

# THE LASER WORKSHOP

## Learning from Authoritative Security Experiment Results

Co-located with Network and Distributed System Security Symposium (NDSS 2020)

Catamaran Resort Hotel & Spa

San Diego, CA

February 23, 2020

# LASER Workshop Series

Focuses on learning from and improving cybersecurity experiment results

The workshop strives to provide a highly interactive, collegial environment for discussing and learning from experimental methodologies, execution, and results

Ultimately, the workshop seeks to foster a dramatic change in the experimental paradigm for cybersecurity research, improving the overall quality and reporting of practiced science

<https://www.laser-workshop.org/>

# Applied Computer Security Associates

ACSA is a non-profit association of computer security professionals who have a common goal of improving the understanding, theory, and practice of computer security

To this end, ACSA supports a number of activities, all of which serve the goal of improving the computer security field:

- ACSAC - Annual Computer Security Applications Conference
- NSPW - New Security Paradigms Workshop
- LASER - Learning from Authoritative Security Experiment Results

<https://www.acsac.org/acsa/>

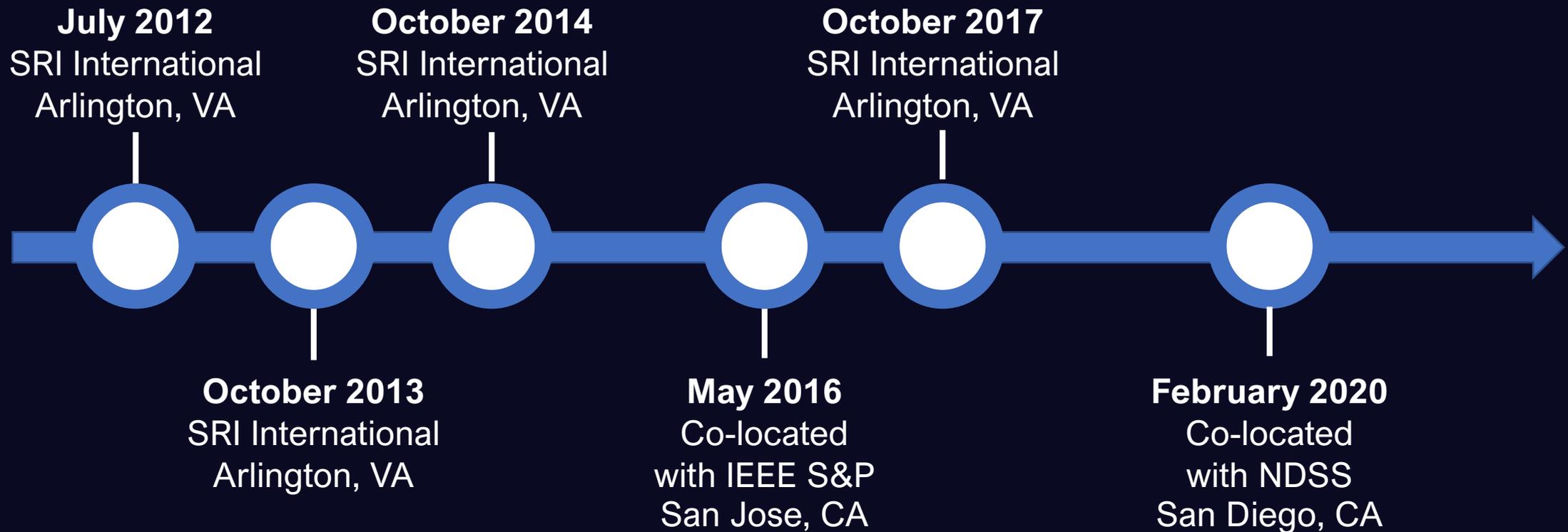
# Accelerating Cybersecurity Research

While safety and security challenges brought on by new technological advances are mounting, the overall progress in cybersecurity research to meet these challenges has historically been slow

The lack of scientific progress in cyber security is due in part to issues in three main areas, on which past LASER workshops have focused:

- Learning from and reporting of unsuccessful or unanticipated results, leading to a reduction in the repetition of past failures
- Adequate reporting of experiments, leading to an ability to understand the approach taken and reproduce results
- Solid experiment methodologies and execution, leading to reliable, conclusive results

# LASER Timeline



<https://laser-workshop.org/workshops.html>

# Some Related Work

NSF-funded Cybersecurity Experimentation of the Future (CEF) Study. <https://www.cyberexperimentation.org/>



Sharing Expertise and Artifacts for Reuse Through Cybersecurity Community Hub (SEARCCH). <https://searcch.cyberexperimentation.org/>



ACSAC Artifacts Submission. <https://www.acsac.org/2019/program/artifacts/>



USENIX Workshop on Cybersecurity Experimentation and Test (CSET). <https://www.usenix.org/conferences/byname/135>



National Academies of Sciences, Engineering, and Medicine 2019. Reproducibility and Replicability in Science. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25303>



THE LASER WORKSHOP

# LASER 2020 Organizers

## Organizing Committee

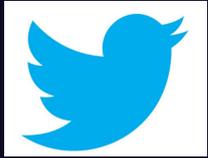
- Terry Benzel (USC ISI), General Chair
- David Balenson (SRI International), Funding/  
Local Arrangements/Scholarships
- Laura S. Tinnel (SRI International), Publications/  
Web/IT Services



## Program Committee

- Dr. Jim Alves-Foss (University of Idaho), Program Chair

# “The LASER Workshop” Social Media



## Twitter

- The LASER Workshop
- @LASER\_Workshop



## Facebook

- The LASER Workshop
- @TheLASERWorkshop



## LinkedIn

- Learning from Authoritative Security Experiment Results
- groups/8226696

Hashtag  
#LASER2020

# LASER 2020 “Experiment”

**H1:** NDSS authors are excited about sharing their experimental methodologies, execution, and results

**H2:** NDSS authors and LASER participants are interested in learning about other researchers’ experimental methodologies, execution, and results

**H3:** NDSS authors and LASER can work collaboratively to improve experimental science in cybersecurity research



# Workshop Format

The workshop will be structured as a true “workshop” in the sense that it will focus on discussion and interaction around the topic of

Experimental methodologies, execution, and results

Authors will lead the group in a discussion of the experimental aspects of their work

Ultimate goal is to share and learn from each other and encourage improvements in experimental science in cybersecurity research

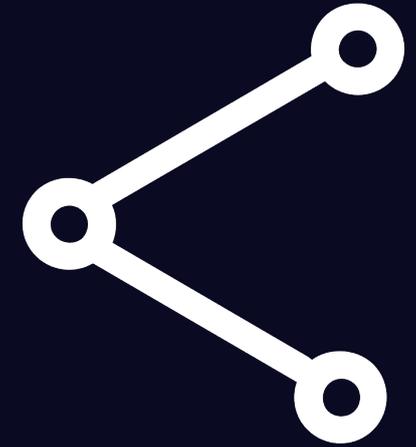
Additional information, abstracts, bios, and links to papers are available on the NDSS website at <https://www.ndss-symposium.org/ndss2020/laser-workshop-2020/>

# Areas of Interest



- Research questions and/or hypothesis
- Experimental methodologies used and/or developed
- Experiment design
- Use of simulation, emulation, virtualization, and/or physical testbeds
- Use of specialized hardware including CPS and IoT devices
- Modeling of human-behavior characteristics
- Software tools used and/or developed to perform experimentation
- Approaches to experiment validation, monitoring, and data collection
- Datasets used and/or developed to perform experimentation
- Measurements and metrics
- Analytical techniques used and/or developed to evaluate experimental results

# Interesting Meta-Questions



- Did you use experimentation artifacts borrowed from the community?
- Did you attempt to replicate or reproduce results of earlier research as part of your work?
- What can be learned from your methodology and your experience using your methodology?
- What did you try that did not succeed before getting to the results you presented?
- Did you produce any intermediate results including possible unsuccessful tests or experiments?

# Session Format

<b>Time</b>	<b>Topic</b>
5 mins	Introduce the main topic of your work (e.g., genetic genealogy or keyless entry car theft)
15 mins	Discuss the experiments or evaluations performed, including the areas of interest (as applicable)
15 mins	Lead the group in a discussion of the meta-questions
10 mins	Wrap up discussion (next steps, post-workshop paper)
<b>45 mins</b>	<b>TOTAL</b>

# Agenda (Morning)

Welcome, Workshop Goals/Organization

## Session 1

- DefRec: Establishing Physical Function Virtualization to Disrupt Reconnaissance of Power Grids' Cyber-Physical Infrastructures, Hui Lin et al. (U. Nevada, Reno)
- Genotype Extraction and False Relative Attacks: Security Risks to Third-Party Genetic Genealogy Services Beyond Identity Inference, Peter Ney et al. (U. Washington)

## Session 2

- Hold the Door! Fingerprinting Your Car Key to Prevent Keyless Entry Car Theft, Kyungho Joo et al. (Korea University)
- Compliance Cautions: Investigating Security Issues Associated with U.S. Digital-Security Standards, Rock Stevens et al. (U. Maryland)

# Agenda (Afternoon)

## Session 3

- **Invited Talk:** Can You Do that Again? Real-World Requirements for Cybersecurity Experiment Replication, Stephen Schwab (USC-ISI)
- How to Hack Blockchain Systems, Parinya Ekparinya et al. (U. Sydney and Data 61/CISRO)

## Session 4

- Security Evaluation of MCUS Defenses, Naif Saleh Almakhdhub et al. (Purdue)
- TKPERM: Cross-platform Permission Knowledge Transfer to Detect Overprivileged Third-party Applications, Faysal Hossain Shezan, Kaiming Cheng, et al. (U. Virginia)

## Wrap-up

# Workshop Papers

Participants in the LASER Workshop are invited to write new papers on their experimental work

The papers will be published in post-workshop proceedings

The new papers will be driven and guided, in part, by the discussions and interactions, and possibly even new collaborations, forged at the workshop

## Notional Schedule

- Draft papers due approximately 2 months after workshop
- Program committee will review papers and provide notifications and feedback 1 month later
- Final camera-ready papers will be due approximately 1 month later

### **Tentative Dates**

Draft Papers Submitted: April 23, 2020  
Notifications and feedback: May 23, 2020  
Final Papers Submitted: June 23, 2020  
Papers Published: July 23, 2020

# Financial Support for Authors

Supported by  
National  
Science  
Foundation



LASER will reimburse cost of:

- Workshop registration
- One night's hotel (workshop and NDSS) or two night's hotel (workshop only)
- Travel stipend – airfare, taxi/shuttle, parking (\$200 for workshop and NDSS) or full cost (for workshop only)

DB will send Payee Information and Reimbursement Request forms to you via email

Submit completed Payee Information form to [payee@acsac.org](mailto:payee@acsac.org) and completed Reimbursement Request form and **RECEIPTS** to [LASER-Reimbursement@acsac.org](mailto:LASER-Reimbursement@acsac.org)

DB will review and approve the reimbursement request

ACSA Treasurer and Bookkeeper will process payments

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