



# ACSAC 2020

December 7-11, 2020 • Online



# Welcome to ACSAC 2020





# ACSAC 2020

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Kevin Butler, Conference Chair:	Administrative Announcements
Daphne Yao, Program Chair:	Technical Program Remarks
Roberto Perdisci, Artifacts Chair:	Artifact Evaluation
Daphne Yao:	Distinguished Paper Awards
Mary Ellen Zurko and	SWSIS Scholarship Presentations
Jeremy Epstein, ACSA:	
Emily Stark, Distinguished Practitioner Keynote:	
	“When Security Meets Compatibility”



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## Navigating the Conference

Wednesday, 9 December 2020

10:00-10:30	<p><b>Welcome</b></p> <p>ACSAC Conference Welcome: <i>Kevin Butler, Conference Chair</i></p> <p>PC Chair Opening Remarks and Distinguished Paper Awards: <i>Daphne Yao, Program Chair</i></p> <p>SWSIS Scholarship Awards: <i>Mary Ellen Zurko and Jeremy Epstein, ACSA</i></p>		
10:30-11:45	<p><b>Distinguished Practitioner Keynote: When Security Meets Compatibility</b></p> <p><b>When Security Meets Compatibility</b></p> <p><i>Emily Stark, Tech Lead and Manager, Chrome Security Team, Google</i></p>		
11:45-12:00	<p><b>Break</b></p>		
12:00-13:15	<p><input type="checkbox"/> <b>Panel: Cybersecurity Research Challenges and Opportunities in 5G and Next Generation Cellular Networks</b></p> <p><i>Session Chair: Daniel Massey, OUSD(R&amp;E)</i></p> <p><i>Panelists:</i></p> <ul style="list-style-type: none"> <li>Ehab Al-Shaer, Distinguished Career Professor, Carnegie Mellon INI and CyLab Security, and Privacy Institute</li> <li>Wayne Phoel, Visiting Research Engineer, University of Maryland Institute for Systems Research</li> <li>Sumit Roy, Innovate Beyond 5G Lead, OUSD(R&amp;E)</li> <li>Alex Sprintson, Program Director, NSF/CISE</li> <li>Vincent Sritapan, Cyber QSMO Section Chief, Cybersecurity and Infrastructure Security Agency</li> </ul>	<p><input type="checkbox"/> <b>Technical Papers 1A: Digital Forensics and Malware Detection</b></p> <p><i>Session Chair: Heng Yin, Dima Rabadi</i></p> <p><i>The Tangled Genealogy of IoT Malware</i> Emanuele Cozzi; Pierre-Antoine Verrier; Matteo Dell'Amico; Yun Shen; Leyla Bilge; Davide Balzarotti</p> <p><i>Spotlight: Malware Lead Generation at Scale</i> Fabian Kaczmarczyk; Bernhard Grill; Luca Invernizzi; Jennifer Pullman; Cecilia M. Procopiuc; David Tao; Borbala Benko; Elle Bursztein</p> <p><i>App-Agnostic Post-Execution Semantic Analysis of Android In-Memory Forensics Artifacts</i> Aisha Ali-Gombe; Alexandra Tambaoan; Angela Gurfollino; Golden G. Richard III</p> <p><i>AVClass2: Massive Malware Tag Extraction from AV Labels</i> Silvia Sebastián; Juan Caballero</p> <p><i>Advanced Windows Methods on Malware Detection and Family Classification</i> Dima Rabadi; Sin G. Teo</p>	<p><input type="checkbox"/> <b>Technical Papers 1B: Anonymity and Privacy</b></p> <p><i>Session Chair: Tristan Allard, Sean Oesch</i></p> <p><i>Betrayed by the Guardian: Security and Privacy Risks of Parental Control Solutions</i> Suzan Ali; Mounir Elgharabawy; Quentin Duchaussoy; Mohammad Mannan; Amr Youssef</p> <p><i>Talek: Private Group Messaging with Hidden Access Patterns</i> Raymond Cheng; William Scott; Elisaweta Masserova; Irene Zhang; Vipul Goyal; Thomas Anderson; Arvind Krishnamurthy; Bryan Parno</p> <p><i>Towards a Practical Differentially Private Collaborative Phone Blacklisting System</i> Ucci Daniele; Roberto Perdisci; Jaewoo Lee; Mustaque Ahamed</p> <p><i>Towards Realistic Membership Inferences: The Case of Survey Data</i> Luke A. Bauer; Vincent Bindschaedler</p> <p><i>Quantifying measurement quality and load distribution in Tor</i> Andre Greubel; Steffen Pohl; Samuel Kounev</p>
13:15-13:30	<p><b>Break</b></p>		

acsac.org -> Program

acsac2020.cd.pathable.com



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## Connecting with Others

Home Schedule People Conversations Help Desk Account

BACK TO AGENDA

+ RESERVE SPOT NOTES MANAGE

TRACK C

### Technical Papers 1B: Anonymity and Privacy

0 DAYS 12 HRS 1 MIN 5 SEC  
This live meeting hasn't started yet

Chat Polls People Files

No Messages  
No messages have yet been sent.

Session Chair: Tristan Allard, Sean Oesch

Betrayed by the Guardian: Security and Privacy Risks of Parental Control Solutions  
Suzan Ali; Mounir Elgharabawy; Quentin Duchaussoy; Mohammad Mannan; Amr Youssef

- Daniele Ucci, Ph.D.
- Andre Greubel
- Raymond Cheng
- Sean Oesch, Security Researcher
- Luke Bauer
- Mounir Elgharabawy
- Tristan Allard

Chat during Sessions

Home Schedule People Conversations Help Desk Account

### Kevin Alejandro Roundy

Kevin Alejandro Roundy

WANT TO MEET SCHEDULE MEETING SEND MESSAGE

Badge Name  
Kevin Alejandro Roundy

Affiliation  
NortonLifeLock Research Group

US State or Province  
CA

Country  
USA

Ribbons  
ORGANIZER SPEAKER ATTENDEE MODERATOR

### ACSAC 2020 - Speaker Training

- Salman Ahmed
- Aisha Ali-Gombe, Ph.D.
- Mahmoud Ammar
- Tiffany Bao
- Adam Bates
- Juan Caballero
- Michele Carminati
- Jason Ceci
- Long Cheng
- Fritz Alder
- Tristan Allard
- Nampoina Andriamilanto
- Sebastien Bardin
- Luke Bauer
- Chen Cao
- Stephen Carrasquillo
- Raymond Cheng
- Phakpoom Chinprutthiwong

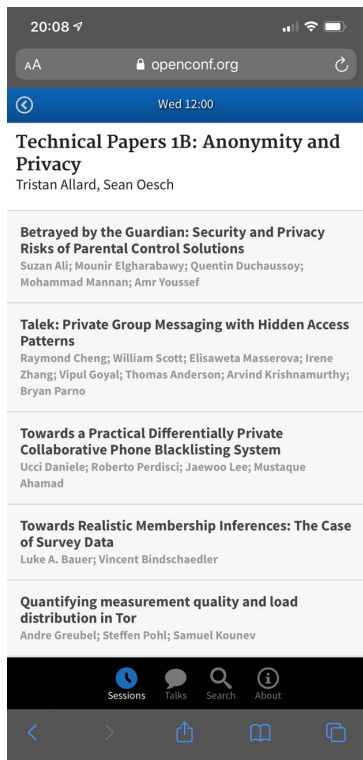
Directly contact attendees



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## Mobile Program



<https://www.openconf.org/acsac2020/mobile>



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## Program At-a-Glance (Wednesday)

- **Welcome**
- **Distinguished Practitioner Keynote**
- Break (all breaks are 15 minutes)
- **Multi-track Sessions**
- Break
- **Multi-track Sessions**
- Break
- **Poster and Work in Progress Talks 1**



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## Program At-a-Glance (Thursday)

- **Tribute to Marshall Abrams**
- **Test of Time Awards**
- Break
- **Multi-track Sessions**
- Sponsored Talk/Break
- **Multi-track Sessions**
- Break
- **Poster and Work in Progress Talks 2**



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## Program At-a-Glance (Friday)

- **Multi-track Sessions**
- Sponsored Talk/Break
- **Multi-track Sessions**
- Break
- **Multi-Track Sessions**
- **Closing Remarks**
- **BoF**





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# Panels & National Interest Track

## **Wednesday**

- Panel: Cybersecurity Research Challenges and Opportunities in 5G and Next Generation Cellular Networks
- NITRD Panel: Homomorphic Encryption: Clever, Idea But Can We Make It Practical?

## **Thursday**

- NITRD Panel: CMMC: Raising the Bar on Cybersecurity Maturity

## **Friday**

- Panel: Diversity & Inclusion in the Cybersecurity Research Community



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## Case Studies

### Thursday

- Cybersecurity Test and Evaluation Lessons Learned

### Friday

- Anchoring Trust in a Totally Open Platform
- Incident Response Planning for Election Cybersecurity: Designing a Workshop for County Clerks
- Summarizing Intrusion Alerts to Attack Models for Higher-Ed SOC



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## Poster and Work in Progress Talks

**Wednesday and Thursday (3:00-4:00 PM Eastern Time)**

- 10 talks in each session, each 1 hour
- Short talks with lots of Q&A opportunities



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## Test of Time Paper Awards, 2<sup>nd</sup> edition

- Recognize and honor selected papers from the first 20 years (1985-2004) that have had a significant impact
  - Led to a major change in the field
  - Are used commercially
  - Have been well cited
  - Are well known as strong papers
- Special panel of distinguished speakers



<https://www.wabisabilearning.com/blog/13-educational-tools-test-time>

**Thursday, 10:30 AM Eastern**



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## Tribute to Marshall Abrams

Recollections and remembrance of the founder of ACSAC and his indelible influence



**Thursday, 10:00 AM Eastern**



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Thank You to our Sponsors!!





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## Sponsored Talks

- Memory corruption attacks in the Spectre era (Thurs 1:15 PM Eastern)
- Unleashing Cyber Reasoning: DARPA Transparent Computing Threat Hunting Retrospective (Fri 11:15 AM Eastern)



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## Conference Proceedings

### Proceedings

36<sup>th</sup> Annual Computer Security  
Applications Conference



ACSAC 2020

### Technical Program

<b>Digital Forensics and Malware Detection</b>	
The Tangled Genealogy of IoT Malware.....	1
<i>Emanuele Cicci (Eurecom), Pierre-Antoine Herber, Matteo Dell'Amico, Yun Shen, Leyla Bilge (NotionLife/Lock Research Group), Davide Balzarotti (Eurecom)</i>	
Spotlight: Malware Lead Generation at Scale.....	17
<i>Fabian Kaczmareczek, Bernhard Grill, Luca Invernizzi, Jennifer Pullman, Cecilia M. Procopio, David Tao, Borbala Benko, Elie Burstein (Google)</i>	
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<i>Ashu Ali Gunde, Alexander Etmannson, Angela Garofano (Toson University), Golden G. Richard III (Louisiana State University)</i>	
AVClass2: Massive Malware Tag Extraction from AV Labels.....	42
<i>Silvia Sebastian, Juan Caballero (IMEA Software Institute)</i>	
Advanced Windows Methods on Malware Detection and Classification.....	54
<i>Dina Rabah, Sir G. Teo (Institute for Infocomm Research, Singapore)</i>	
<b>Anonymity and Privacy</b>	
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<i>Shouqi, Masrur Elghasbeey, Quentin Duchasson, Muhammad Mannan, Amir Yousef (Concordia University)</i>	
Talk: Private Group Messaging with Hidden Access Patterns.....	84
<i>Raymond Cheng, William Scott (University of Washington), Elavarasu Manasa (Carnegie Mellon University), Jinx Zhang (Microsoft Research), Eyal Grand (Carnegie Mellon University), Thomas Anderson, Arvind Krishnamurthy (University of Washington), Bryan Parno (Carnegie Mellon University)</i>	
Towards a Practical Differentially Private Collaborative Phone Blacklisting System.....	100
<i>Daniela Ucci (University of Rome), Roberto Perdisci, Jaewoo Lee (University of Georgia), Monique Ahmad (Georgia Institute of Technology)</i>	
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<i>Luke A. Bauer, Vincent Bindschadler (University of Florida)</i>	
Quantifying Measurement Quality and Load Distribution in Tor.....	129
<i>Andre Greshel (University of Wuerzburg), Steffen Pohl (University of Tuebingen), Samuel Kounev (University of Wuerzburg)</i>	
<b>Enterprise Security Management</b>	
SABBERSEC: Synthetic Attack Injection to Benchmark and Evaluate the Performance of Security Operation Centers.....	141
<i>Martin Rozas, Michele Campobasso, Gundaalga Gankhuyag, Luca Allodi (Eindhoven University of Technology)</i>	
Measurements of the Most Significant Software Security Weaknesses.....	154
<i>Carloa Carlotta Galuardo (National Institute of Standards and Technology; INMETRO), Peter Mell, Irena Bujanova (National Institute of Standards and Technology), Assane Gueye (CAD9-Senegal &amp; Prometheus Computing)</i>	



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## Conference Proceedings: ACM Digital Library (thru Friday)

The screenshot shows the top navigation bar of the ACM Digital Library website. It includes the ACM Digital Library logo, the Association for Computing Machinery (ACM) logo, and navigation links for Journals, Magazines, Proceedings, Books, SIGs, Conferences, and People. A search bar is present with the text "Search ACM Digital Library" and a magnifying glass icon. Below the navigation bar, there is a blue banner for the "International Conference Proceeding Series (ICPS)" with a search bar labeled "Search within Proceedings".

Home > ICPS Proceedings > ACSAC '20

The screenshot shows the details page for the ACSAC '20: Annual Computer Security Applications Conference. It includes a blue "Proceeding" icon, the text "2020 Proceeding", the publisher information "Association for Computing Machinery, New York, NY, United States", the conference title "ACSAC '20: Annual Computer Security Applications Conference", the location and date "Austin USA • December, 2020", and the ISBN "978-1-4503-8858-0". There are also buttons for "Get Alerts for this Conference", "Save to Binder", and "Export Citation", along with social media sharing icons for Twitter, LinkedIn, Facebook, and RSS.

<https://www.acsac.org/2020/proceedings>



<https://dl.acm.org/citation.cfm?id=34271228>



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## Via ACSAC List of Accepted Papers (Indefinitely)



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search on duckduckgo



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[Program](#) ▾

[Registration](#)

### Accepted Papers

*The following technical papers have been accepted for this year's program.*

#### **The Tangled Genealogy of IoT Malware**

Emanuele Cozzi (Eurecom), Pierre-Antoine Vervier, Matteo Dell'Amico, Yun Shen, Leyla Bilge (NortonLifeLock Research Group), Davide Balzarotti (Eurecom)

#### **Spotlight: Malware Lead Generation at Scale**

Fabian Kaczmarczyk, Bernhard Grill, Luca Invernizzi, Jennifer Pullman, Cecilia M. Procopiuc, David Tao, Borbala Benko, Elie Bursztein (Google)

#### **App-Agnostic Post-Execution Semantic Analysis of Android In-Memory Forensics Artifacts**

Aisha Ali-Gombe, Alexandra Tambaoan, Angela Gurfolino (Towson University), Golden Richard (Louisiana State University)

#### **AVClass2: Massive Malware Tag Extraction from AV Labels**

Silvia Sebastián, Juan Caballero (IMDEA Software Institute)

#### **Advanced Windows Methods on Malware Detection and Classification**

Dima Rabadi, Sin Teo (Institute for Infocomm Research (I2R), A\*STAR, Singapore)

#### **SAIBERSOC: Synthetic Attack Injection to Benchmark and Evaluate the Performance of Security Operation Centers**

Martin Rosso, Michele Campobasso, Ganduulga Gankhuyag, Luca Allodi (Eindhoven University of Technology)

[https://www.acsac.org/2020/  
program/papers/](https://www.acsac.org/2020/program/papers/)



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## Organizing Committee

- Kevin Butler, University of Florida (Conference Chair)
- Danfeng (Daphne) Yao, Virginia Tech (Program Chair)
- Heng Yin, UC Riverside (Program Chair)
- Roberto Perdisci, University of Georgia (Artifacts Evaluation Chair)
- Randy Smith, Boeing (Case Studies Co-Chair)
- Saurabh Shintre, Norton Lifelock Research Group (Case Studies Co-Chair)
- Tomas Vagoun, NITRD (National Interest Track Chair)
- David Balenson, SRI International (Panels Chair & ACSA Government Liaison & Treasurer & Conf. Chair Emeritus)
- Kevin Roundy, Norton Lifelock Research Group (Posters & Work-in-Progress Co-Chair)
- Brandon Saltaformaggio, Georgia Tech (Posters & Work-in-Progress Co-Chair)
- Harvey Rubinovitz, MITRE (Workshops Chair)
- Daniel P. Faigin, Aerospace (Training Workshops Chair)
- Dan Thomsen, SIFT (Knowledge Coordinator)
- Charles Payne, Adventium (Local/Virtual Arrangements Chair)
- Giorgio Giacinto, Univ. of Cagliari (Proceedings Coordinator)
- Peter Mayer, Karlsruhe Institute of Technology (Publicity Co-Coordinator)
- Adam Bates, UIUC (Publicity Co-Coordinator)
- Karen Davis (Registration Coordinator)
- Thomas Moyer, UNC Charlotte (Student Conferenceships)
- ~~Sarah Diesburg, UNI (Student Conferenceships)~~
- Robert H'obbes' Zakon, Zakon Group LLC (Web Advisor)
- Marshall Abrams (ACSAC Curmudgeon and Treasurer)
- Jeremy Epstein, NSF (ACSA President)
- Mike Moshell, Carole Mann, Sharri Hanacek, Registration Systems Lab (Registration)



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## Steering Committee

- Marshall Abrams
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- Davide Balzarotti, Eurecom
- Kevin Butler, Univ. of Florida
- Juan Caballero, IMDEA Software Institute
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- Guofei Gu, Texas A&M University
- Ann Marmor-Squires, The Sq Group
- Charles Payne, Adventium Labs
- Wil Robertson, Northeastern Univ.
- Harvey Rubinovitz, MITRE
- Steve Schwab, USC-ISI
- Cristina Serban, AT&T Security Research Center
- Dan Thomsen, SIFT
- Danfeng (Daphne) Yao, Virginia Tech
- Robert H'obbes' Zakon, Zakon Group LLC



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## Special Thanks: Virtual Conference Committee

- Marshall Abrams
- Charles Payne
- David Balenson
- Robert Zakon

Conference Direct Team: Marcy Hilecher, Maile Kim, Michelle Mears



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## Keep Up with ACSAC on Social Media



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– <https://www.facebook.com/groups/acsaconfattendeess/>



LinkedIn

– <https://www.linkedin.com/in/acsaconf-chair/>





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# Keynote





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# Distinguished Practitioner Keynote

## **When Security Meets Compatibility**

Emily Stark,

Tech Lead and Manager, Chrome  
Security Team, Google

