence, Université Grenoble Alpes,



France Alexandre Berard Florian Boyer Marie Vialle Nicolas Mege Team mentor: Sebastien Jean



# SIX-P'HACK, INSA Centre Val de Loire, France

Jeremy Briffaut Léo Casteiltort Nicolas Wendling Raphael Calvet Team mentor: Jérémy Briffaut

# TEAM POULPI, Grenoble INP - Esisar & Grenoble INP - Ensimag, France



François Sauger Richard Jarry Tahiry Ravelonahina Team mentor: Quentin Giorgi

# TECHWARRIORS, Infotech Master

### University of Stuttgart, Germany



Kaiwalya Belsare Manish Dalvi Sarthak Kelapure Varad Kulkarni Team mentor: Marco Aiello



TRX, Sapienza University of Rome, Italy Cristian Assaiante

Christian Cotignola Matteo Almanza Qian Matteo Chen Team mentor: Camil Demetrescu



# UBS\_BZH, Université Bretagne Sud, France

Jérôme Blanchard Mathieu Dolmen Pierre Fontaine Romain Brenaget Team mentor: Cyril Chavet

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Through its **Training** program, led by **Grenoble INP** and **Grenoble Ecole de Management**, Nanoelec anticipates the needs of its partners in new skills. It also engineers new training programs to support human resources management teams, an essential element of **innovation** policies in the semiconductor sector.



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# **RED TEAM COMPETITION**

Formerly the High School Forensics Challenge, this competition has been redesigned as a two-part red team investigation for high school students.

The online Qualification Round runs as a jeopardy-style CTF. Challenges are designed to encourage learning and skill-building in the areas of reversing, web security, forensics, crypto and pwning.

During in-person Finals, high school teams will be tasked with infiltrating and analyzing the findings of the operation without getting caught.

Red competion has been organised with the support of Académie de Grenoble, Académie de Lyon and Académie de Clermont-Ferrand



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# CMATRIX, Lycée Saint Victor, France

Aimé Deutsch Elouan Sausset Emerick Roman Team mentor: Christian Calleja

# DAMNKIDS, Lycée Algoud-Laffemas, France

Florian Laye Nathan Bernard Pierre Alix Roux Team mentor: Franck Hergniot

# GRATIX DE RAVIOLES IND, Lycée Notre Dame, France

Antoine Jean Nathan Muller Vivien Cros Team mentor: Gérald Perminjat

### JOJO, Lycée Algoud-Laffemas, France

Grigore Strisca Victor Zablocki Team mentor: Florence Desigaud

# KYOJIN, Lycée Aristide Bergès, France

Esteban Issartel Léo Pellissier Yanis Benhamed Team mentor: Patrick Guérangé

## MANTG4, Lycée de la Matheysine, France

Alekos Anastassiou Maxime Pierre Tanguy Taverna Team mentor: Laure Assie

## QWERTY, Lycée Notre Dame, France

Mathis Billon Nel Coiffet Sam Esber Team mentor: Gérald Perminjat

# SANSNOM.ODT, Lycée Algoud-Laffemas, France

Axel Daujan John Gouvart Lucas Vincent Team mentor: Eva Seignovert

# TOPIPA, Lycée Aristide Bergès, France

Pablo Montanier Pierre Provost Thomas Bercier Team mentor: Patrick Guérangé

# UNDEFINED, Lycée Algoud-Laffemas, France

Mathéo Noalhyt Maxens Gagne Xavier Fremiot Team mentor: Franck Hergniot

# VOX-ISN-01, Lycée polyvalent Vaucanson, France

Benjamin Tronchet Roni Carta Tao Beaufils Team mentor: Christophe Favre



# Questions about our CSAW t-shirt colors?



### **TURQUOISE SHIRTS**

Student competitors and other CSAW guests.



#### **PURPLE SHIRTS**

**Support staff and volunteers.** They're here to help you if you have questions.

# Do you have questions or need assistance? csaw-europe@esisar.grenoble-inp.fr

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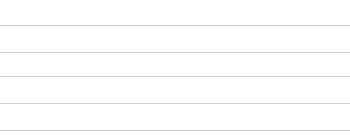


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# Notes & New Contacts





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