Software Security Research Group (SSRG),
University of Ottawa
In collaboration with IBM

The “Game Hack” Scam

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The Problem

We provide an analysis of a social engineering scam targeting **games players:**

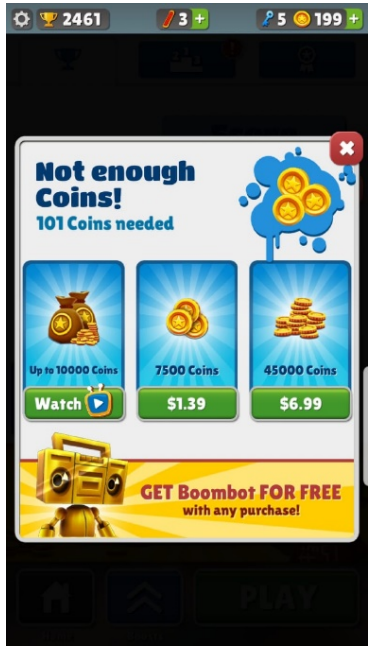
the **Game-Hack Scam** (**GHS**).

GHS in a nutshell:

1. Attackers claim that they can hack a specific game and provide the victim with free, unlimited resources or other advantages for their favorite game.
2. To obtain these claimed advantages, the victims are asked to complete one or more tasks, called "offers".
3. These so-called offers include, but are not limited to, subscriptions to questionable services and installation of executable files on the victim's device.

Games have “resources”

PUBG



Subway Surfers

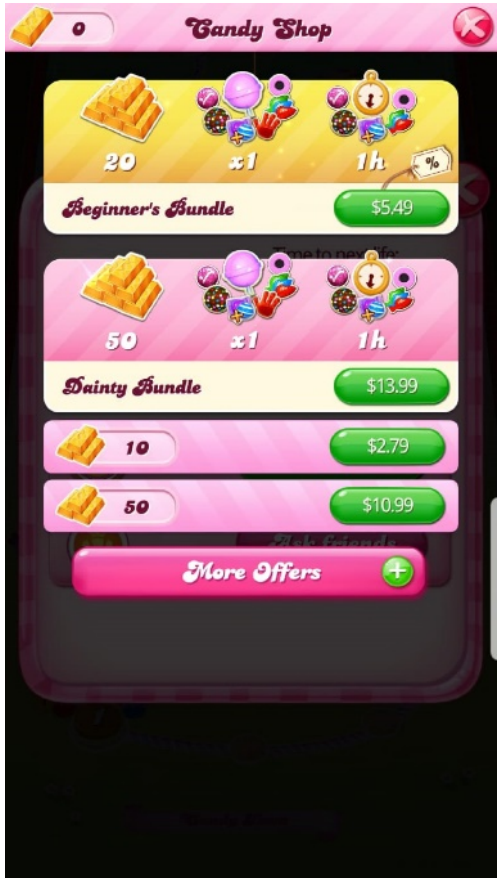
Toon Blast

My Talking Tom

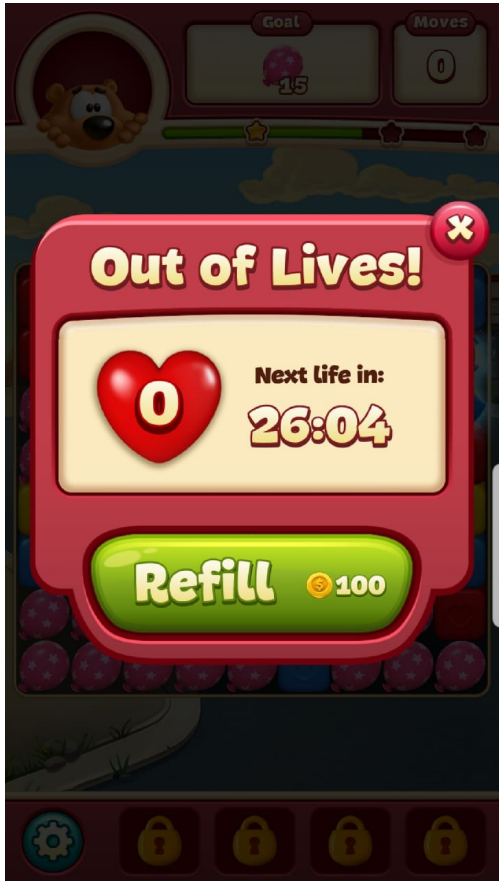
Why Players Buy Resources?

- Used to buy in game outfits.
- Used to by in game extra lives.
- Used to by in game helper tools.

PUBG

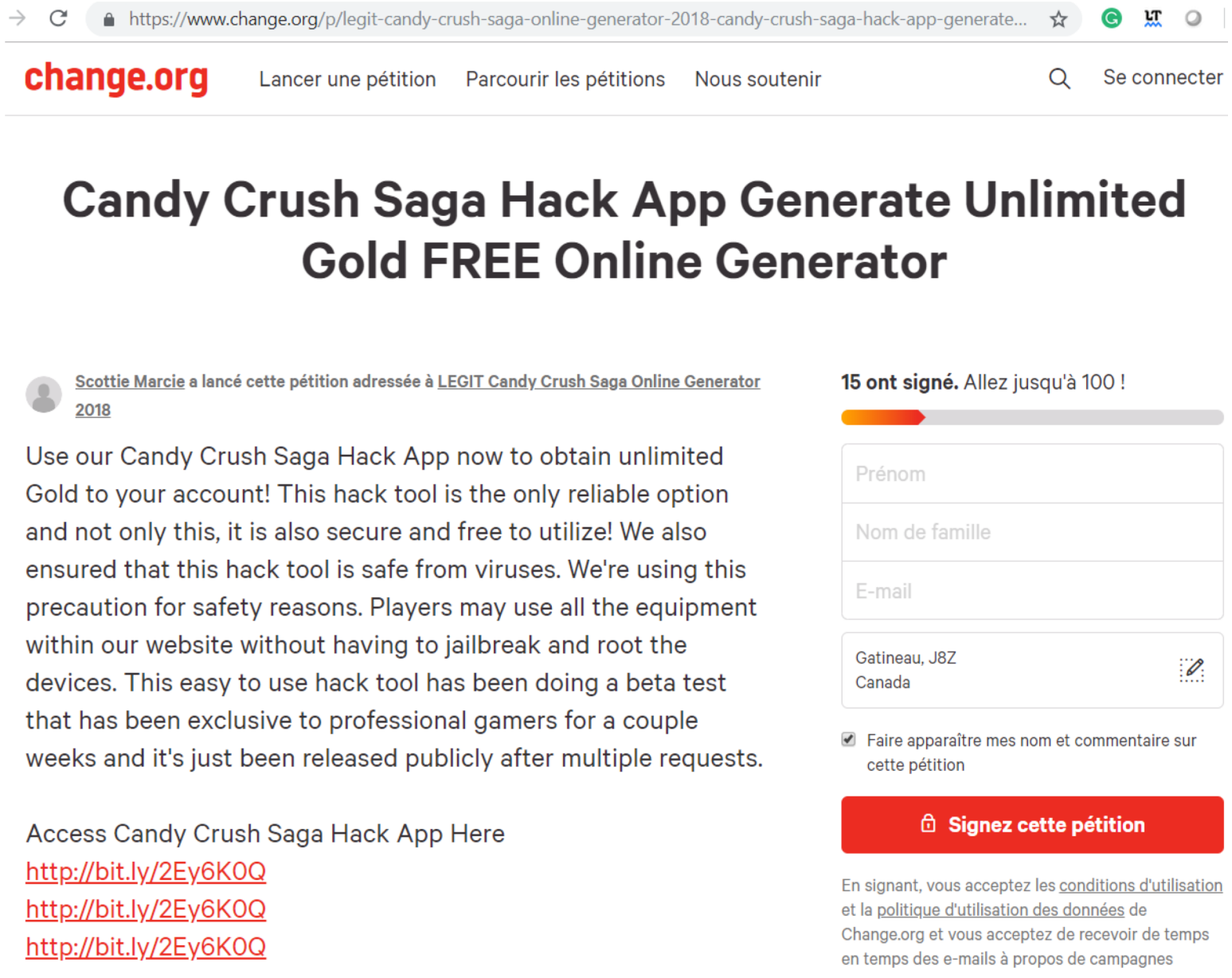


Candy Crush



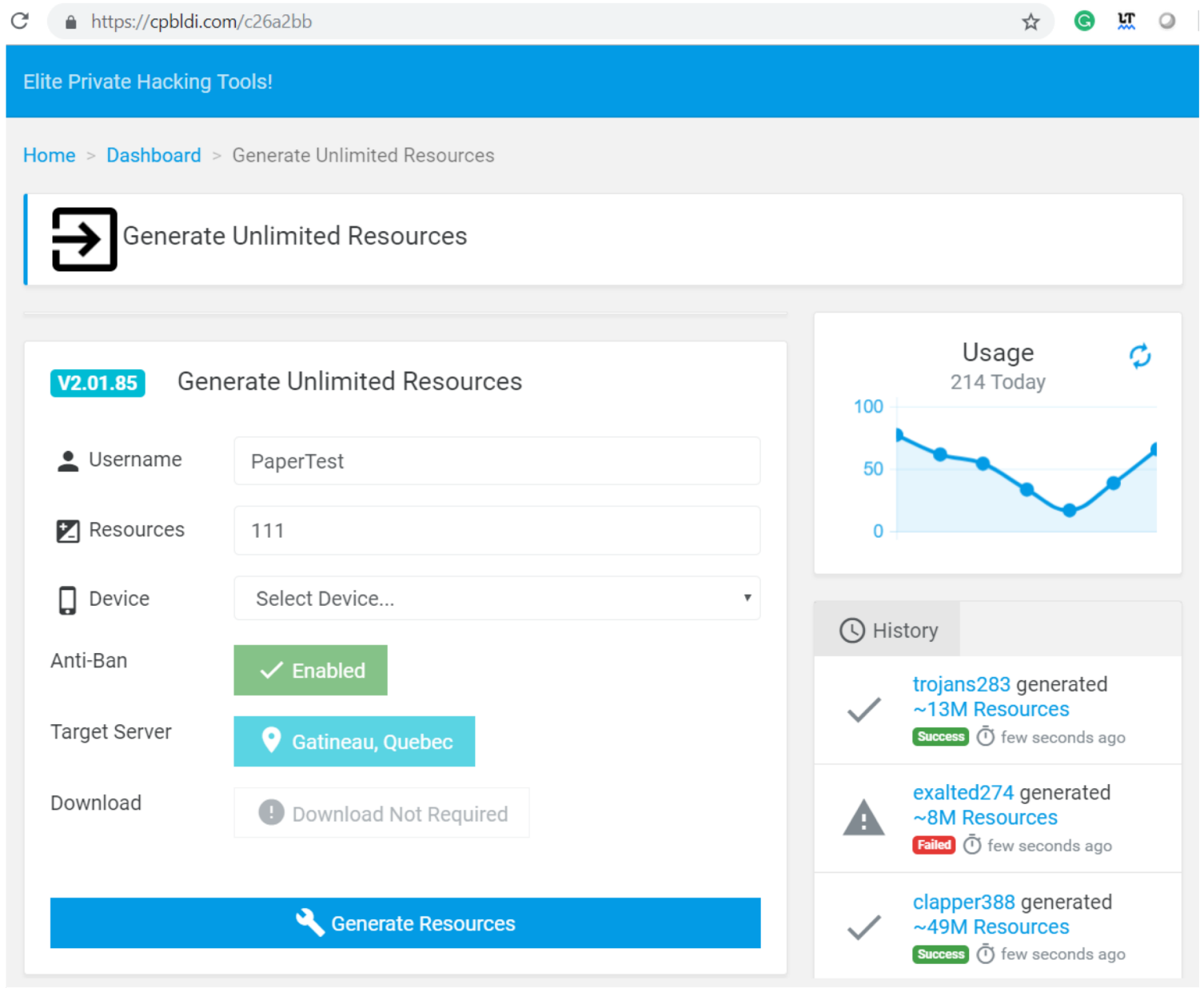
Toon Blast

GHS at Work


https://www.change.org/p/legit-candy-crush-saga-online-generator-2018-candy-crush-saga-hack-app-generate...
change.org
Lancer une pétition
Parcourir les pétitions
Nous soutenir
Se connecter
Candy Crush Saga Hack App Generate Unlimited Gold FREE Online Generator
Scottie Marcie a lancé cette pétition adressée à LEGIT Candy Crush Saga Online Generator 2018
Use our Candy Crush Saga Hack App now to obtain unlimited Gold to your account! This hack tool is the only reliable option and not only this, it is also secure and free to utilize! We also ensured that this hack tool is safe from viruses. We're using this precaution for safety reasons. Players may use all the equipment within our website without having to jailbreak and root the devices. This easy to use hack tool has been doing a beta test that has been exclusive to professional gamers for a couple weeks and it's just been released publicly after multiple requests.
Access Candy Crush Saga Hack App Here
http://bit.ly/2Ey6K0Q
http://bit.ly/2Ey6K0Q
http://bit.ly/2Ey6K0Q
15 ont signé. Allez jusqu'à 100 !
Prénom
Nom de famille
E-mail
Gatineau, J8Z
Canada
Faire apparaître mes nom et commentaire sur cette pétition
Signez cette pétition
En signant, vous acceptez les conditions d'utilisation et la politique d'utilisation des données de Change.org et vous acceptez de recevoir de temps en temps des e-mails à propos de campagnes

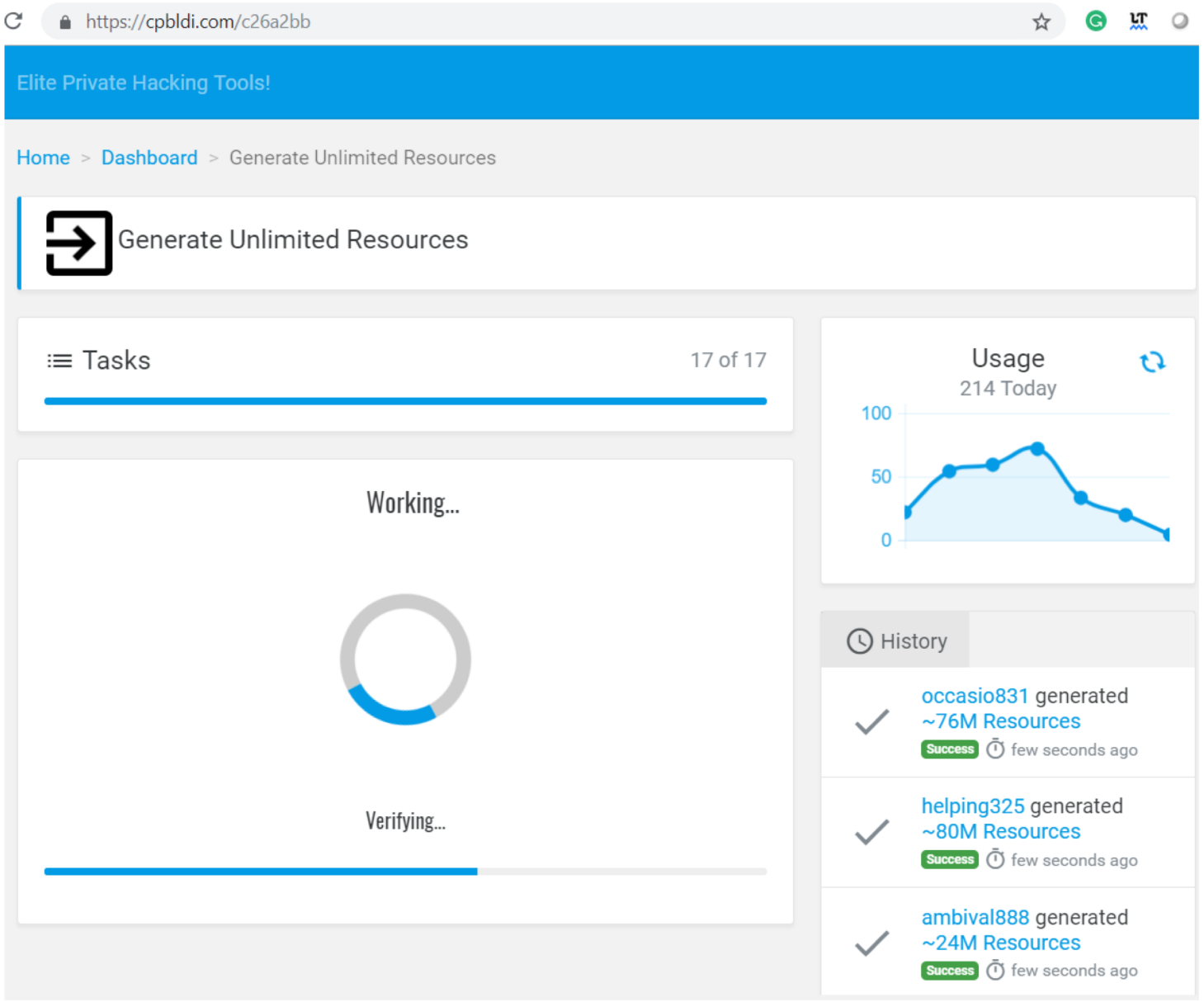
GHS at Work

GHS instance (GHSi)



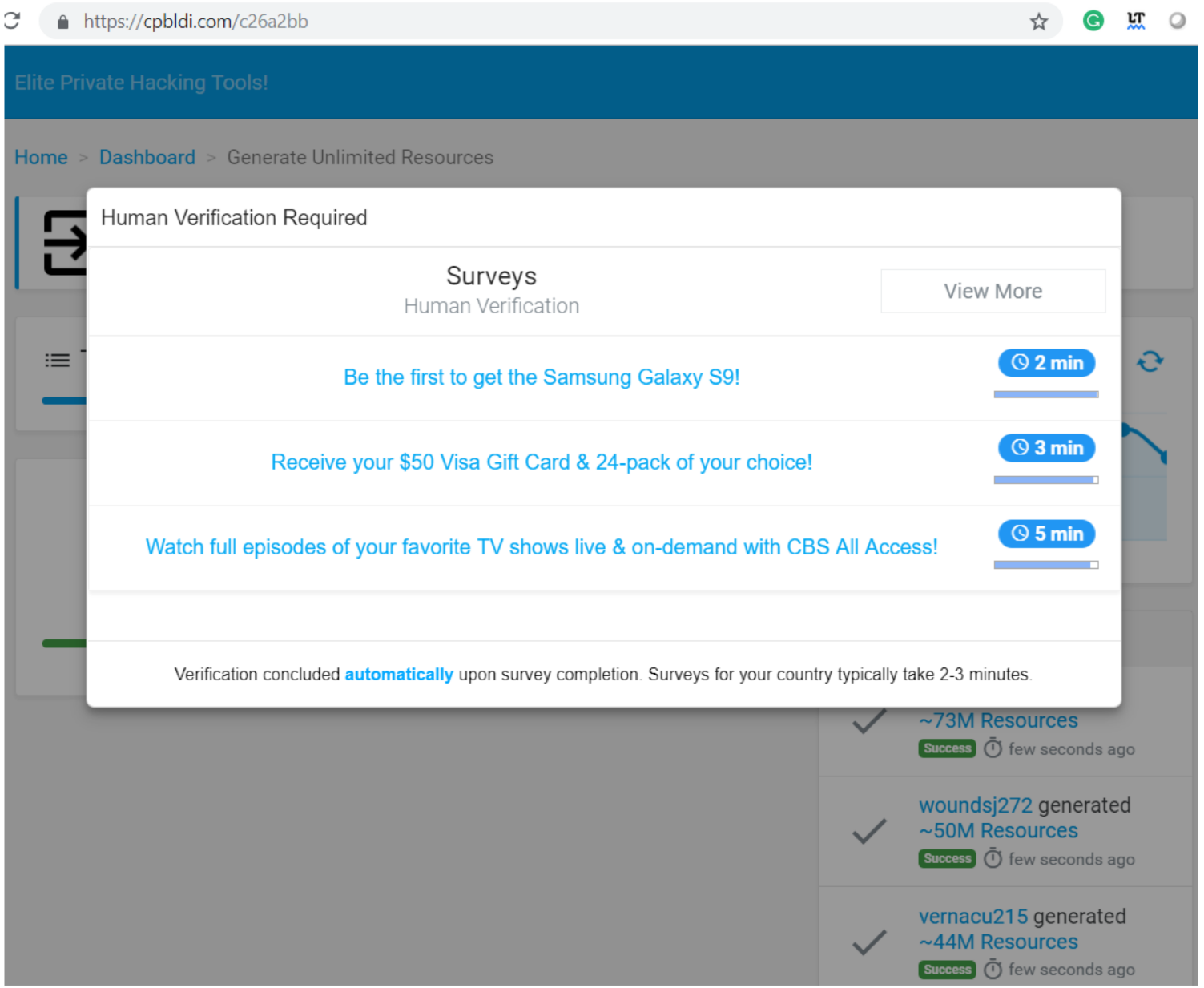
GHS at Work

GHS instance (GHSi)



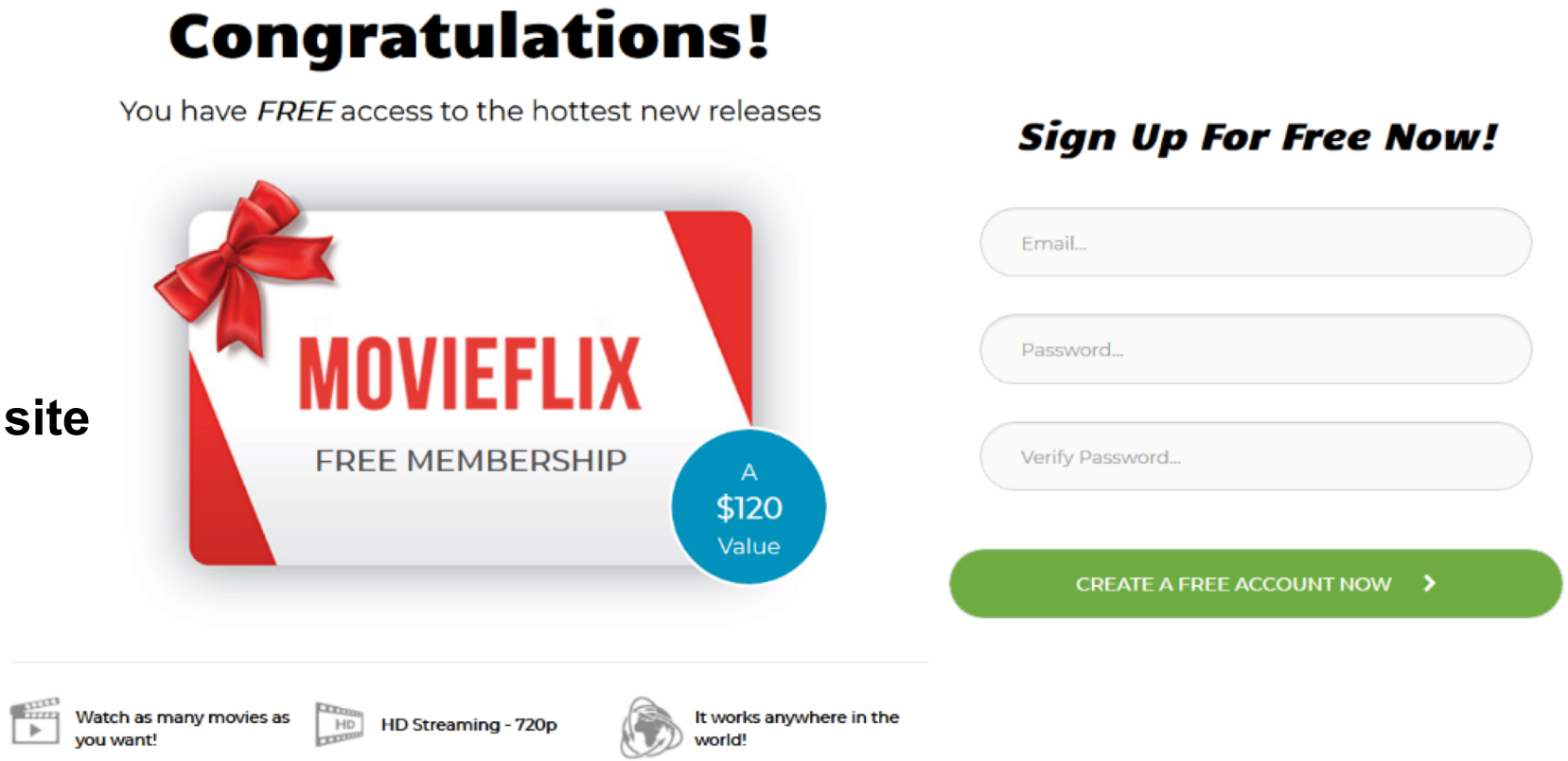
GHS at Work

“Content Locker” with list of tasks to be completed



GHS at Work

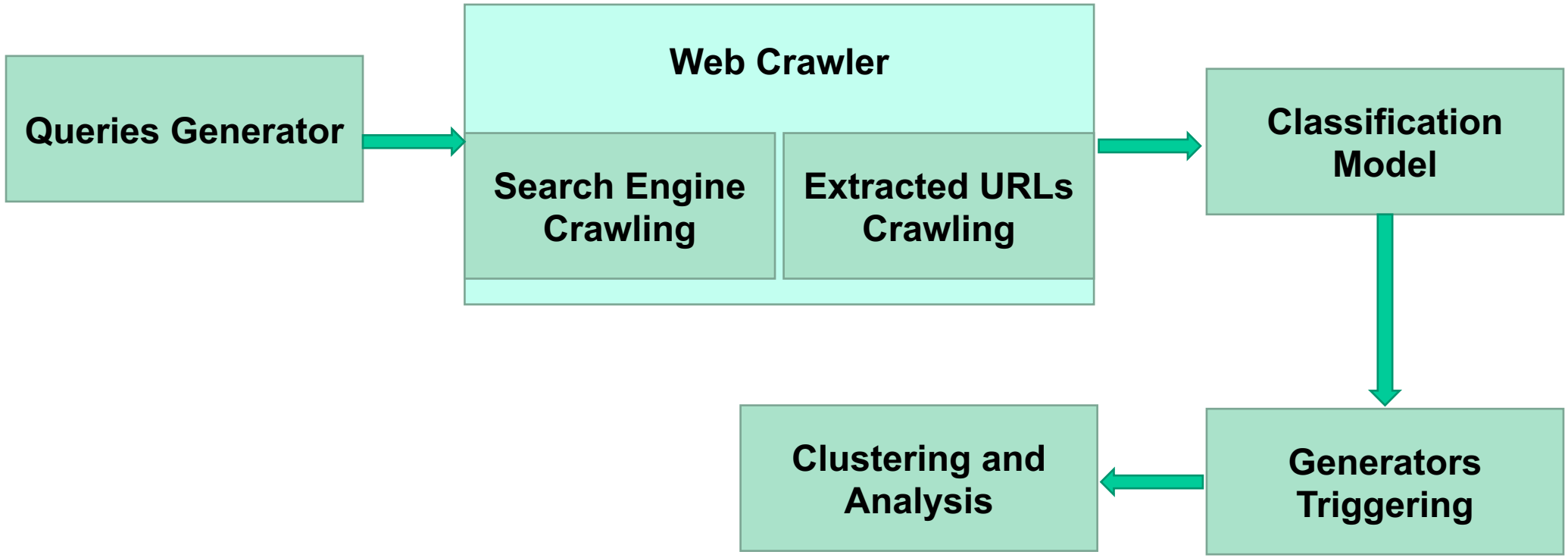
Task: subscription to a site



GHS at Work

Task: installation of executable

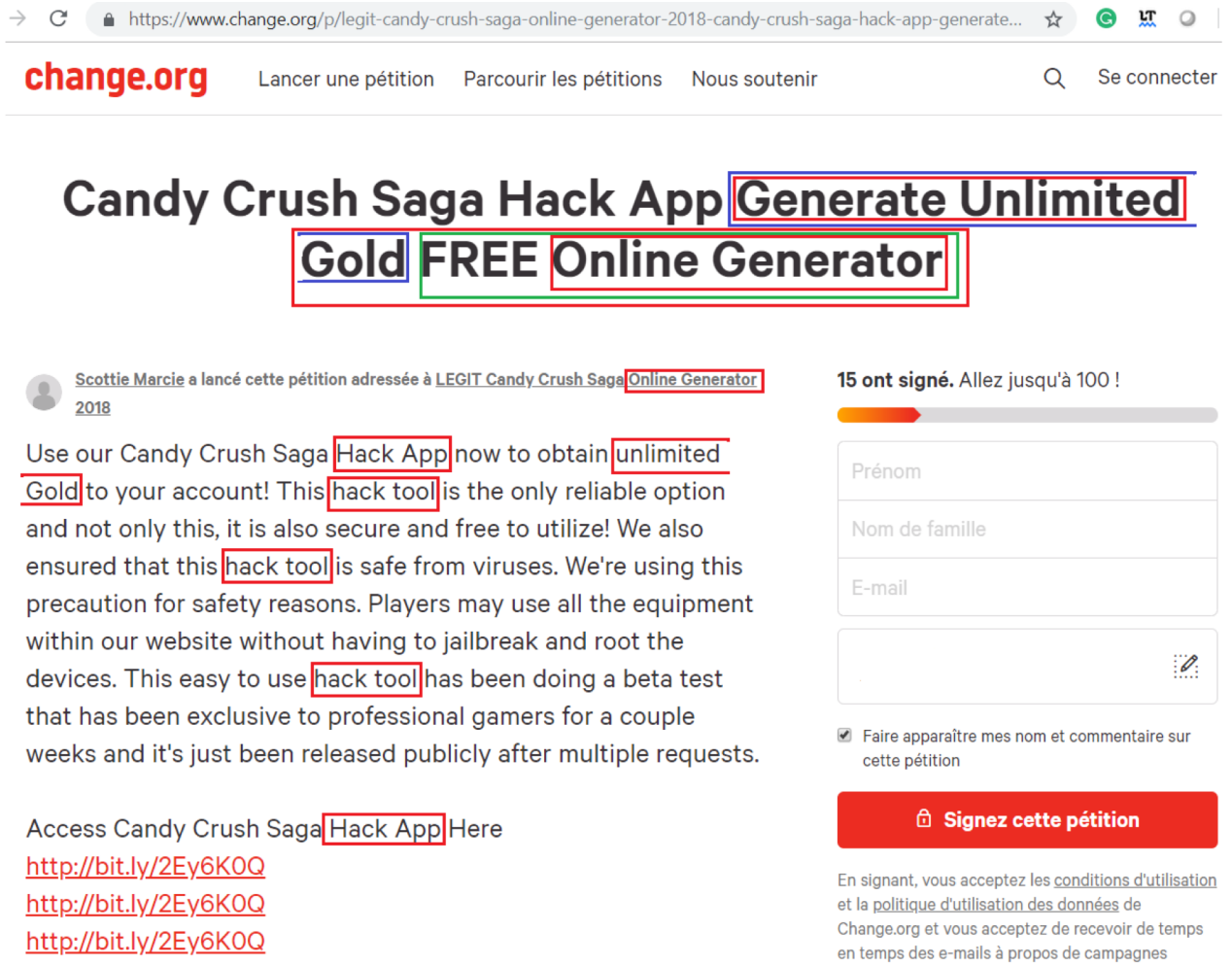
Methodology



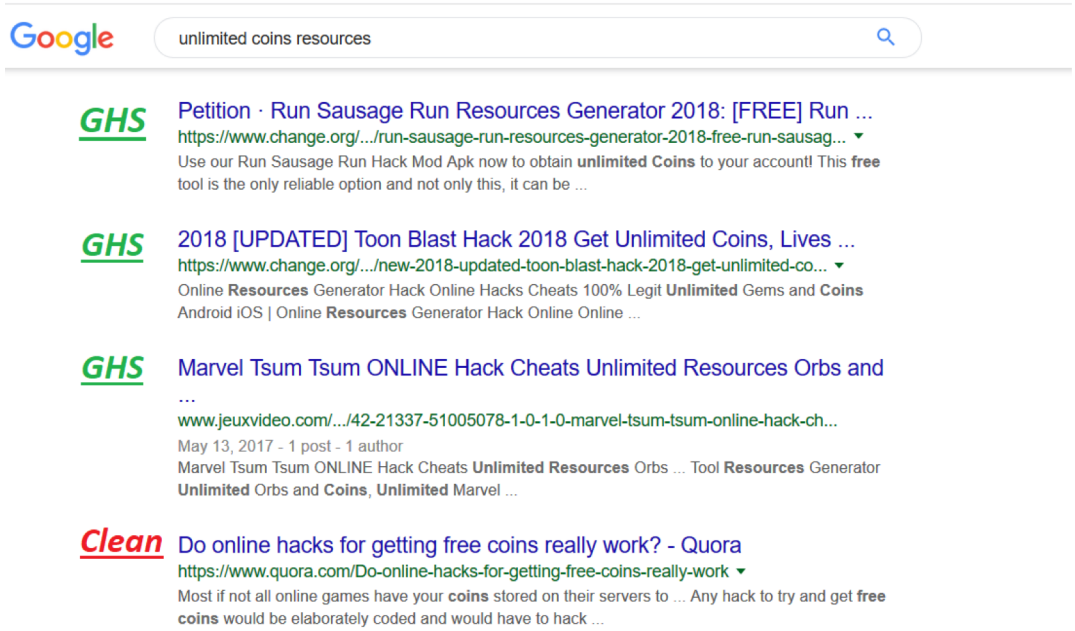
Methodology/Queries Generator

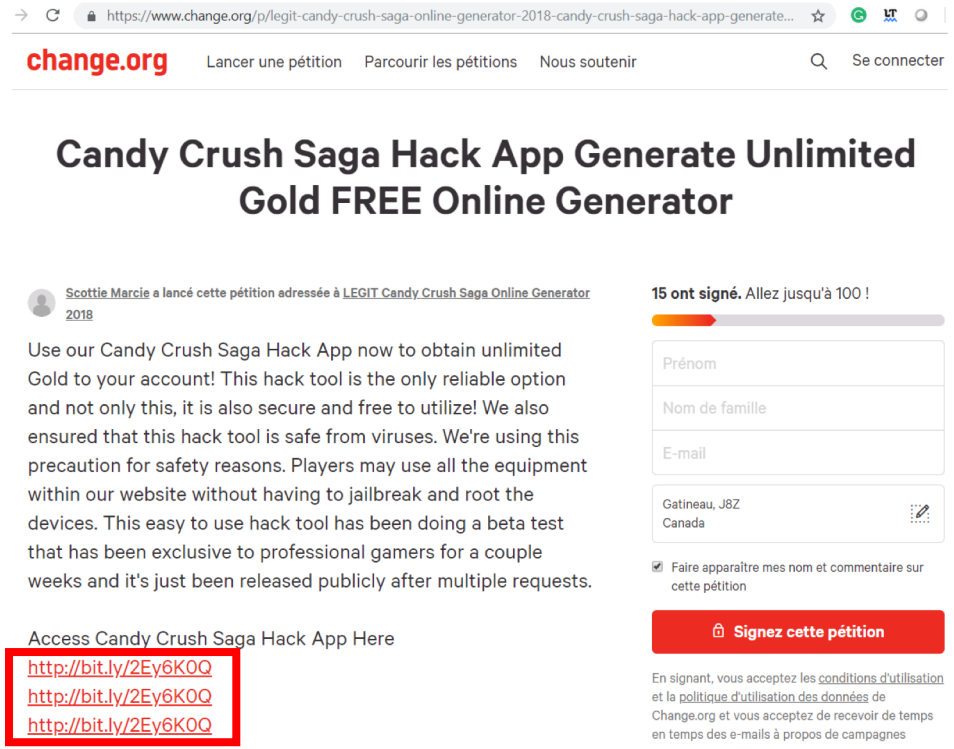
1. Extracted a bag of **1,964** words from our initial set of pages, and manually selected **39** words that relates to GHS.
2. Generated 1-, 2- and 3-grams and manually selected **410** queries.
3. Extracted a set of **966** games from FB, iTunes, and play store, and permutated them with **9** different queries which generated **8,694** new queries.

4. In total, we have generated **9,104** queries,
searched daily on
Google, Yahoo, Bing and **1and1**



Methodology/Web Crawler





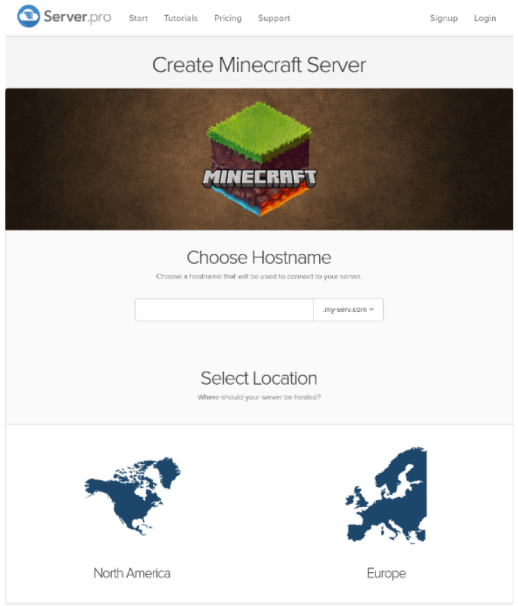
Search Engine Crawling

Extracted URLs Crawling

GHS links were posted in many popular websites including **Jeuxvideo.com**, **change.org**, **pinterest.com**, **linkedin.com** and even **researchgate.net.**

Methodology/Classification Model: SVM

- Support-Vector Machine classification based on pages' text.
- **96.7%**TPR and **2.1%**FPR using 10-fold cross-validation on **470** clean pages and **495** GHS pages.



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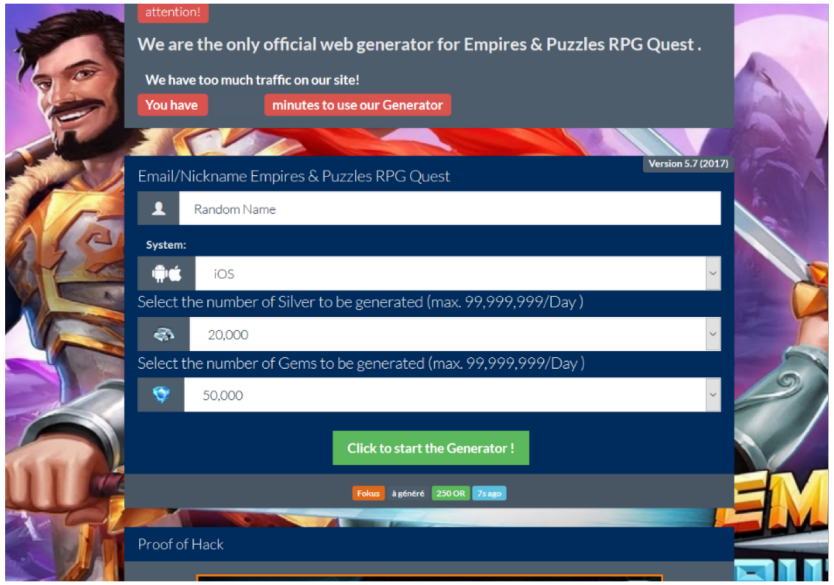


Clean Page

GHS Page

Collected Dataset

Two different crawls were conducted:

1) Collected URL's from different search engines.

#URLs	#Reachable URLs	#English Pages	#1k Alexa Domains URLs	#GHSis	%GHSis
1M	657,578	576,476	326,862 (**NO** GHSis)	11,969	2.07% (4.7% without 1k Alexa URLs)

2) Extracted URL's from the pages collected in step 1 (excluding pages on 1k Alexa domains).

#URLs	#Crawled URLs	#Reachable URLs	#English Pages	#GHSis	%GHSis
18.5M	1.5M	497,986	378,147	21,353	5.6%

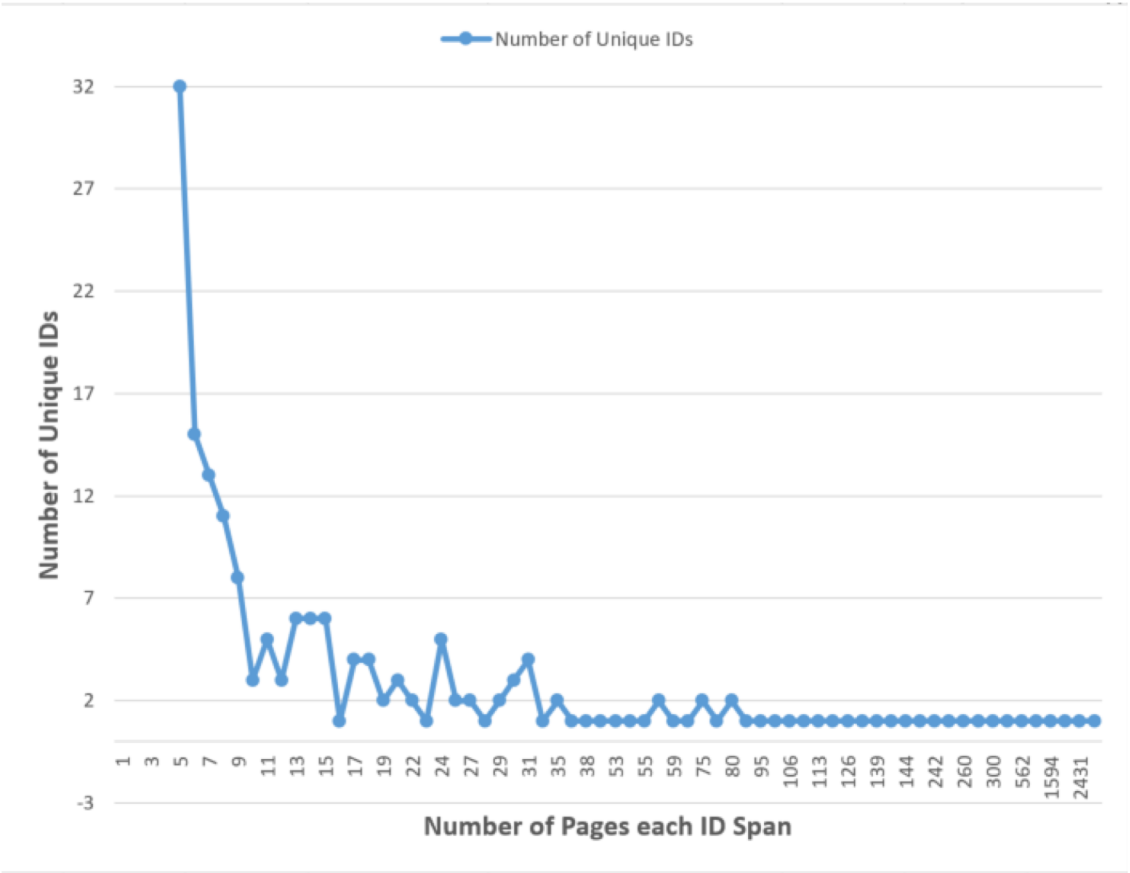
Clustering and Analysis

Several analyses were conducted:

- The relationship between the different GHSis, the scammers who publish them and the games they target.
- Analyzing the Content Lockers, the offers domains and the relationship between the different CLs and the offer domains.
- GHS and offers domains analysis.
- Bitly Click Through Analysis
- Bitly Monthly URL Clicks and Creation Analysis

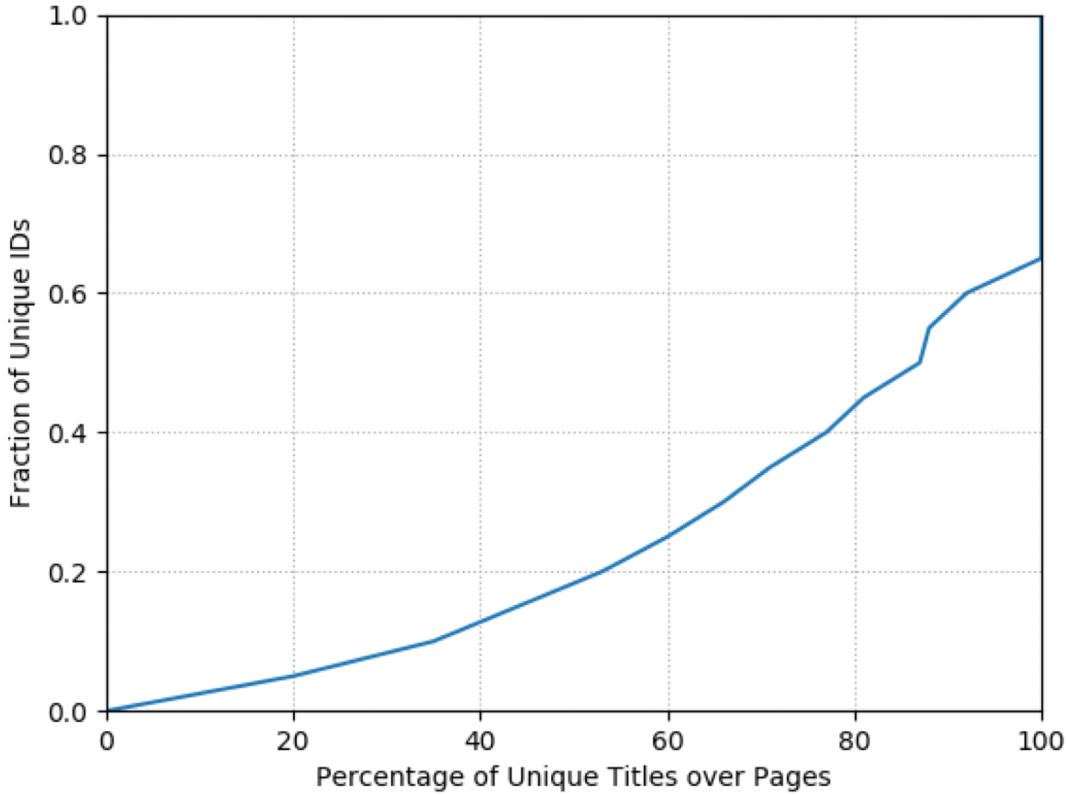
GHS Analysis / GHS groups

- Identified **7** identifiers types used for various purposes such as statistics collection (***histats.com***).
- Some identifiers come from the tools used to create GHS templates (***cpabuild.com*** and ***ogads.com)***
- **4,040** unique IDs, **95.2%** found on fewer than **5** pages.



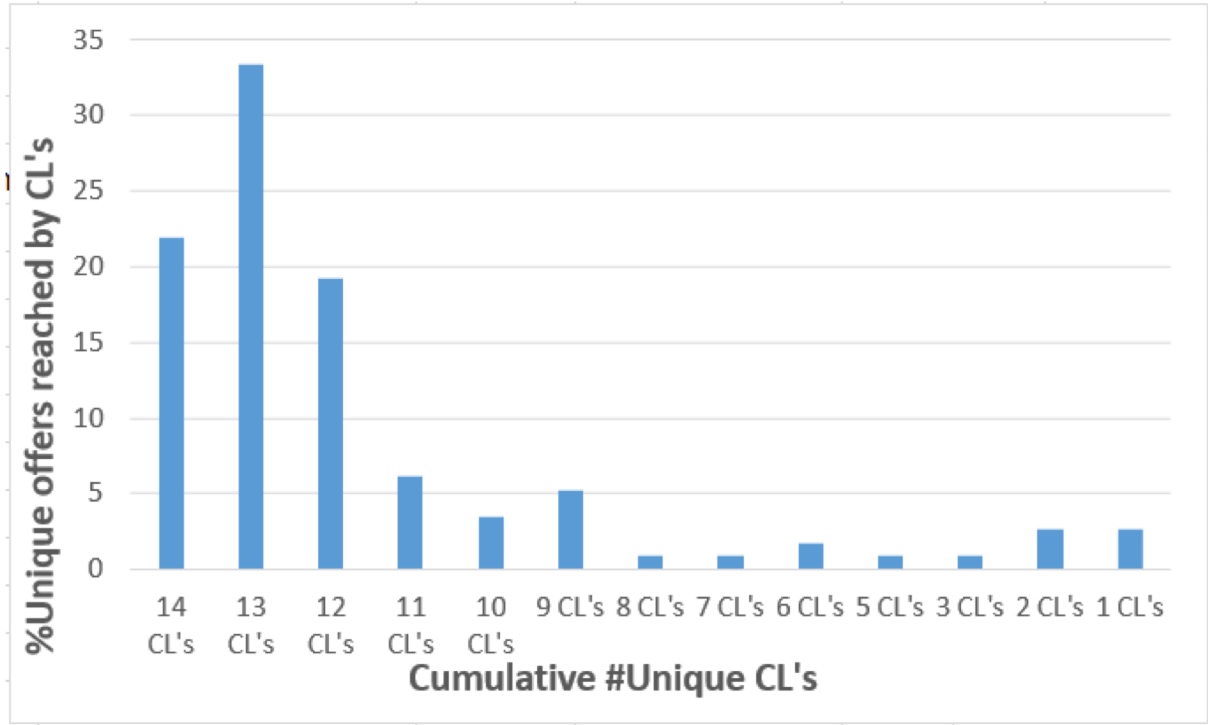
GHS Analysis / GHS groups 2

- We have **19k** different pages title in a corpus of **33K** GHSIs.
- We found generic titles such as "**Generate Resources For Your Game!**" in **1,263** GHSIs.
- The analysis is conducted on IDs found on at least **5** GHSIs.



Content Locker (CL) / Offers Analysis

- Analysis conducted on **42** seemingly unrelated GHSis (different domains).
- Identified only **14** unique CLs.
- **41%** of the GHSis CLs belongs to ***cpabuild.com*** and ***ogads.com***.
- **115** offers Domains were collected.
- **22%** of the domains reached by all **14 CLs**, and **75%** of the domains reached by at least **12 CLs**.
- Offers domains targets mainly surveys and online subscription websites such as music, movies and books websites.



GHS and Offers domains Analysis

- Email/Phone reaching out with **10** different offers websites with online bookstore as a service:

1) **9** out of the **10** has the same reply “A representative will follow-up with you as soon as possible. You can view the tickets progress online. ”
2) Only **1** website replied back asking to create a **free** account with a visa with at least **50$** to check the offered content.
3) Similar case with a direct call, all sites has similar auto response with a repeated cycle. We succeeded once to get a human response with similar answer as in **2**.

GHS and Offers domains Analysis

❖ Blacklists analysis

Malwaredomains: http://www.malwaredomains.com/

SANS: https://isc.sans.edu/suspicious_domains.html

abuse.ch: https://abuse.ch/

Malc0de database: http://malc0de.com/database/

malwaredomainlist: https://www.malwaredomainlist.com

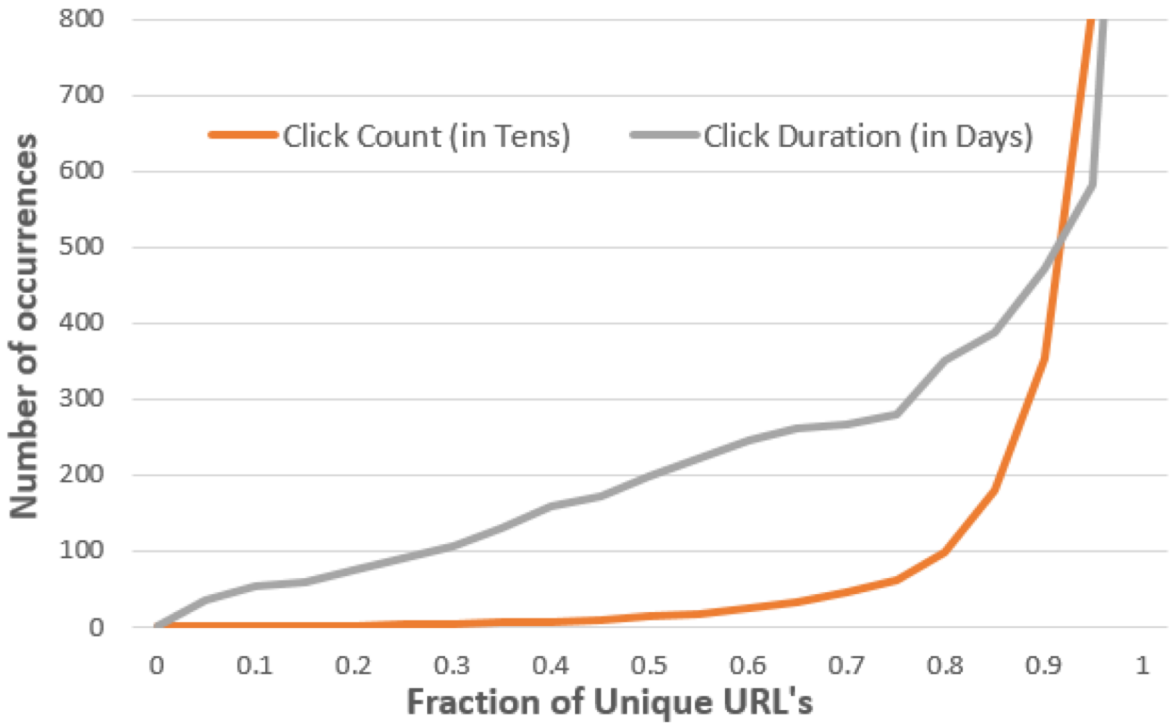
virus total

google safe browsing

- Only **225** (**6.7%**) of the GHS domains are blacklisted.
- **91** (**79%**) of the Content locker domains are blacklisted.
  - average black listing time is **506** days from registration day.
  - Only **1** domain was blacklisted in less than **100** days.

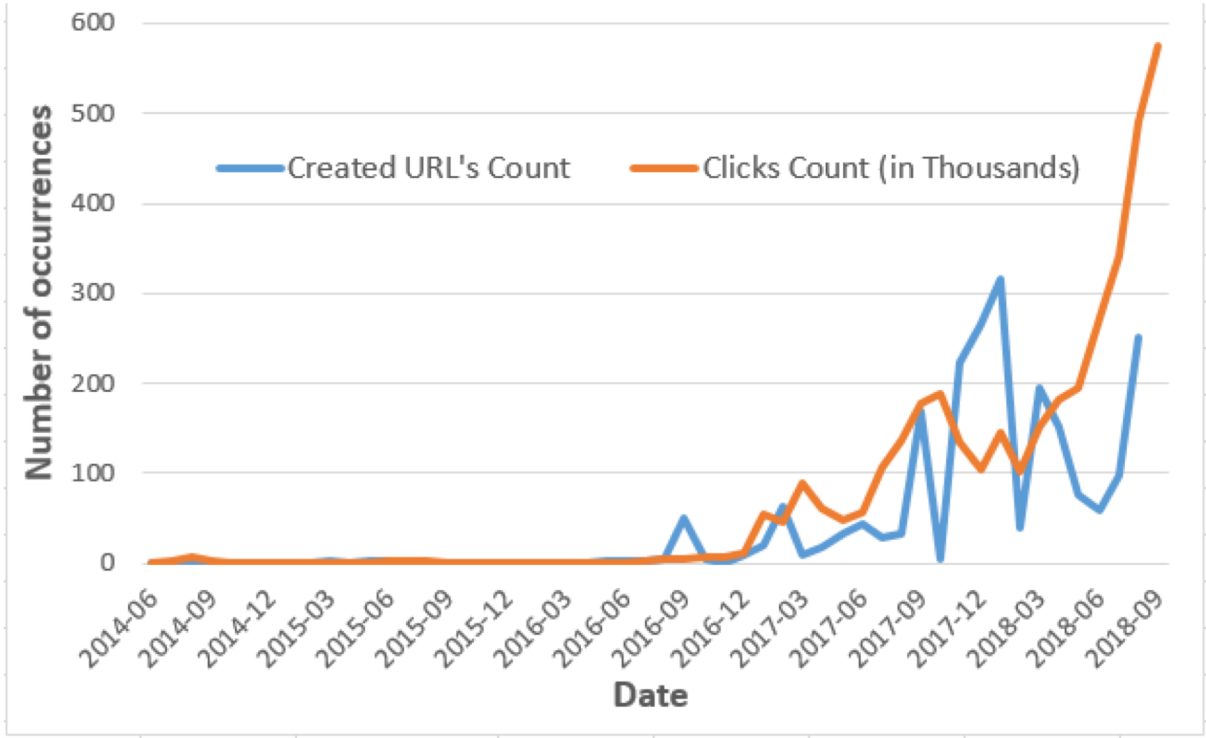
Bitly Analytics

- Collected **2,215** GHSIs shortened using Bitly.
- **99%** of the URLs has at least **2** clicks.
- Total # of clicks is **3,894,964** with average clicks of **1,774** per URL.
- **20%** of the links register clicks over a period of a year or more.
- By extrapolation, we estimate that these links have been clicked through at least **60** million times.



Bitly Monthly URL Clicks and Creation Analysis

- The first active Bitly URL was seen in mid-2014.
- The GHS URL creation and clicks peaked in early **2018**.
- GHS Bitly URLs had **575k** clicks in September **2018** only.
- US, India and Indonesia had the highest # of clicks with **22.67%**, **10.37%** and **6.7%** respectively.
- Direct, jeuxvideo.com and piktochart.com are the top referrals with **77.17%**, **5.81%** and **3.36%** respectively.



Limitations and Future Work

- Our work is based on GHS corpus that we have collected as a starting point.
  - We plan to do a more systematic and exhaustive study of this scam.

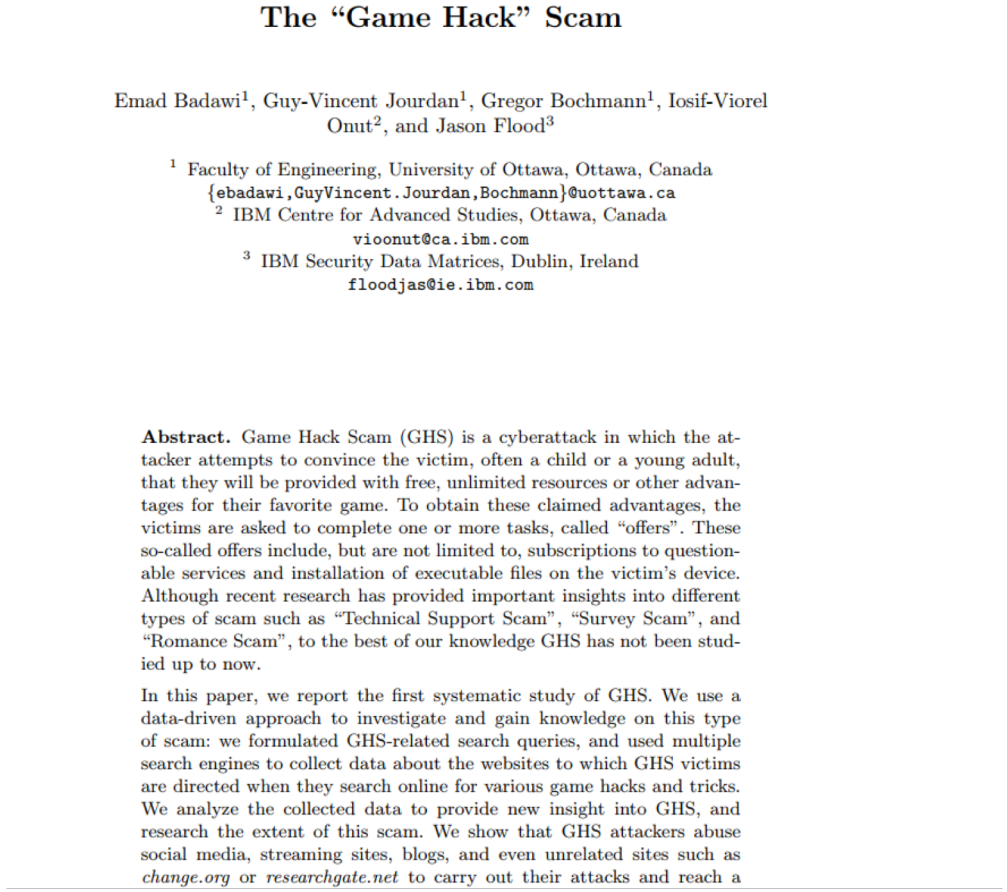
- The analysis was focused on the GHSis and the final offers.
  - A more study of the Malware part is to be conducted.
  - More analysis of the offer side of the scam.

Conclusion

- Reported the first systematic investigation of what we call the “Game Hack” Scam GHS.
- GHS attackers use popular websites to publish links leading to this type of scam.
- The targeted websites are social media, streaming sites, blogs, and even unrelated sites such as ***change.org*** or ***researchgate.net***
- Over a period of 5 months we uncovered over **3k** GHS domains and over **100** different offer domains.
- attackers use pre-built templates to create their attacks. They also target different games
- We estimate that these links have been clicked through at least 60 million times.
- Current Blacklists are ineffective against GHS.

Thanks!

ANY QUESTIONS?



The "Game Hack" Scam

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Abstract. Game Hack Scam (GHS) is a cyberattack in which the attacker attempts to convince the victim, often a child or a young adult, that they will be provided with free, unlimited resources or other advantages for their favorite game. To obtain these claimed advantages, the victims are asked to complete one or more tasks, called "offers". These so-called offers include, but are not limited to, subscriptions to questionable services and installation of executable files on the victim's device. Although recent research has provided important insights into different types of scam such as "Technical Support Scam", "Survey Scam", and "Romance Scam", to the best of our knowledge GHS has not been studied up to now.

In this paper, we report the first systematic study of GHS. We use a data-driven approach to investigate and gain knowledge on this type of scam: we formulated GHS-related search queries, and used multiple search engines to collect data about the websites to which GHS victims are directed when they search online for various game hacks and tricks. We analyze the collected data to provide new insight into GHS, and research the extent of this scam. We show that GHS attackers abuse social media, streaming sites, blogs, and even unrelated sites such as *change.org* or *researchgate.net* to carry out their attacks and reach a

You can find me at: ebadawi@uottawa.ca

Or access our website: http://ssrg.site.uottawa.ca

Access our full dataset at: http://ssrg.site.uottawa.ca/ghsicwe2019/