Scientific Papers

Francesco Regazzoni
`f.regazzoni@uva.nl`

University of Amsterdam

Contacts

Francesco Regazzoni

e-mail: f.regazzoni@uva.nl

Previous Colloquium

- Descriptive Statistics
- Basic probability theory
- Parameter estimation
- Confidence intervals, limits, significance
- How to communicate graphically

Today

- Evaluation process of a scientific paper
- The main parts of a scientific paper

From you

A Survey of Worldwide Censorship Techniques, J. Hall, M. Aaron, S. Adams, A. Andersdotter, B. Jones, N. Feamster, IETF 2020,
I liked it because it really does give you a good overview of censorship. There are a lot of references to a lot of works and helps you kickstart your own research. A bit like when you get lost in a wikipedia rabbit hole.

From you

Authors: Vaishnavi Mohan (Department of Computer Science, Rechnische TUD) and Lotfi ben Othmane (Fraunhofer SIT)
Title: SecDevOps: Is It a Marketing Buzzword? - Mapping Research on Security in DevOps
Year: 2016
The reason why I am reading this paper is because DevOps is already being used as a buzzword quite often, whereas there is a discussion on if it is a job function or a working lifestyle. I am trying to get a better understanding of this. Now a new one has spawned, namely DevSecOps or SecDevOps. With this one there is a lively discussion regarding the position of the Security in the word. I like how this paper looks at the theory and actually maps it towards DevOps tools.

From you

B. Tan, H. Liu, J. Rao, X. Liao, H. Jin and Y. Zhang, "Towards Lightweight Serverless Computing via Unikernel as a Function," 2020 IEEE/ACM 28th International Symposium on Quality of Service (IWQoS), Hang Zhou, China, 2020, pp. 1-10, doi: 10.1109/IWQoS49365.2020.9213020.
The abstract describes very good what the paper wanted to achieve and what it has done. The layout of the paper is simple and easy to follow. Also the figures in this paper are very understandable. Besides that I find it an interesting topic. For me I good scientific paper has a simple layout so it is easier to focus on what is said nt how it is being said.

From you

Keshav, S. (2007). How to read a paper. ACM SIGCOMM Computer Communication Review, 37(3), 83-84.
The paper describes a clear and concise method (the three-pass approach) on how to effectively approach the reading of a research paper. Sometimes, especially if you have to go through a lot of papers (e.g. for a literature survey), it can feel like a daunting task. This short but well-written paper describes a great method of tackling this that I think can be beneficial to anyone frequently reading papers. Furthermore, it also provides an interesting take on how to create the groundwork for a literature survey.

From you

Classen, Jiska and Wegemer, Daniel and Patras, Paul and Spink, Tom and Hollick, Matthias, Anatomy of a Vulnerable Fitness Tracking System: Dissecting the Fitbit Cloud, App, and Firmware, 2018, Proc. ACM Interact. Mob. Wearable Ubiquitous Technol
I liked because it is comprehensive study with god comparison between attacks and it provide us with complete understanding for the echo system of the fitness trackers.

From you

Venue: Usenix Security Symposium
Title: Users Really Do Answer Telephone Scams
Year: 2019
Authors: Huahong Tu, Adam Doupé, Ziming Zhao, Gail-Joon Ahn
The paper is well written with a well though out (set of) experiment(s) in a topic that does not seem to get as much attention as it perhaps should. The ethical considerations where to the point and (I expect) covered all that was possible to considering regarding the topic of scam phone calls. The statistics in the paper are well set-up and there are some good graphs backing the numbers up. The paper overall is pretty fun to read and easy to understand, although it was not an extremely technical subject to that perhaps made it easy to read.

What is a scientific “paper”?

- “Fast” way of communicating scientific results
- Quite short

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But, a scientific paper is a **publication**

Conferences or Journals?

- **Strongly** depends on the community
- Sometimes conference novel result, journal consolidated result
- But it is changing: conferences associated to journals (why?)

Let's take off

- Identify the target conference/journal
- **Read** the call for papers (**ALWAYS!**)
- Check the deadline
- Check the page limit
- Check the submission system

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Continue to not **underestimate** the submission process!

What happens “after” submission?

- The TPC bids the papers / the paper is associated to an editor
- The TPC chairs assigns the papers / the editor assigns the paper
- TPC performs reviews / Reviewers perform reviews
- Rebuttal?
- Decision (accept/revision/reject)

Technical Program Committee (TPC)

Check the program committee of some embedded security conferences/workshops:

- CHES: `https://tches.iacr.org/index.php/TCHES/editorial`
- DATE (track DT5 and DT6): `https://www.date-conference.com/tpc`
- SPACE: `https://cse.iitkgp.ac.in/conf/SPACE2020/progcomm.php`
- COSADE: `https://www.cosade.org/committees.html`
- CARDIS: `https://cardis2020.its.uni-luebeck.de/committee.html`

Reviews

- Grade your paper (maybe under different parameters)
- Positive aspects
- Negative aspects
- Detailed comments
- Overall

Discussion Phase

- Chairs Trigger the discussion
- TPC members try to reach an agreement
- Face-to-face meeting?
- Final decision
- Notification

And Now?

Accepted

- Read the reviews carefully
- Include the comments of reviewer in the paper

Reject

- Read the reviews carefully
- Use the comments of reviewers for improving

The structure of a Scientific Publication

Experimental process	Section of Paper
What did I do in a nutshell?	Abstract
What is the problem?	Introduction
What has been done so far?	Related work
How did I solve the problem?	Materials and Methods
What did I find out?	Results
What does it mean?	Discussion (and Conclusions)
Who helped me out?	Acknowledgments (optional)
Whose work did I refer to?	Literature Cited
Extra Information Appendices (optional)	

The Title

- What is the paper about?
- Are there rules to be followed?
- Which style?

The Title

- A 252 x 144 SPAD Pixel Flash Lidar with 1728 Dual-Clock 48.8 PS TDCs, Integrated Histogramming and 14.9-to-1 Compression in 180NM CMOS Technology. VLSI Circuits 2018
- A 640 Mbit/S 32-Bit Pipelined Implementation of the AES Algorithm
- A Design Flow and Evaluation Framework for DPA-Resistant Instruction Set Extensions
- The Curse of Class Imbalance and Conflicting Metrics with Machine Learning for Side-channel Evaluations
- Shared FPGAs and the Holy Grail: Protections against Side-Channel and Fault Attacks

Titles taken from published papers

The “Game” of the Title

The Abstract

- Target: experts of your field
- **Short** introduction to the problem
- **Short** description of the approach
- **Short** discussion of the results

The Abstract

Check the introduction from:
Francesco Regazzoni, Alessandro Cevrero, François-Xavier Standaert, Stéphane Badel, Theo Kluter, Philip Brisk, Yusuf Leblebici, Paolo Ienne: **A Design Flow and Evaluation Framework for DPA-Resistant Instruction Set Extensions.** CHES 2009
Available at:
`https://www.epfl.ch/labs/lap/wp-content/uploads/2018/05/RegazzoniSep09_ADesignFlowAndEvaluationFrameworkForDpaResistantInstructionSetExtensions_CHES09.pdf`

The Abstract

Check the abstract works from:
Nele Mentens, Edoardo Charbon, Francesco Regazzoni: **Rethinking Secure FPGAs: Towards a Cryptography-friendly Configurable Cell Architecture and its Automated Design Flow**. IACR Cryptol. ePrint Arch. 2018: 724 (2018)
Available at:
`https://eprint.iacr.org/2018/724.pdf`

Vote your favorite!

- a) First
- b) Second

Vote your favorite!

- a) First
- b) Second

Now you have to say why ;)

- Target: **non** experts of your field
- Introduction to the problem
- Highlights of the work
- Organization of the paper
- No anticipation on the results (very often)

Check the introduction from:
Francesco Regazzoni, Alessandro Cevrero, François-Xavier Standaert, Stéphane Badel, Theo Kluter, Philip Brisk, Yusuf Leblebici, Paolo Ienne: **A Design Flow and Evaluation Framework for DPA-Resistant Instruction Set Extensions.** CHES 2009
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What is wrong?

- a) Abstract and Introduction are in the paper
- b) Abstract and introduction targets two different requirements
- c) Abstract should report the results
- d) Introduction is for very expert on the field

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Related Work

Related Work

- **Critical** summary of the state of the art
- It is **never** agnostic
- Show the state of the art...
- ...pointing out the limitations
- ... and the fact that you are solving them ;)

Related Works

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How was the related work of your bachelor thesis?

- a) Agnostic
- b) Critical

How was the related work of your bachelor thesis?

- a) Agnostic
- b) Critical

Now you have to say why ;)

Materials and Methods

- In some communities is **compulsory**
- Give all the information needed
- Show soundness
- Fully reproducible results

Results

- Report your results
- Compare with the state of the art
- **Fairness** of the comparison

Conclusions

- Summary of the proposed methodology/approach
- Summary of the results
- Highlight possible research directions

Conclusions

Check the conclusions from:
Francesco Regazzoni, Alessandro Cevrero, François-Xavier Standaert, Stéphane Badel, Theo Kluter, Philip Brisk, Yusuf Leblebici, Paolo Ienne: **A Design Flow and Evaluation Framework for DPA-Resistant Instruction Set Extensions**. CHES 2009
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Acknowledgments

- Colleagues that helped you but not authors (someone that discussed with you)
- Sometimes the reviewers
- Who payed the research (could be biased!)

Last Tips

- Polish your text (spellchecker, punctuation, ...)
- Polish your figures and tables (and refer to them)
- Avoid to write too much times “for the first time”

Exercise

Take your bachelor thesis and re-write the state of the art and the abstract in a paper format.

Questions

"If you do not target the best paper award, don't waste time working on it"

Questions?

Acknowledgments

Thanks to... (sources of the material)

- Paola Grosso, Colloquia slides 2019-2020