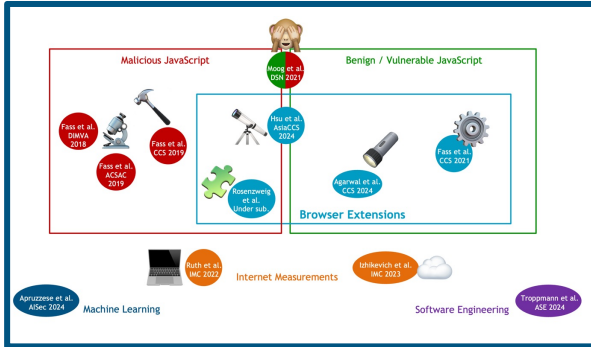


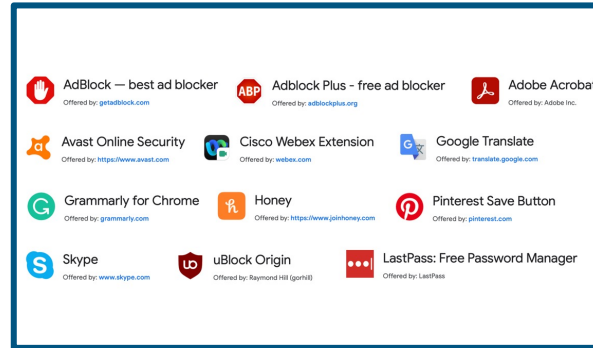
Dos and Don'ts of Reviewing

Aurore Fass

Tenure-Track Faculty at CISPA – Helmholtz Center for Information Security

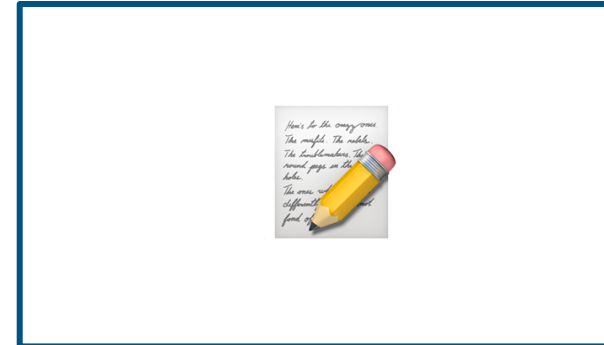


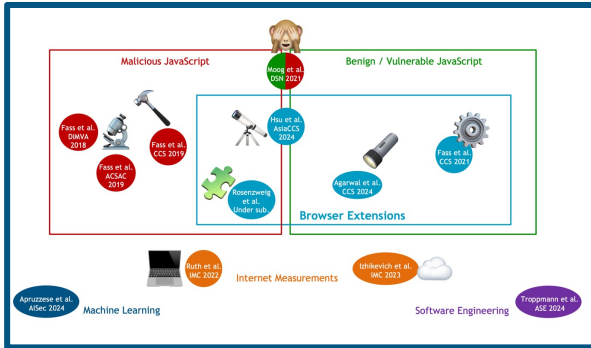
Research Work



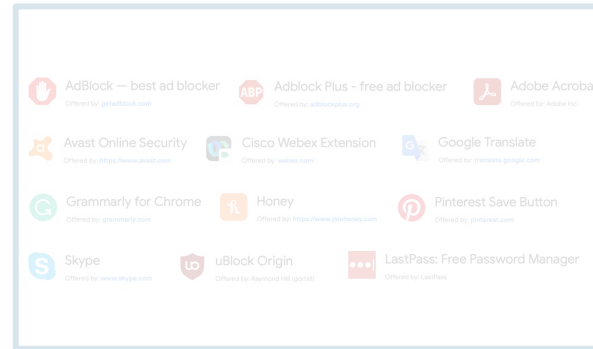
Browser Extensions

Reviewing





Research Work



Browser Extensions

Reviewing





Malicious JavaScript

Fass et al.
DIMVA
2018

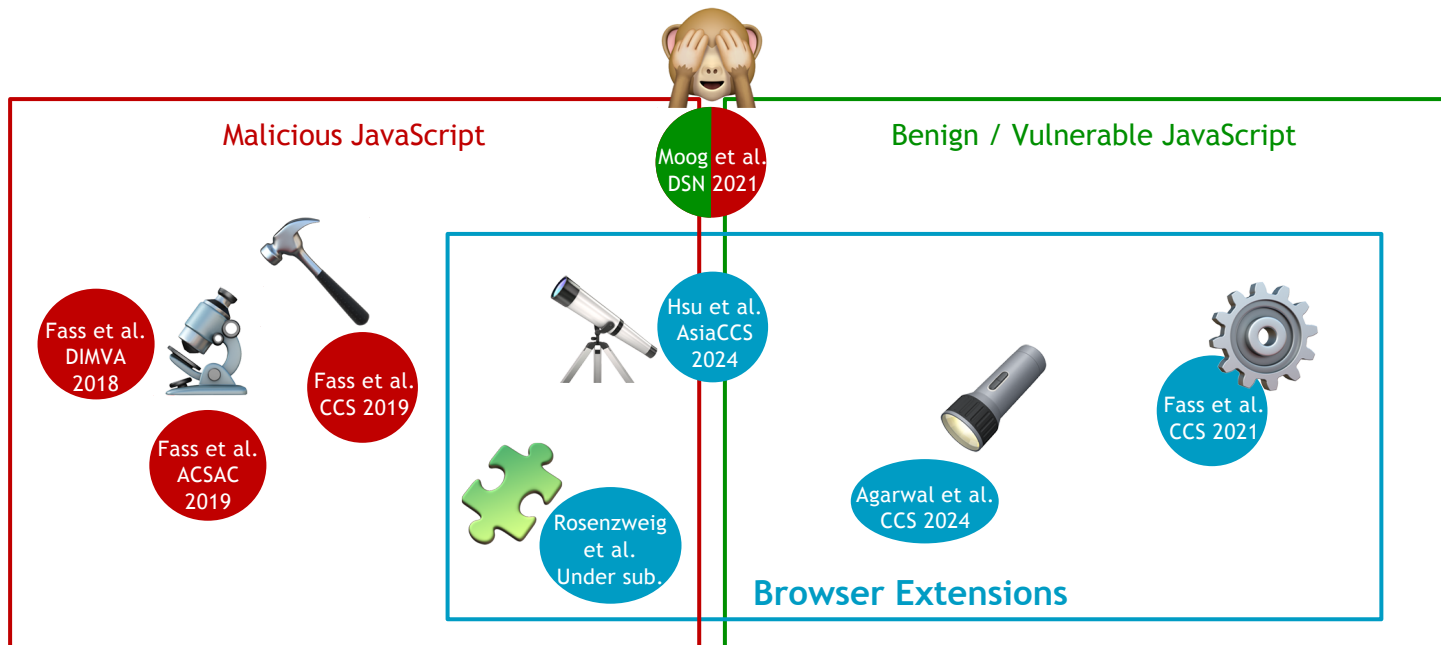


Fass et al.
CCS 2019

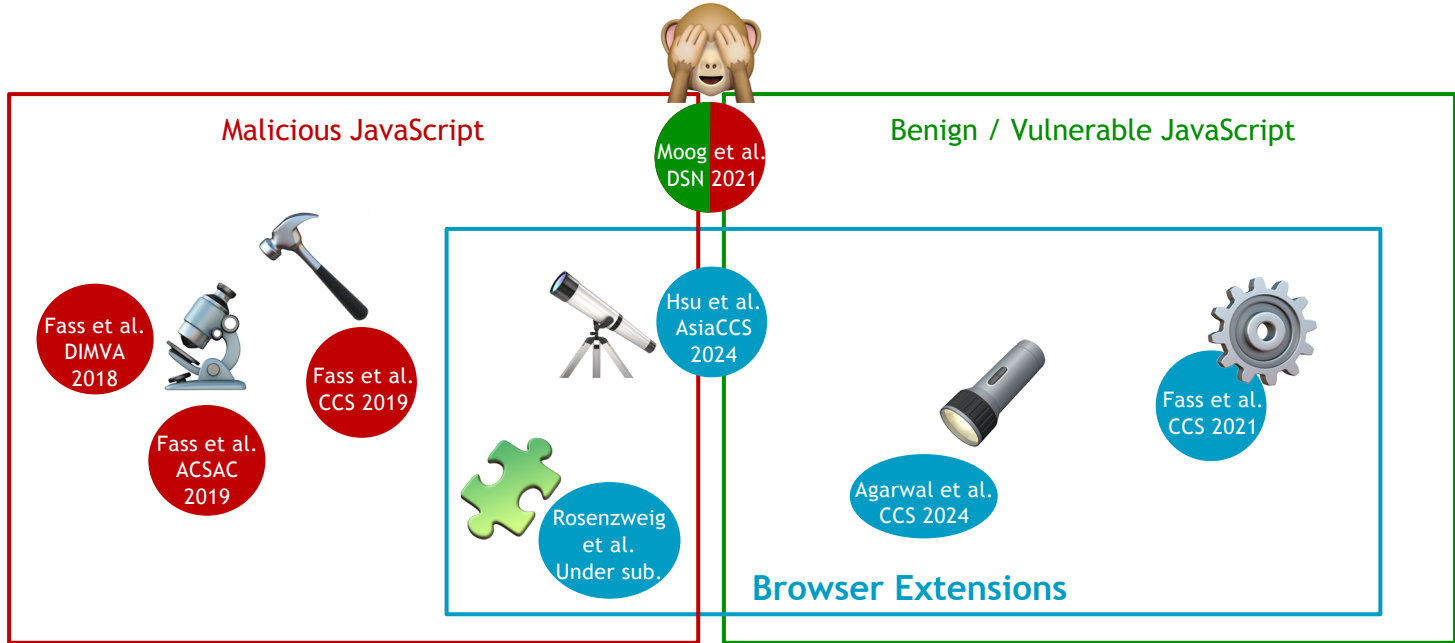
Fass et al.
ACSAC
2019

Moog et al.
DSN 2021

Benign / Vulnerable JavaScript



Research Work: Web Security & Privacy



Ruth et al.
IMC 2022

Internet Measurements

Izhikevich et al.
IMC 2023



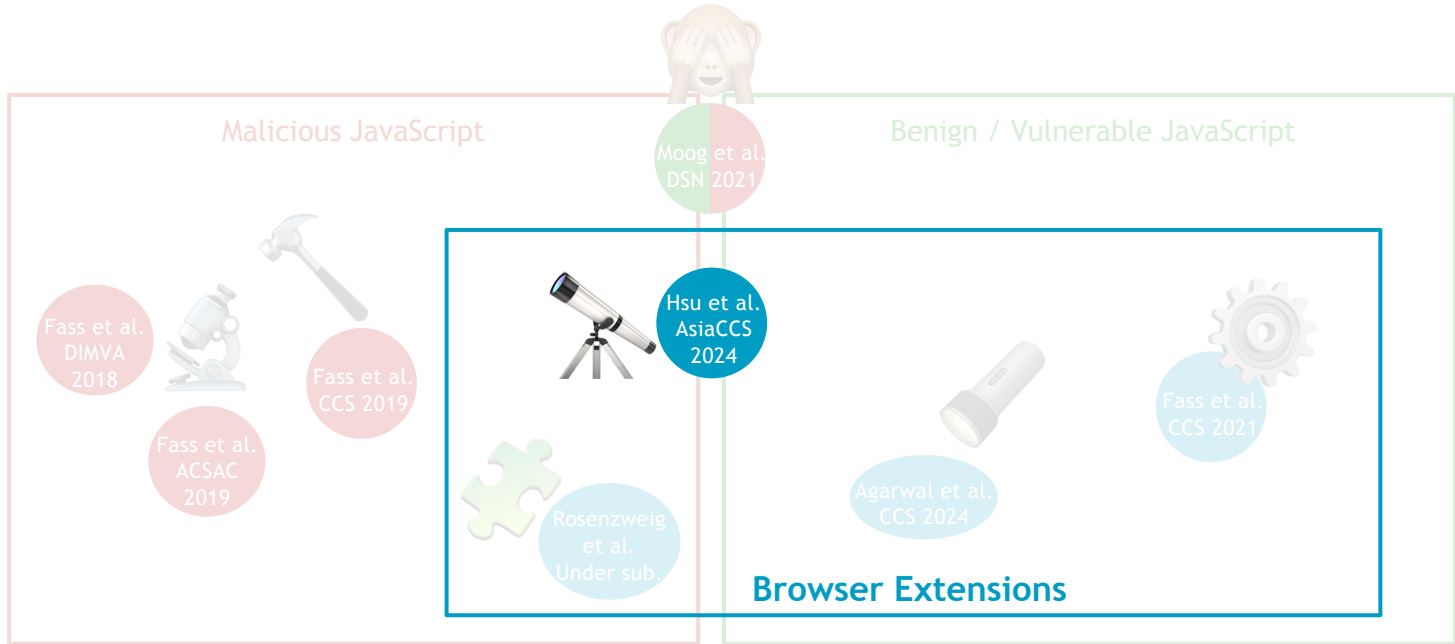
Apruzzese et al.
AISec 2024

Machine Learning

Software Engineering

Troppmann et al.
ASE 2024

Research Work: Web Security & Privacy

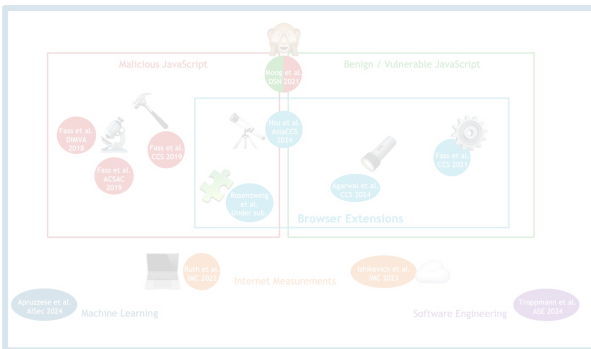


Machine Learning



Software Engineering





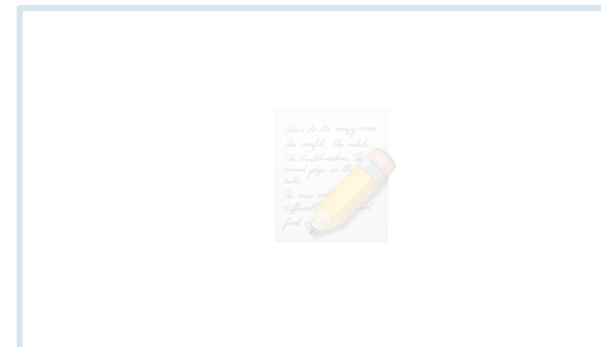
Research Work

This block displays a grid of browser extension logos and their descriptions. The extensions are arranged in four rows. The first row includes AdBlock (best ad blocker), Adblock Plus (free ad blocker), and Adobe Acrobat. The second row includes Avast Online Security, Cisco Webex Extension, and Google Translate. The third row includes Grammarly for Chrome, Honey, and Pinterest Save Button. The fourth row includes Skype, uBlock Origin, and LastPass: Free Password Manager. Each entry includes the extension's name, a brief description, and the provider's website or name.

- AdBlock — best ad blocker (Offered by: getadblock.com)
- Adblock Plus - free ad blocker (Offered by: adblockplus.org)
- Adobe Acrobat (Offered by: Adobe Inc.)
- Avast Online Security (Offered by: <https://www.avast.com>)
- Cisco Webex Extension (Offered by: [webex.com](https://www.webex.com))
- Google Translate (Offered by: translate.google.com)
- Grammarly for Chrome (Offered by: [grammarly.com](https://www.grammarly.com))
- Honey (Offered by: <https://www.joinhoney.com>)
- Pinterest Save Button (Offered by: [pinterest.com](https://www.pinterest.com))
- Skype (Offered by: www.skype.com)
- uBlock Origin (Offered by: Raymond Hill (gorhill))
- LastPass: Free Password Manager (Offered by: LastPass)

Browser Extensions

Reviewing



What are Browser Extensions?

- Third-party programs to **improve user browsing experience**



Adblock — best ad blocker

Offered by: getadblock.com



Adblock Plus - free ad blocker

Offered by: adblockplus.org



Adobe Acrobat

Offered by: Adobe Inc.



Avast Online Security

Offered by: <https://www.avast.com>



Cisco Webex Extension

Offered by: webex.com



Google Translate

Offered by: translate.google.com



Grammarly for Chrome

Offered by: grammarly.com



Honey

Offered by: <https://www.joinhoney.com>



Pinterest Save Button

Offered by: pinterest.com



Skype

Offered by: www.skype.com



uBlock Origin

Offered by: Raymond Hill (gorhill)




LastPass: Free Password Manager

Offered by: LastPass

- 125k Chrome extensions totaling over 1.6B active users

How Safe are Browser Extensions?

- Browser extensions provide **additional functionality**...
- ... so browser extensions need **additional & elevated privileges** compared to web pages
- **Browser extensions are an attractive target for attackers** 

→ Extensions can put their users' security & privacy at risk

- Contain **malware**

- Designed by malicious actors to harm victims
- E.g., propagate malware, steal users' credentials, track users

- **Violate the Chrome Web Store policies**

- E.g., deceive users, promote unlawful activities, lack a privacy policy

- Contain **vulnerabilities**

- Designed by well-intentioned developers... but contain some vulnerabilities
- E.g., can lead to user-sensitive data exfiltration

Did you know that...

- **350M users** installed **Security-Noteworthy Extensions** in the last 3 years?
- These **dangerous extensions** stay in the Chrome Web Store *for years*?
- **60%** of extensions have **never received a single update**?

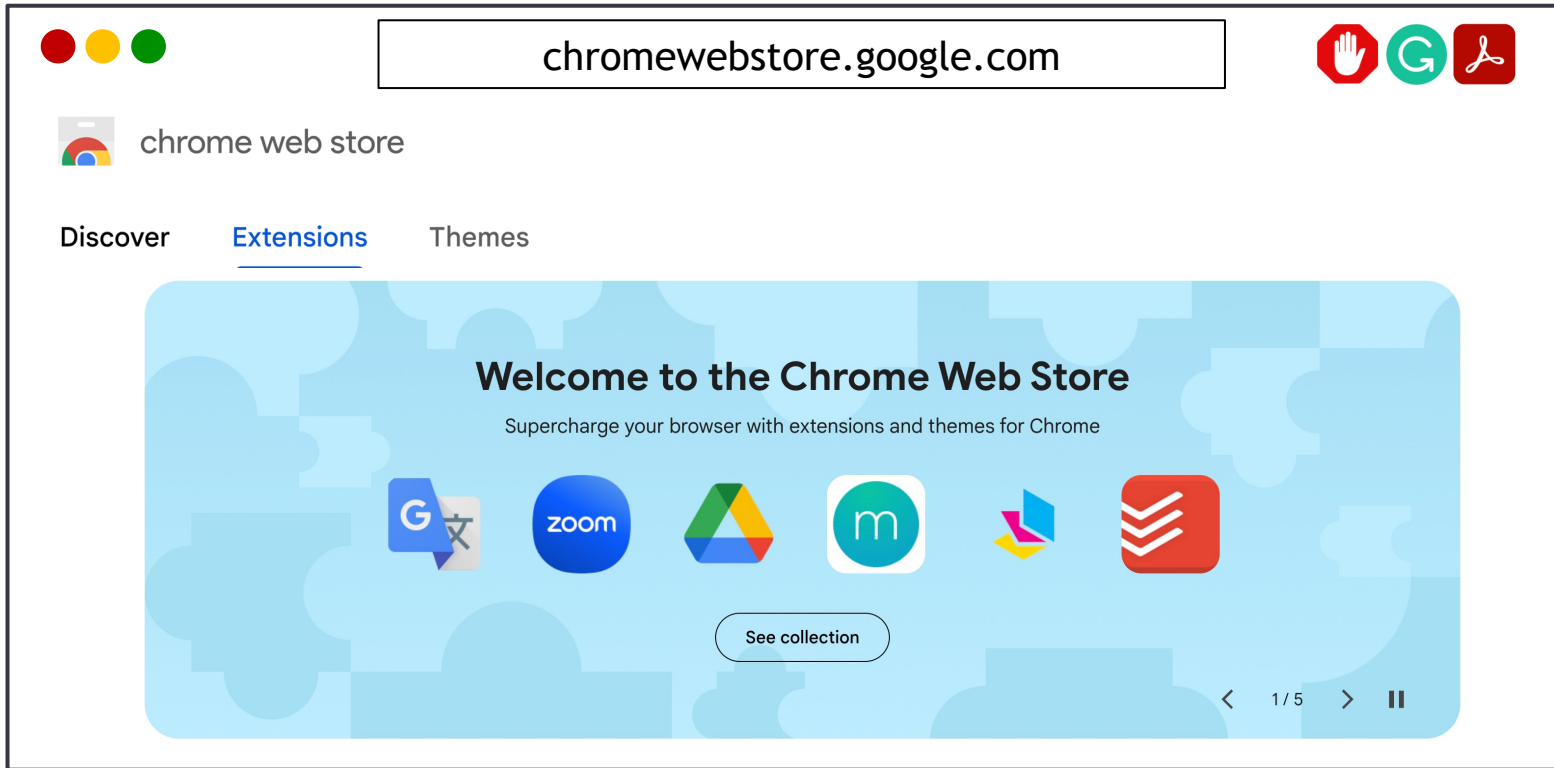


> What is in the Chrome Web Store?



In *ACM AsiaCCS 2024*. Sheryl Hsu, Manda Tran, and Aurore Fass

How to Install Extensions or SNE?




How to Install Extensions or SNE?

The image is a screenshot of a web browser window displaying the Chrome Web Store. The address bar shows 'chromewebstore.google.com'. The page title is 'chrome web store'. There are navigation tabs for 'Discover', 'Extensions', and 'Themes', with 'Extensions' being the active tab. A large blue banner is centered on the page, featuring a white text box that reads '>26k SNE (in the last 3 years)'. Below this text is a button labeled 'See collection'. The banner also includes a 'Welcome to the Chrome Web Store' message and a 'Subscribe your favorite extensions and themes' prompt. The background of the banner has a light blue pattern with various icons like Google, Zoom, and a list icon. At the bottom right of the banner, there are navigation arrows and a '1/5' indicator.

Browser Extension Collection: Chrome-Stats

chrome-stats.com



Search extensions

Recently viewed

- Spotify™ & Deezer™ Music Downloader
- GS Auto Clicker-Free Download 2021
- Fraud Risk Scoring
- Autoskip for Youtube
- Maxi Refresher

Stats & analysis tools

- Chrome extension statistics
- Extension explorer
- Keyword explorer
- Publisher explorer
- Advanced search
- Raw data download
- Chrome-Stats extension

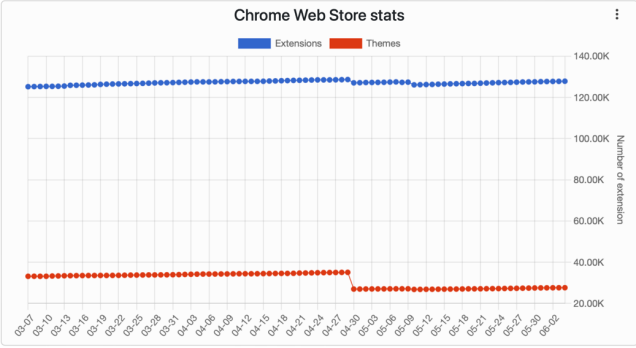
Compare and analyze Chrome extensions

All-in-one platform for competitor research, risk analysis, and growth tracking

Search extensions

127 862 **27 638**

Extensions Themes



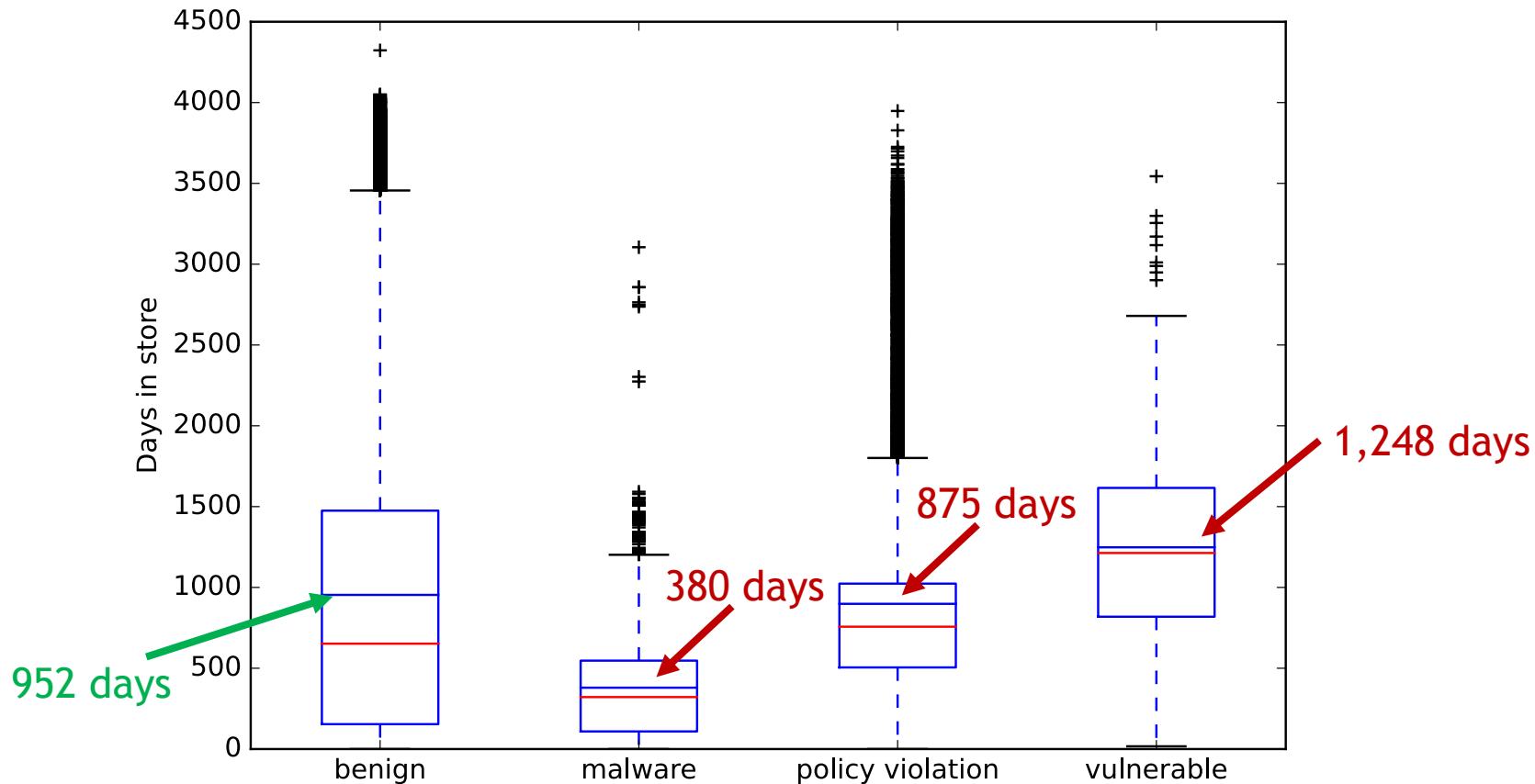
Date	Extensions	Themes
03-07	125,000	35,000
04-30	125,000	35,000
05-05	120,000	30,000
09-02	120,000	30,000

[Explore more Chrome extension statistics](#)

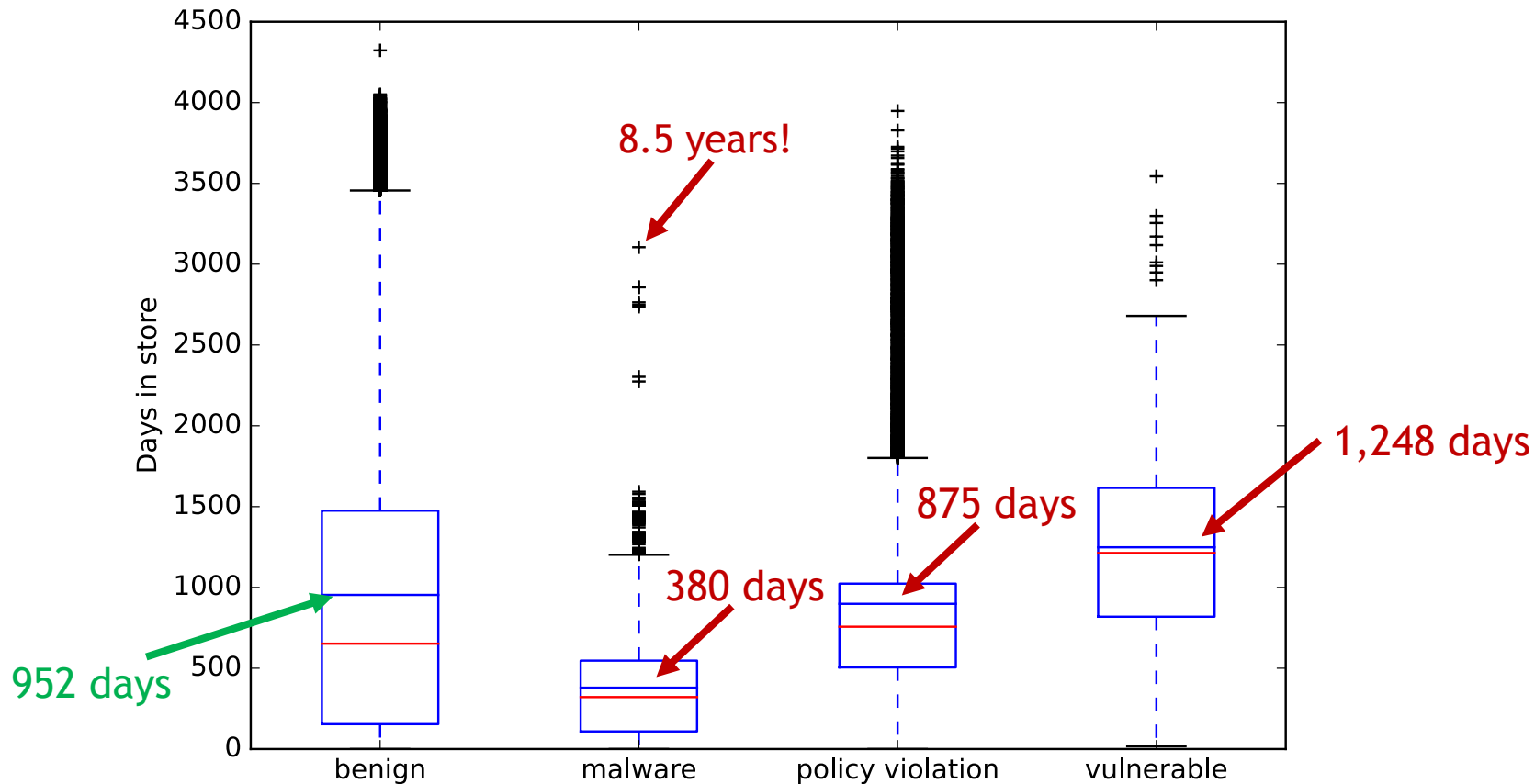
Chrome-Stats makes Chrome extension metrics more accessible to everyone, enable competitive analysis, identify bad actors, and help support the growth of good Chrome extensions.

Category	#Extensions Metadata collected	#Extensions Code collected	When collected
SNE	26,014	16,377	Before May 1, 2023
- Malware-containing	10,426	6,587	Before May 1, 2023
- Policy-violating	15,404	9,638	Before May 1, 2023
- Vulnerable [1]	184	152	March 16, 2021

Number of Days in the CWS



Number of Days in the CWS

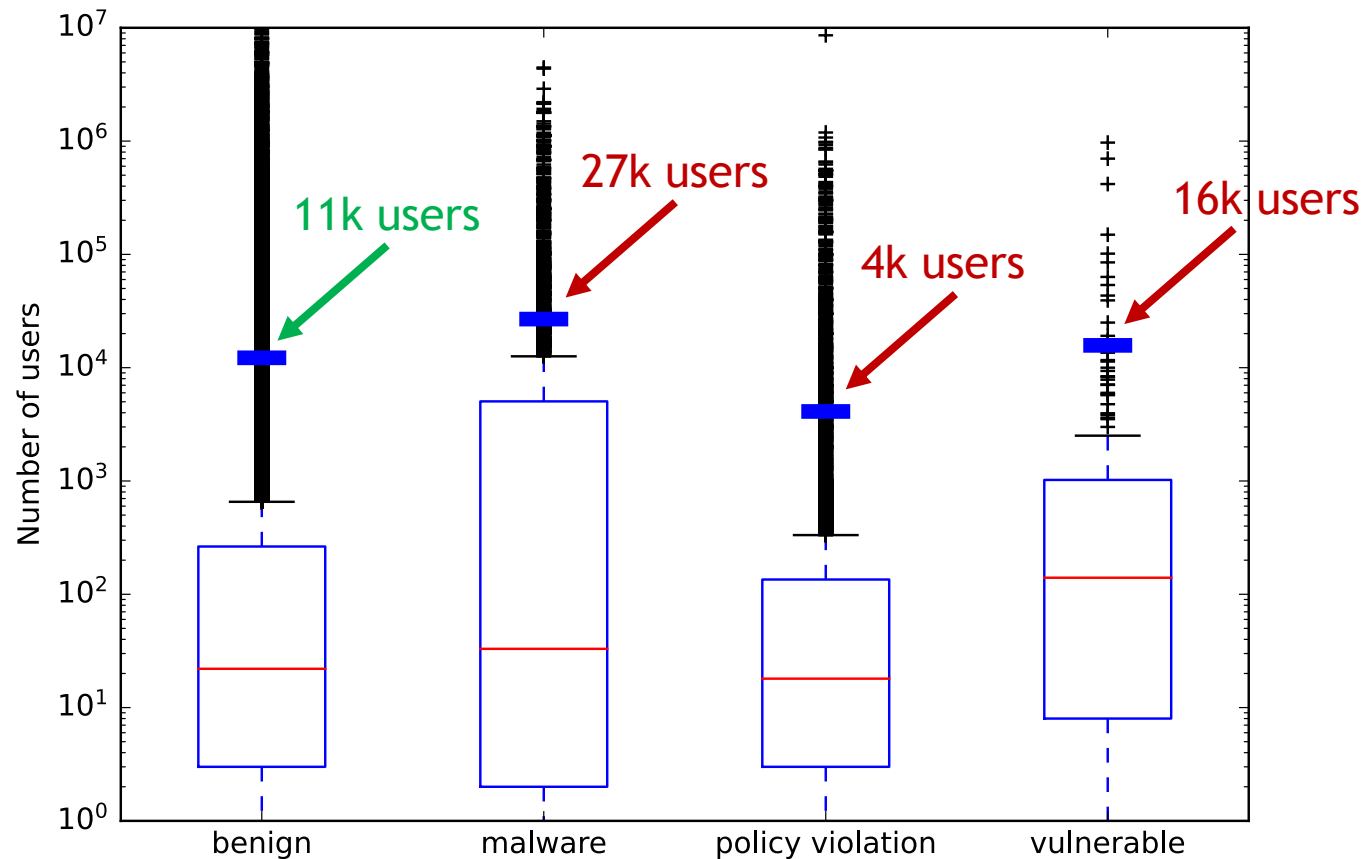


Number of Days in the CWS

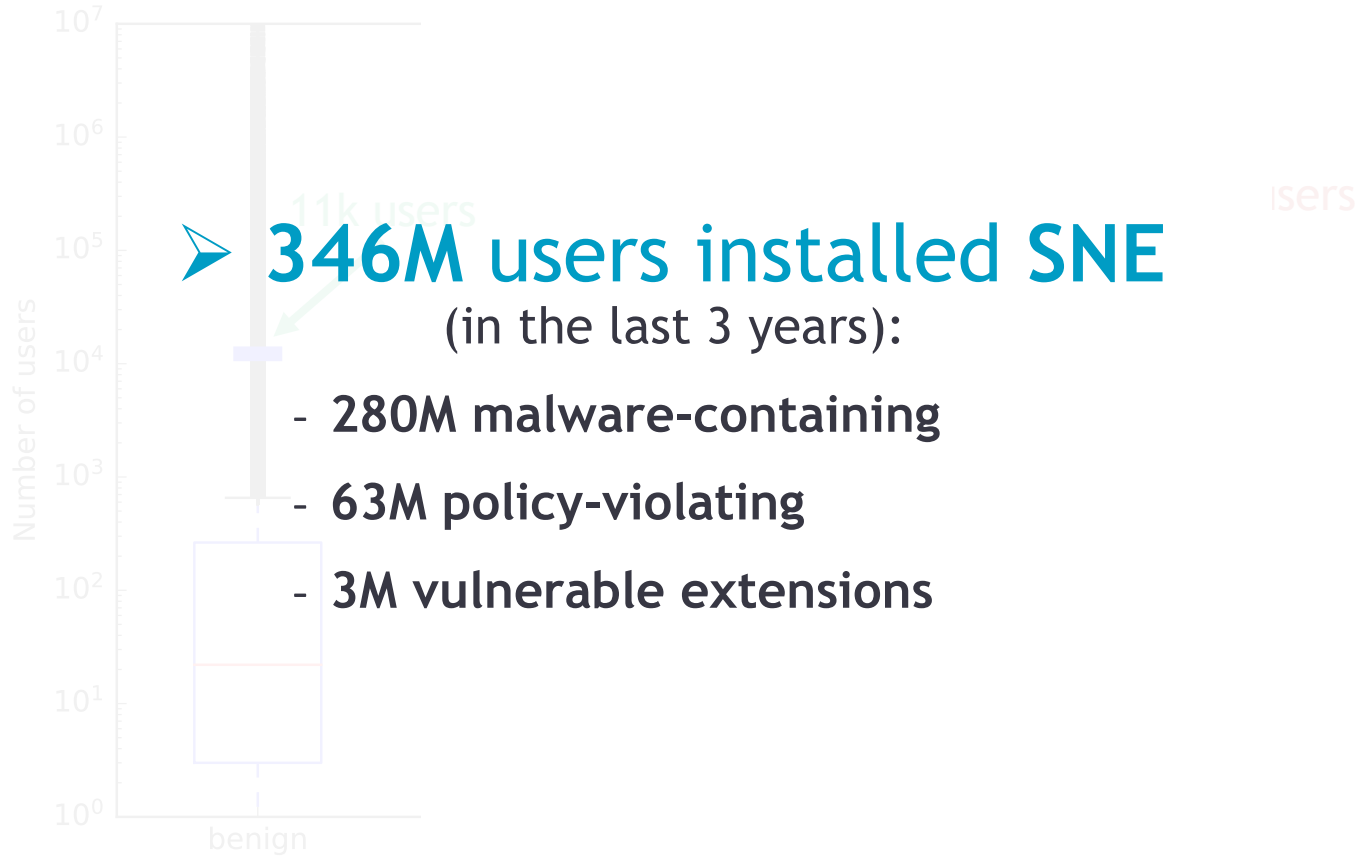


➤ SNE put the security & privacy of Web users at risk *for years*

Number of Users



Number of Users



Media Coverage

Forbes

FORBES > INNOVATION > CYBERSECURITY

280 Million Google Chrome Users Installed Dangerous Extensions, Study Says

Davey Winder Senior Contributor @
Davey Winder is a veteran cybersecurity writer, hacker and analyst.

Follow

Jun 24, 2024, 06:57am EDT



How safe are Google Chrome extensions? SOPA IMAGES/LIGHTROCKET VIA GETTY IMAGES

The Register



Risk of installing dodgy extensions from Chrome store way worse than Google's letting on, study suggests

All depends on how you count it – Chocolate Factory claims 1% fail rate

[Thomas Claburn](#)

Sun 23 Jun 2024 // 10:36 UTC

ADGUARD

A⁵

Subscribe to news

Search blog

AdGuard > Blog > Google is failing miserably at weeding out bad extensions, new research indicates

Google is failing miserably at weeding out bad extensions, new research indicates

July 5, 2024 · 7 min read

TECHSPOT

TRENDING FEATURES REVIEWS THE BEST DOWNLOADS PRODUCT FINDER FORUMS

SECURITY THE WEB MALWARE CHROME

Researchers say 280 million people have installed malware-infected Chrome extensions in the last 3 years

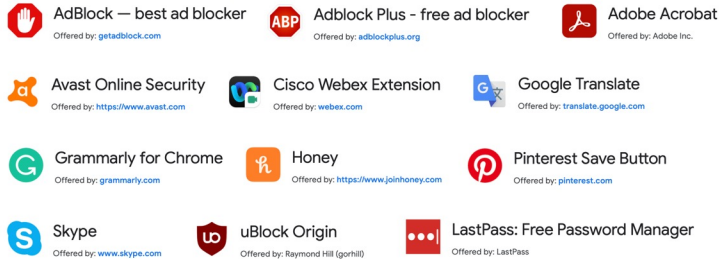
Google claims less than 1% of all installs include malware

By Rob Thubron June 24, 2024 at 11:39 AM



Takeaways – Browser Extension (In)Security

Browser Extensions are Popular



- 125k Chrome extensions totaling over 1.6B active users

Security-Noteworthy Extensions (SNE)

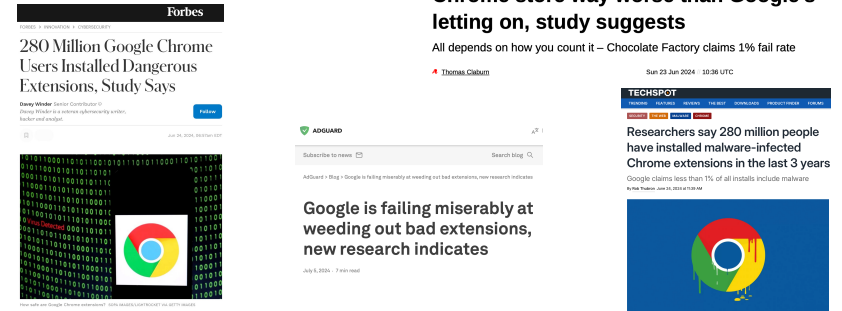
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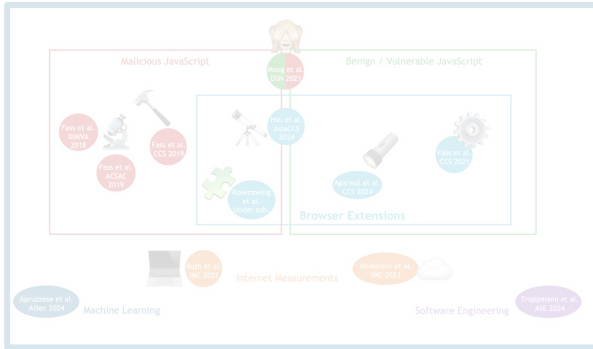
What is in the Chrome Web Store?

- 350M users installed SNE in the last 3 years
- These SNE stay in the Chrome Web Store *for years*
- Extensions have a **short life cycle** in the CWS (60% stay 1 year)
- Critical **lack of maintenance** in the CWS (60% received no update)

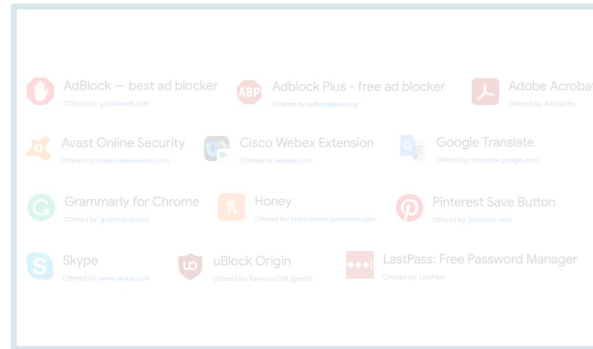


Media Coverage



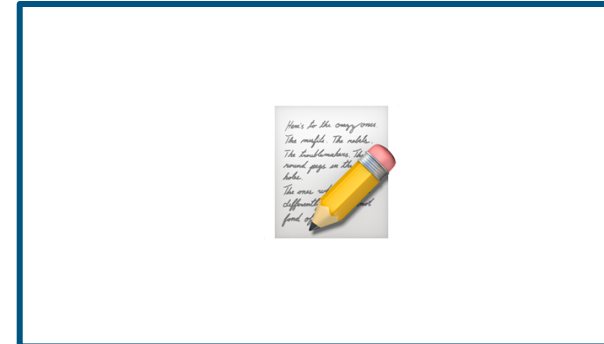


Research Work

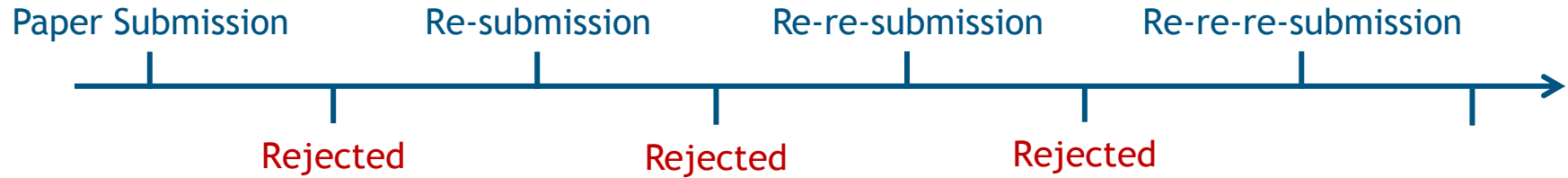


Browser Extensions

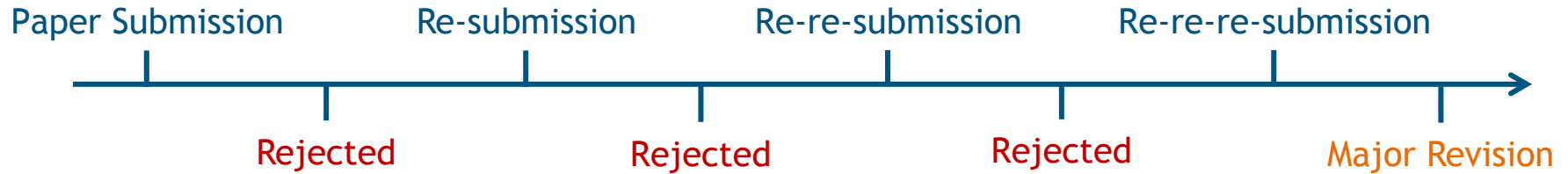
Reviewing



Reviewing Timeline



Reviewing Timeline



How do you Get your Paper Accepted?

- 1) Read the Call for Papers
- 2) Do “good” research
- 3) Write “good” reviews

How do you Get your Paper Accepted?

- 1) Read the Call for Papers
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- Who has reviewed for major security or ML conferences?
(= read the paper and write the review)

- Who has been in the PC of a major security or ML conference?

- Who has reviewed for a workshop / WinterSchool?

Reviewers' Responsibilities

- Participate in the bidding process
- Provide high-quality, constructive, and timely reviews
- Participate in the discussion
- Update your review/score after reading the authors' rebuttal
- Do the above for all cycles/rounds of the conference

- Paper Summary

- Strengths / main reasons to accept the paper

- Weaknesses / main reasons to reject the paper

- Comments for authors

- Objectively evaluate the scientific contribution
 ≠ describe one's subjective opinion

- Comment on the following aspects:
 - Paper’s motivation
 - Overall presentation
 - Technical contribution
 - Experimental evaluation
 - Related work

- Organize your review (sections) and start with the “biggest issues”
- Be specific
- Be constructive

Example

- Weaknesses:
 - ! Out of scope

- Comments for authors:

- Weaknesses:

- ~~! Out of scope~~

- This paper is written mostly from a measurement perspective, and the security implications are not clear to me

- Comments for authors:

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- This paper is written mostly from a measurement perspective, and the security implications are not clear to me

- Comments for authors:

[...]

Unclear security implications

- Weaknesses:

~~! Out of scope~~

- This paper is written mostly from a measurement perspective, and the security implications are not clear to me

- Comments for authors:

[...]

Unclear security implications

This paper is mostly a measurement study of the CWS and would be a better fit for a measurement conference like IMC. It would benefit the paper to clearly highlight the takeaways and security implications of this paper.

Example: Vague Claim

! The motivation of the paper is weak

Example: Vague Claim

~~! The motivation of the paper is weak~~

- Unclear what the problem is: the way the paper is motivated or the *problem* the authors focus on

Example: Vague Claim

~~! The motivation of the paper is weak~~

- Unclear what the problem is: the *way* the paper is motivated or the *problem* the authors focus on
- It would benefit the paper to further discuss the motivation for this work. For example, what is the added value of this paper compared to [X, Y, Z]? The motivation could also be improved by presenting some real-world case studies.

Example: Vague Claim

! Lack of novelty: presence of dangerous extensions in the CWS is well know

Example: Vague Claim

- ~~! Lack of novelty: presence of dangerous extensions in the CWS is well know~~
- Vague and unsubstantiated: provide citations to papers which undermine the novelty of this one

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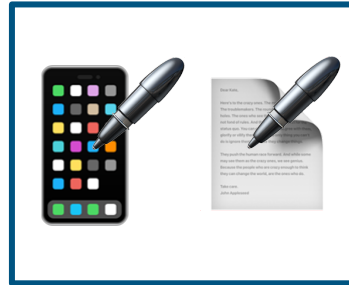
- This paper discusses [X], but the authors do not explain why [X] cannot be applied in this setting nor what the added value of their approach is compared to [X].

- At the beginning (2nd and 3rd year PhD student), takes forever (1–2 days!)
- Now:
 - 1.5 hours to read a paper (13 pages, double column)
 - 1.5–2 hours to write a review

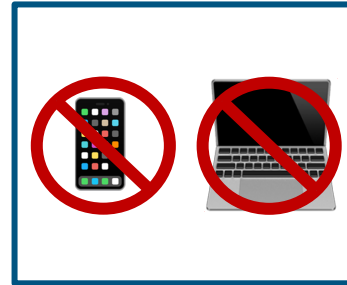
Aurore's Recipe: What do you Need for Reviewing?



Be comfy!



Annotate
easily



NO
distraction



TIME

Aurore's Recipe: My “Reviewing Approach”

- 1) Read the paper + annotate the PDF

- 2) Write the review (possibly on another day)
 - + have a look at the source code
 - + double check some unclear points
 - + check for related work

- 3) Proofread and improve the review (**definitely** on another day)

- 4) Submit the review

Aurore's Recipe: My "Reviewing Approach" Cont'd

- Read the other reviews
- (Optional) rate others' reviews

Review ratings (anonymous reviewer feedback)

Good review

Needs work

Too short

Too vague

Too narrow

Disrespectful

Not correct

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▼ [Your Reviews](#) · [Offline reviewing](#) · [Review preferences](#)

Your reviews have received [5 positive ratings](#).

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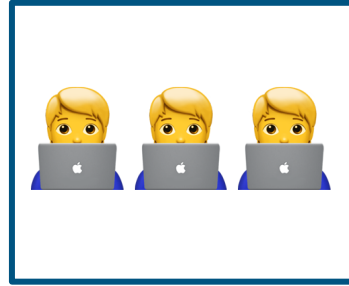
Not correct

- Actively participate in the discussion
- Read the authors' rebuttal
- Update my review (and maybe my score) after reading the rebuttal
- In case of a revision, propose some revision criteria

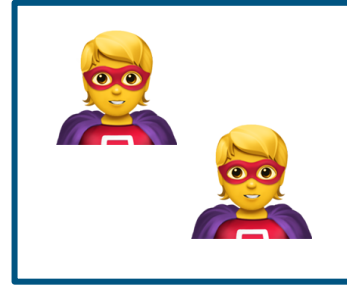
Who Will be Reading your Review?



Authors



Other
reviewers



PC / track
chairs



YOU

- Objective of reviews:
 - Encourage and help the authors to produce a better work, independently of the reviewers' recommendation
 - Help the PC / track chairs reach a decision

Reviewers' Responsibilities

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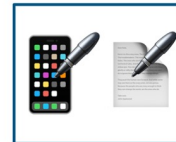
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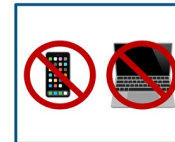
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