

# Where You're Logged In: Analyzing The Usability Of Device Activity Pages

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## PURPOSE

The purpose is to conduct a study with at least 100 participants using a simulated version of the 'Security and Privacy' part of 10 popular web services (Twitter, Facebook, Microsoft, Google, LinkedIn, GitHub, Adobe, Yahoo!, Pinterest, and Netflix) to investigate its quality, which is critically important with the rise of hackers and other illegal activity.

- Is the user able to view account session data?

- Does it seem like the user is able to efficiently navigate to unfamiliar sessions?

- In the bigger picture, do these social media websites do a good job of allowing the user to easily view activity and determine if account remediation is necessary?

- After looking at the data, what aspects make a social media website good for determining unfamiliar activity?

- What are some of these sites lacking?

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## INTRODUCTION

**Account Remediation is a systematic process to re-secure a compromised account or provide security to the account from a proactive defensive mechanism perspective.**

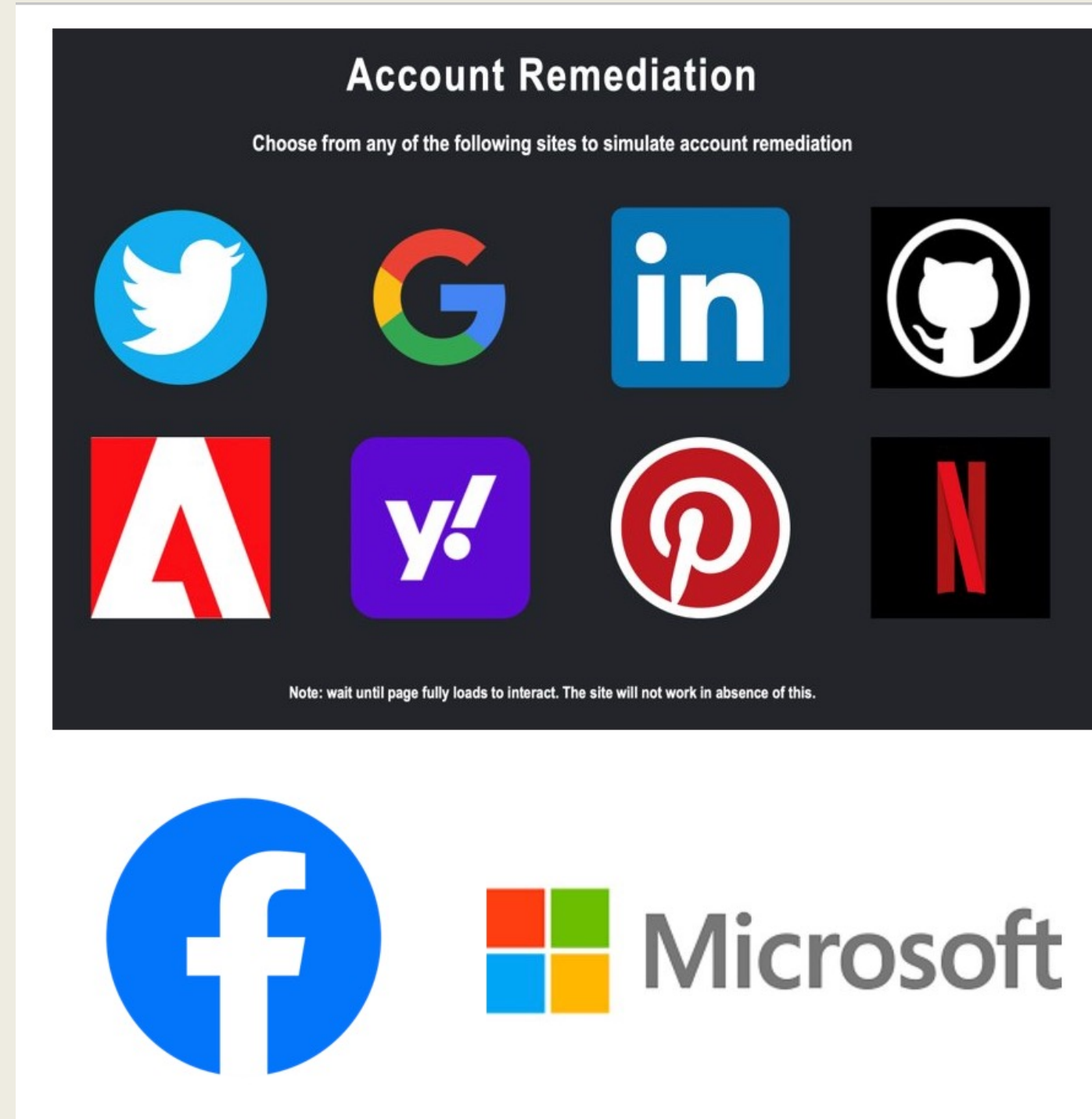
This remediation process consists of five phases[1]:

- Discover the compromise by noticing suspicious activity,
- Recover access to the account if it was lost or compromised,
- Limit access to the account to prevent unauthorized access,
- Restore the service of the account to its pre-compromised state, and
- Secure the security of the account to prevent future compromises.

Web services provide users with advice for account remediation through help pages. However, account remediation is a technically complex process and advice differs drastically among web services in terms of completeness [1,2]. Incomplete account remediation advice does not fully help re-secure a compromised account. Therefore, investigating the quality of the 'Security and Privacy' part of any web page is critically important and serves as our main research agenda.

## MOTIVATION

This research focuses on the first account remediation phase, which requires users to discover the compromise. We do this by focusing on the device activity pages. As an entry point to this research, we analyzed the device activity pages of 10 popular websites:

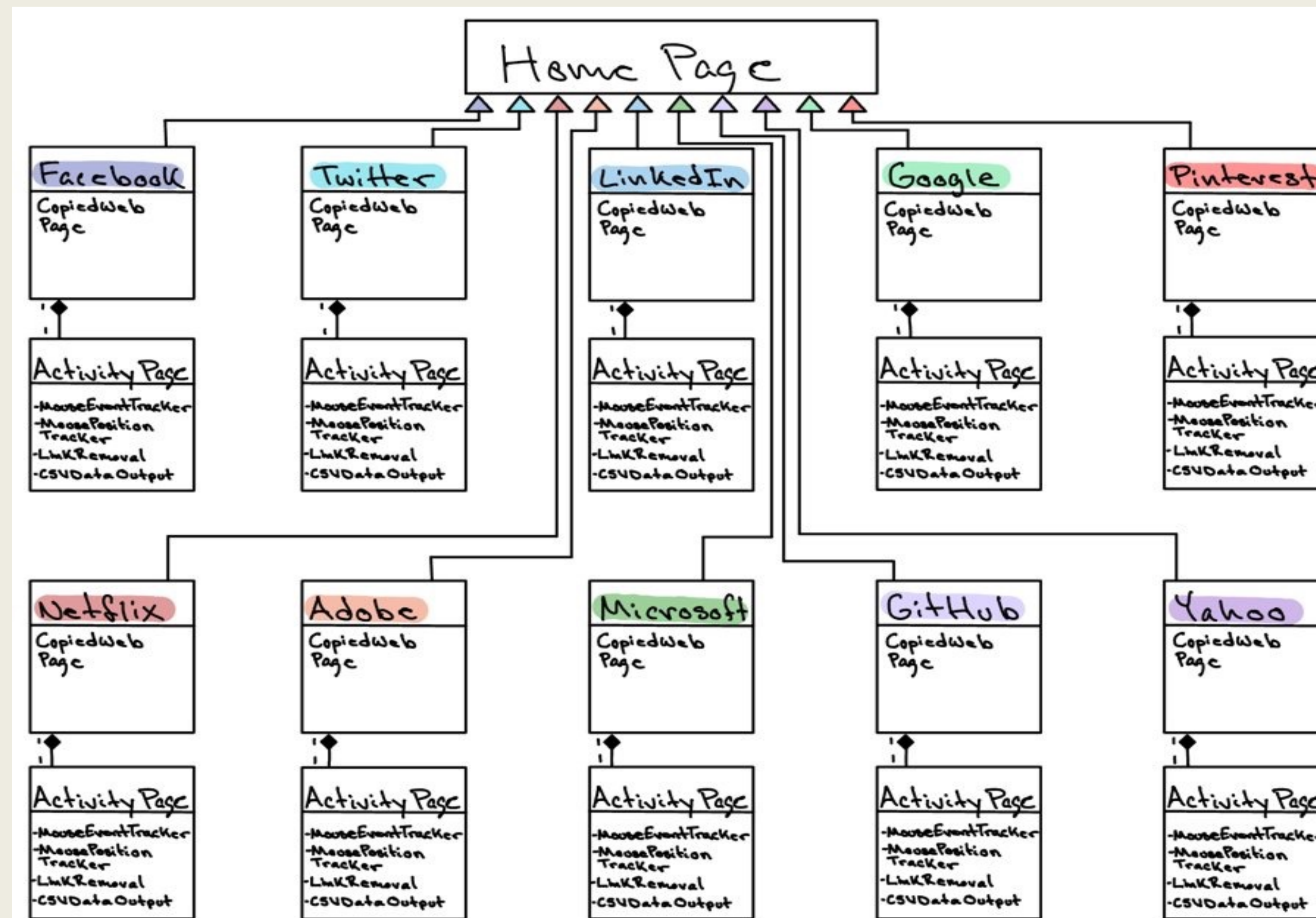
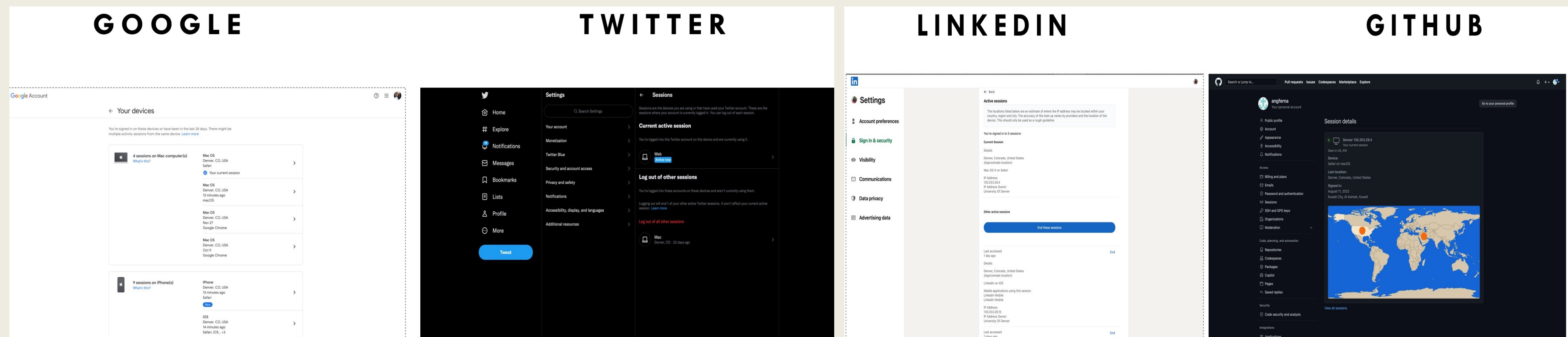


## INITIAL EVALUATION

Table 1: Information contained on the 10 analyzed device activity pages.

	Adobe	Facebook	GitHub	Google	LinkedIn	Microsoft	Netflix	Pinterest	Twitter	Yahoo
Browser	●	●	●	●	●	●	○	○	○	○
Country	●	●	●	●	●	○	●	●	○	○
State	○	●	●	●	●	○	○	○	○	○
City	●	●	●	●	●	○	●	●	●	○
Date	●	●	●	●	●	●	●	●	●	●
Time	○	●	○	○	○	○	●	●	●	○
Device	○	●	●	●	○	○	●	●	●	○
Graphics	○	●	●	●	○	●	○	○	●	○
Hidden Sessions	○	○	○	○	○	●	○	○	○	○
IP Address	○	●	●	○	●	●	●	●	○	●
Network Owner	○	○	○	○	●	●	○	○	○	●
Operating System	●	●	●	●	●	●	○	●	●	●

Table 1. gives an overview of the analysis regarding the available information. As can be seen, there are no two pages with the same amount of information. This raises the question of what type of information actually needs to be present to enable users to make informed decisions when asked to tell legit and malicious sessions apart.



## NEXT STEPS

- In-lab user study to understand better how users interact with these pages, which information helps them to tell legit and malicious logins apart, and ultimately improve the design of device activity pages.

## REFERENCES

1. Lorenzo Neil, Elijah Bouma-Sims, Evan Lafontaine, Yasemin Acar, and Bradley Reaves. 2021. Investigating Web Service Account Remediation Advice. In Symposium on Usable Privacy and Security (SOUPS '21). USENIX, Virtual Conference, 359–376.
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