## DATA MINING TOR, SOCIAL NETWORKS, OSINT WITH AIL PROJECT

E.102

CIRCL COMPUTER INCIDENT RESPONSE CENTER LUXEMBOURG

MISP PROJECT https://www.misp-project.org

October 27, 2022 - V0.7





Threat Sharing



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DATA MINING TOR, SOCIAL NETWORKS, OSINT WITH AIL PROJECT E:102 CIRCL COMPUTER INCOMENT RESPONSE CONTRE LIXED PROFES



Data mining Tor, social networks, OSINT with AIL Project

INTRODUCTION

## INTRODUCTION

#### **CONCEPTS - DEEP WEB**



- This can be content hidden from crawlers by requiring a specific access and this can includes private social media, password-protected forums or content protected by different measures such as paywalls or specific security interface to access the information:
- A large portion of content accessible via Internet is part of the deep web<sup>1</sup>.

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Deep Web is the part of World Wide Web not indexed

-Concepts - Deep Web

1. There is a huge misconception about the difference between the darknet and deep web. The differences are important because it's two different aspects which can be related to each other.

<sup>1</sup>also called invisible web, hidden web or non-indexed web

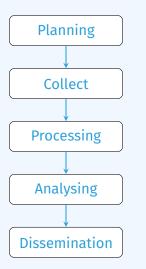
#### **CONCEPTS - DARKNET**

- Darknet is an overlay network running on top of Internet requiring specific software to access the network and its services;
- Tor, I2P and Freenet are the most commonly used ones. Many are used for hidden services access and some for proxy access to the Internet;
- There are legitimate use-cases for such network but also many illegal or criminal usage.

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#### LIFECYCLE OF COLLECTION AND ANALYSIS



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Lifecycle of collection and analysis



# COLLECTING, PROCESSING AND ANALYSING CONTENT - WEB PAGES

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Collecting, processing and analysing content

COLLECTING, PROCESSING AND ANALYSING CONTENT NEB PAGES

- Building a search engine on the web is a challenging task because:
- it has to crawl webpages,
- it has to to make sense of unstructured data,
   it has to index these data.
- it has to index these data,
   it has to provide a way to retrieve data and structure data
- (e.g. correlation).
- Doing so on Tor is even more challenging because services don't always want to be found
- parts of the dataset have to be discarded.
- in each case, it requires a lot of bandwidth, storage an

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- Doing so on Tor is even more challenging because:
  - services don't always want to be found,
  - parts of the dataset have to be discarded.
- in each case, it requires a lot of bandwidth, storage and computing power.

# Collecting, processing and analysing content - structured data

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Collecting, processing and analysing content
```

COLLECTING, PROCESSING AND ANALYSING CONTENT STRUCTURED DATA

- Some data are structured and are easy to process metadatal
- API responses.
- Some even provide cryptographic evidences
- authentication mechanisms between peer
   OpenGPG can leak a lot of metadata
  - Openation can wake a rot or instantial
     key ids,
     subject of enabling threaderhind
  - subject of email in thunderbird,
     Bitcoin's Blockchain is public
- Bitcoin's Biockchain is public,
   pivoting on these data with external sources yiel

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  - metadata!
  - ► API responses.
- Some even provide cryptographic evidences:
  - authentication mechanisms between peers,
  - OpenGPG can leak a lot of metadata
    - 🔳 key ids,
    - subject of email in thunderbird,
  - ► Bitcoin's Blockchain is public,
  - pivoting on these data with external sources yields interesting results.

## AIL DESIGN OBJECTIVES

Data mining Tor, social networks, OSINT with AIL Project AIL design Objectives

AIL DESIGN OBJECTIVES

#### **OBJECTIVES OF THE SESSION**

- Show how to use and extend an open source tool to monitor web pages, pastes, forums and hidden services
- Explain challenges and the design of the AIL open source framework
- Review different collection mechanisms and sources
- Learn how to create new modules
- Learn how to use, install and start AIL
- Supporting investigation using the AIL framework and including it in cyber threat intelligence lifecycle

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AIL design Objectives
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-Objectives of the session

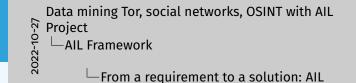
OBJECTIVES OF THE SESSIO

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Data mining Tor, social networks, OSINT with AIL Project AIL Framework

AIL FRAMEWORK

### FROM A REQUIREMENT TO A SOLUTION: AIL FRAMEWORK



#### FROM A REQUIREMENT TO A SOLUTION: AIL FRAMEWORK

- AlL initially started as an internship project (2014) to evaluate the feasibility to automate the analysis of (un)structured information to find leaks.
- In 2019, AlL framework is an open source software in Python. The software is actively used (and maintained) by CIDCL and many activities.
- In 2020, AlL framework is now a complete project called ail project<sup>2</sup>.

https://github.com/ail-project

### History:

- AIL initially started as an internship project (2014) to evaluate the feasibility to automate the analysis of (un)structured information to find leaks.
- In 2019, AIL framework is an open source software in Python. The software is actively used (and maintained) by CIRCL and many organisations.
- In 2020, AIL framework is now a complete project called **ail project**<sup>2</sup>.

**CAPABILITIES OVERVIEW** 

Data mining Tor, social networks, OSINT with AIL Project Capabilities Overview

CAPABILITIES OVERVIEW

#### COMMON USAGE

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Check if mail/password/other sensitive information (terms tracked) leaked
Detect reconnaissance of your infrastructure
Search for leaks incide an archive
Monitor and crawl websites

- Check if mail/password/other sensitive information (terms tracked) leaked
- **Detect** reconnaissance of your infrastructure
- **Search** for leaks inside an archive
- Monitor and crawl websites

# SUPPORT CERT/CSIRTS AND LAW ENFORCEMENT ACTIVITIES

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Capabilities Overview

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-Support CERT/CSIRTs and Law Enforcement

SUPPORT CERT/CSIRTS AND LAW ENFORCEMENT ACTIVITIES

- Proactive investigation: leaks detection
- List of emails and passwords
- Leaked dat
   AWS Keys
- AWS Keys
   Credit-card
- PGP private keys
- Certificate private keys
- Feed Passive DNS or any passive collection system
  CVE and PoC of subprabilities most used by attacker

#### Proactive investigation: leaks detection

- List of emails and passwords
- Leaked database
- AWS Keys
- Credit-cards
- PGP private keys
- Certificate private keys
- Feed Passive DNS or any passive collection system
- **CVE** and PoC of vulnerabilities most used by attackers

# SUPPORT CERT/CSIRTS AND LAW ENFORCEMENT ACTIVITIES

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-Support CERT/CSIRTs and Law Enforcement

SUPPORT CERT/CSIRTS AND LAW ENFORCEMENT ACTIVITIES

- Website monitoring
- monitor booters
   Detect encoded exploits (WebShell, malware encoded in
- Base64...)
- Automatic and manual submission to threat sharing and
  - ent response platforms
- MISP
   TheHive
- Term/Regex/Yara monitoring for loca

- Website monitoring
  - monitor booters
  - Detect encoded exploits (WebShell, malware encoded in Base64...)
  - SQL injections
- Automatic and manual submission to threat sharing and incident response platforms
  - ► MISP
  - ► TheHive
- Term/Regex/Yara monitoring for local companies/government

#### SOURCES OF LEAKS: PASTE MONITORING

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└─Sources of leaks: Paste monitoring

Example: https://gist.github.com/
 Easily storing and sharing text online
 Used by programmers and legitimate users
 Source code & information about configurat

#### Example: https://gist.github.com/

- **•** Easily storing and sharing text online
- Used by programmers and legitimate users
  - $\rightarrow$  Source code & information about configurations

#### SOURCES OF LEAKS: PASTE MONITORING

#### Example: https://gist.github.com/

- **•** Easily storing and sharing text online
- ► Used by programmers and legitimate users → Source code & information about configurations
- Abused by attackers to store:
  - List of vulnerable/compromised sites
  - Software vulnerabilities (e.g. exploits)
  - Database dumps
    - ightarrow User data
    - $\rightarrow \text{Credentials}$
    - $\rightarrow$  Credit card details
  - More and more ...

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└─Sources of leaks: Paste monitoring

- SOURCES OF LEAKS: PASTE MONITORIN
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#### WHY SO MANY LEAKS?

Economical interests (e.g. Adversaries promoting services)
 Ransom model (e.g. To publicly pressure the victims)

- Political motives (e.g. Adversaries showing off)
- Collaboration (e.g. Criminals need to collaborate)
- Operational infrastructure (e.g. malware exfiltrating information on a pastie website)
- Mistakes and errors

Data mining Tor, social networks, OSINT with AIL Project Capabilities Overview WHY SO MANY LEAKS

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#### ARE LEAKS FREQUENT?

## Yes! and we have to deal with this as a CSIRT.

- Contacting companies or organisations who did specific accidental leaks
- Discussing with media about specific case of leaks and how to make it more practical/factual for everyone
- Evaluating the economical market for cyber criminals (e.g. DDoS booters<sup>3</sup> or reselling personal information reality versus media coverage)
- Analysing collateral effects of malware, software vulnerabilities or exfiltration
  - $\rightarrow$  And it's important to detect them automatically.

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ARE LEAKS FREQUE

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And it's important to detect them autor s://github.com/Di-project/

<sup>&</sup>lt;sup>3</sup>https://github.com/D4-project/

#### PASTE MONITORING AT CIRCL: STATISTICS

#### Monitored paste sites: 27

- gist.github.com
- ▶ ideone.com
- ▶ ...

|                  | 2016       | 2017       | 08.2018    |
|------------------|------------|------------|------------|
| Collected pastes | 18,565,124 | 19,145,300 | 11,591,987 |
| Incidents        | 244        | 266        | 208        |

Table: Pastes collected and incident<sup>4</sup> raised by CIRCL

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Paste monitoring at CIRCL: Statistics

| Monitored paste sit                 | 05: 33 |         |
|-------------------------------------|--------|---------|
| <ul> <li>aist.aithub.com</li> </ul> |        |         |
| <ul> <li>ideone com</li> </ul>      |        |         |
| F                                   |        |         |
|                                     |        |         |
|                                     |        |         |
|                                     | 2016   |         |
| Collected pastes                    |        | 08.2018 |

http://www.circl.lu/pub/tr-46

<sup>4</sup>http://www.circl.lu/pub/tr-46

## **CURRENT CAPABILITIES**

Data mining Tor, social networks, OSINT with AIL Project Current capabilities

CURRENT CAPABILITIES

### AIL FRAMEWORK: CURRENT CAPABILITIES

- Extending AIL to add a new analysis module can be done in 50 lines of Python
- The framework supports multi-processors/cores by default. Any analysis module can be started multiple times to support faster processing during peak times or bulk import
- Multiple concurrent data input
- Tor Crawler (handle cookies authentication)

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AIL Framework: Current capabilities

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### AIL FRAMEWORK: CURRENT FEATURES

- Extracting credit cards numbers, credentials, phone numbers, ...
- Extracting and validating potential **hostnames**
- Keeps track of **duplicates**
- Submission to threat sharing and incident response platform (MISP and TheHive)
- **Full-text indexer** to index unstructured information
- **Tagging** for classification and searches
- Terms, sets, regex and YARA tracking and occurences
- Archives, files and raw **submission** from the UI
- PGP, Cryptocurrency, Decoded (Base64, ...) and username Correlation
- And many more

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AIL Framework: Current features

AIL FRAMEWORK: CURRENT FEATU

#### **TERMS TRACKER**

#### Search and monitor specific keywords/patterns

- Automatic Tagging
- Email Notifications
- Track Term
  - ► ddos
- Track Set
  - booter,ddos,stresser;2
- Track Regex
  - ► circl\.lu

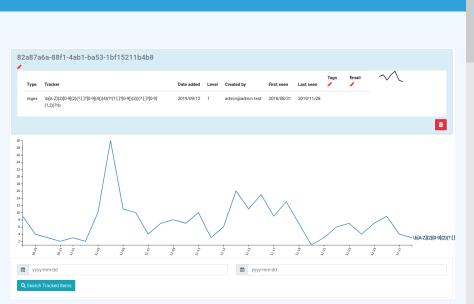
#### YARA rules

https://github.com/ail-project/ail-yara-rules

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#### MS TRACKER

Search and monitor specific keywords/patterns
Automatic Tagging
Track Term
Adda
Track Search
Bootecddos,thresser;
Controls
Contr



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└─Terms Tracker

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#### YARA TRACKER

| Туре   | Tracker  | Date added | Level | Created by       | First seen | Last seen        | Tags 🥖   | Email 🧪 | . /                |
|--|--|------------|-------|------------------|------------|------------------|--|---------|--------------------|
| yara   | ail-yara-rules/rules/code/vbscript.yar   | 2020/09/17 | 1     | admin@admin.test | 2020/09/17 | 2021/04/01       |  |         | 20                 |
|  |  |            |       |                  |            |                  |  |         | Edit Tracker 🖋 🥫   |
| info<br>refe<br>strings:<br>sa =<br>sb =<br>sc :<br>sd =<br>se =<br>sf =<br>sg =<br>sh = | er "Yerthöhersi"<br>* Twei di Astenuer*<br>ene "Nitjui/Dib.dox/Architersi/Pistek<br>"rontion" nocae side acii fullard<br>"orestedget:" nocae side acii fullard<br>"read" nocae side acii fullard<br>"read" nocae side acii fullard<br>"read" nocae side acii fullard<br>"read" nocae side acii fullard<br>"maltionary nocae side acii fullard<br>"maltionary nocae side acii fullard | llword     |       |                  |            |                  |  |         |                    |
|  |  |            |       |                  |            | -tr <sub>0</sub> | 1973 - 1975 - 19 | - Reb   | aliyas ridesindewo |

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└─YARA Tracker

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### **TERMS TRACKER - PRACTICAL PART**

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└─Terms Tracker - Practical part

|   | Engo (spitorai, spore separated)   | C deinormake ball |
|---|------------------------------------|-------------------|
| ۰ | Estais technological, pace age and |                   |
| 1 |                                    |                   |

#### **Create and test** your own tracker

| ٠    | Tags (optional, space separated)                 | 💽 🚢 Show tracker to all Users |
|------|--|-------------------------------|
| @    | E-Mails Notification (optional, space separated) |                               |
| ø    | Tracker Description (optional)                   |                               |
|      |  |                               |
| - Se | elect a tracker type - 🔶                         |                               |
|      |  |                               |
| - A  | dd Tracker                                       |                               |
| TA   |  |                               |
|      |  |                               |

#### **RECON AND INTELLIGENCE GATHERING TOOLS**

#### Attacker also share informations

#### Recon tools detected: 94

- sqlmap
- dnscan
- whois
- msfconsole (metasploit)
- dnmap
- nmap
- ► ...

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Recon and intelligence gathering tools

- Attacker also share information
   Recon tools detected: 94
- sqlmap
   dnscan
- whois
   msfronsole (metaso
- dnmap
   nman

#### **RECON AND INTELLIGENCE GATHERING TOOLS**

| Hostname        | www.pabloquinta  | nilla.cl |          |          | ISP       | Wix.com  | Ltd.      |
|-----------------|------------------|----------|----------|----------|-----------|----------|-----------|
| Continent<br>US | North America    |          | Flag     |          |           |          |           |
| Country         | United States    |          | Country  | Code     | US        |          |           |
| Region Unknown  |                  | Local t  | ime      | 19 Nov   | 2019 07:  | 59 CST   |           |
| City Unknown    |                  | Postal   | Code     | Unknowr  | 1 I       |          |           |
| IP Address      | 185.230.60.195   |          | Latitud  | е        | 37.751    |          |           |
|                 | Longitu          | de       | -97.822  |          |           |          |           |
|                 |                  |          |          |          |           |          |           |
| ******          | *****            | ######## | ######## | 4####### | *######## | ######## | ********* |
| > www.pabloquin |                  |          |          |          |           |          |           |
| Server:         | 38.132.106.139   |          |          |          |           |          |           |
| Address:        | 38.132.106.139#  | 53       |          |          |           |          |           |
| Non-authoritati | ve answer:       |          |          |          |           |          |           |
| www.pabloquinta | nilla.cl canonic | al name  | = www192 | .wixdns. | net.      |          |           |
| www192.wixdns.n | et canonic       | al name  | = balanc | er.wixdr | ns.net.   |          |           |
| Name: balance   | r.wixdns.net     |          |          |          |           |          |           |
| Address: 185.23 | 0.60.211         |          |          |          |           |          |           |
| >               |                  |          |          |          |           |          |           |
|                 |                  | ######## | ######## |          |           | ######## |           |
| Domain name: pa | bloquintanilla.c | 1        |          |          |           |          |           |
| Registrant name | : SERGIO TORO    |          |          |          |           |          |           |
| Registrant orga | nisation:        |          |          |          |           |          |           |
| Pogistrar name: | NIC Chile        |          |          |          |           |          |           |
| Negistiai name. |                  |          |          |          |           |          |           |
|                 | https://www.nic. | cl       |          |          |           |          |           |

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Recon and intelligence gathering tools
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|  | UNLINE DESCENT    |          |  |  |
|--|-------------------|----------|--|--|
|  |                   | 1184     |  |  |
|  |                   | 1000     |  |  |
|  |                   |          |  |  |
|  | 285, 238, 69, 285 |          |  |  |
|  | 6 mg/m            | - 10.412 |  |  |
|  |                   |          |  |  |
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|  |                   |          |  |  |
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|  |                   |          |  |  |
|  |                   |          |  |  |
|  |                   |          |  |  |
|  |                   |          |  |  |
|  | Codeting cast     |          |  |  |
|  |                   |          |  |  |
|  |                   |          |  |  |
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|  |                   |          |  |  |
|  |                   |          |  |  |
|  |                   |          |  |  |
|  |                   |          |  |  |

DECODER

#### Search for encoded strings

- ► Base64
- ► Hexadecimal
- Binary
- Guess Mime-type
- Correlate paste with decoded items

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#### DECODER

Search for encoded strings
Base64,
Hexadecimal
Binary
Guess Mime-type
Correlate paste with decoded items

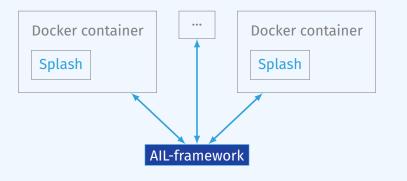
#### **DECODER:**

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| estimated type        | hash 🍴                                   | first seen 🛛 🗍 | last seen 🛛 🕸 | nb item 📋 | size 📋 | Virus Total          | Sparkline 🌐   |
|-----------------------|--|----------------|---------------|-----------|--------|----------------------|---------------|
| application/x-dosexec | c11c2be8d9ba4e86c8effaa411aa6b867ba75abe | 2019/11/28     | 2019/11/28    | 1         | 191    | Send this file to VT |               |
| application/x-dosexec | a50cba731204ecce193b40178399a250b5ce6f67 | 2019/11/28     | 2019/11/28    | 1         | 32768  | Send this file to VT |               |
| application/x-dosexec | cc5f2f0da711443ec12ae1b3cb6ab8bad80f22c4 | 2019/11/28     | 2019/11/28    | 1         | 203    | Send this file to VT | /             |
| application/x-dosexec | eed67e8fa9cb9a43fea21ae653983a8e0a174f63 | 2019/11/26     | 2019/11/28    | 6         | 83     | Send this file to VT | $\_ \! \land$ |

#### CRAWLER

- Crawlers are used to navigate on regular website as well as .onion addresses (via automatic extraction of urls or manual submission)
- Splash ("scriptable" browser) is rending the pages (including javascript) and produce screenshots (HAR archive too)



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#### CRAWLER



CRAWLER

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#### How a domain is crawled by default

- 1. Fetch the first url
- 2. Render javascript (webkit browser)
- 3. Extract all urls
- 4. Filter url: keep all url of this domain
- 5. crawl next url (max depth = 1)

#### CRAWLER: COOKIEJAR

#### Use your cookies to login and bypass captcha

| 🕸 Edit Cookiejar   |  |                      |   | ē   |
|--|--|----------------------|---|---|
| Description  | Date   | UUID                 |   | User  |
| 3thxemke2x7hcibu.onion   | 2020/03/31   | 90674deb-38fb-4eba-a | 1661-18899ccb3841   | admin@admin.test  |
| Edit Description 🖋 Add Cookies 😌   |  |                      |   |   |
| <b>i</b> /   |  | <b>i</b> /           | i /   | i /   |
| <pre>{   "domain": ".3thxemke2x7hcibu.onior   "name": "mybb[Lastactive]",   "path": "/forum/",   "value": "1583829465" }</pre> | <pre>{     "domain": ".3thxemk     "name": "loginattem     "path": "/forum/",     "value": "i" }</pre> |                      | {     "domain": ".3thxemke2x7hcibu.onior     "name": "sid",     "path": "/forum/",     "value": "047ab0cd97ff5bcc77edb0a: } | <pre>{     "name": "remember_token",     "value": "12 S8cddd1511d74d341f23+ }</pre> |
|  |  |                      |   | i /   |
| <pre>{   "domain": ".3thxemke2x7hcibu.onion",   "name": "myb0[announcements]",   "path": "/forum/",   "value": "0" }</pre>     |  |                      |   |   |

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Crawler: Cookiejar

| Previation          | -      | *** |                  | -           |
|---------------------|--------|-----|------------------|-------------|
| Pharties Tells over | 88.871 |     |                  | strepsto of |
| Gast Station        | , 30.3 |     | ar teachertarras |             |
|                     |        |     |                  |             |

### CRAWLER: COOKIEJAR

|  |                                    | Shere Kh  | an   |                                       |                                 |
|--|------------------------------------|---|--|---------------------------------------|---------------------------------|
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| 2020/03/09 2020/03/30 ['80']   |                                    | Se User CP                                      | View   | New Posts View Today's Posts          | Private Hessages (Uncend 2, Tot |
|  |                                    |   | w have 2 unread private messages. The most recen | t is from Jok3 10ed KEY FOR PRIVATE   | SECTIONS                        |
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| Ŧ  |                                    | Henu  |  |                                       | Luc Luci                        |
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| nual   |                                    | Compose   | Message Title                                    | Sender                                | Date/Time Sent [asc             |
|  |                                    | L Dobax   | KEY FOR PRIVATE SECTIONS                         | Jok3                                  | 3 hours ag                      |
| Show Domain Correlations 139   |                                    | L Drafts<br>L Trash Can                         | Verification                                     | Jok3                                  | 03-09-2020, 11:55 AM            |
|  |                                    | Tracking  |  | Move To Inbox 💌                       | or Delete the selected mes      |
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| Decoded 1  |                                    | @ Edit Options                                  |  |                                       |                                 |
|  |                                    | Miscellaneous 🚥                                 |  |                                       |                                 |
| Screenshot 138   |                                    | Group Memberships     Buddy/Sprore List         |  |                                       |                                 |
| Screensnot 138   | •                                  | // Nanage Attachments                           |  |                                       |                                 |
|  |                                    | Saved Drafts                                    |  |                                       |                                 |
|  |                                    | Subscribed Threads                              |  |                                       |                                 |
| rawled Items Dat   | te: 2020/03/23 - 13:10.40 PORT: 80 |   |  |                                       |                                 |
|  |                                    | Forum Team Contact Us S                         | here Khan - Hacking group Return to Top Life (   | Archiva) Hode Mark all forums read    | RSS Syndication                 |
| 10 ¢ entries   | Search:                            | Powered By HyBB, @ 2002-2021                    | Ny55 Group                                       |                                       | Current time: 03-23-2020, 0     |

Data mining Tor, social networks, OSINT with AIL Project

└─Current capabilities

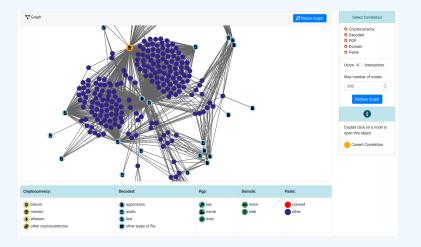
2022-10-27

Crawler: Cookiejar

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#### **CORRELATIONS AND RELATIONSHIP**



- Data mining Tor, social networks, OSINT with AIL Project
- └─Current capabilities

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Correlations and relationship



Data mining Tor, social networks, OSINT with AIL Project Live demo!

LIVE DEMO!

# LIVE DEMO!

#### EXAMPLE: DASHBOARD

#### Data mining Tor, social networks, OSINT with AIL Project

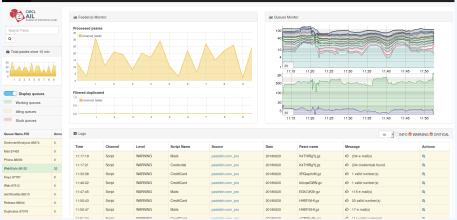
Live demo!

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Example: Dashboard

| Annal Mil  | 10.21 | 14 PC | <br> | - <b>-</b> | <br> |   |          |  |
|--|-------|-------|------|------------|------|---|----------|--|
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| har and<br>Manager<br>San Par  |       |       |      |            |      |   | P Carlos |  |

🚓 Dashboard 🤨 PasteSubmit 🔖 Tags 👁 Terms frequency - 🔍 Browse important pastes 🖬 Trending charts 🖬 Modules statistics 🎔 Sentiment Analysis -



#### **EXAMPLE: TEXT SEARCH**

| Q 1 Resul | ts for "gandcrab"   |            |           |           |
|-----------|---|------------|-----------|-----------|
| Index:    | 2019-05-20 - 1365.328591 Mb   |            | Search:   |           |
| # 41      | Path 1  | Date 11    | Size (Kb) | Action 1  |
| 0         | crawled/2019/05/17/vs5e7g245s3pxjoc.onion374a1a89-4b16-4c31-a460-4be8898da140 | 2019/05/17 | 15.44     | <b>છ</b>  |
| Showing 1 | to 1 of 1 entries   |            | Previo    | us 1 Next |
| Totalling | 1 results related to paste content  |            |           |           |

Data mining Tor, social networks, OSINT with AIL Project Live demo!

Example: Text search

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## EXAMPLE: ITEMS METADATA (1)

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| Date           | Sourc      | 0                  | End     | oding          | Langua    | ge        | Size (Kb)                 | Mime              | Number of lines | Max line I | ength  |  |
| 04/05/2019     | pastet     | bin.com_pro        | text    | /plain         | None      |           | 6.12                      | text/plain        | 1650            | 100        |        |  |
| Create MISP E  |            |                    |         |                |           |           |                           |                   |                 |            |        |  |
| Duplicate list | les        | Paste info         |         | Date           |           | Path      |                           |                   |                 | Search:    | Action |  |
| ['tish']       | -          | Similarity: [19]%  |         | 2019-04-13     |           |           | astebin.com pro/2019/04/1 | 2/EbM/D97S az     |                 |            |        |  |
| ['tish']       |            | Similarity: [10]%  |         | 2019-04-11     |           |           | astebin.com pro/2019/04/1 |                   |                 |            |        |  |
| ('tish')       |            | Similarity: [23]%  |         | 2019-04-25     |           |           | astebin.com pro/2019/04/2 |                   |                 |            |        |  |
| ('tish')       |            | Similarity: [14]%  |         | 2019-04-17     |           |           | astebin.com_pro/2019/04/1 |                   |                 |            |        |  |
| ['tlsh']       |            | Similarity: [23]%  |         | 2019-04-20     |           | archive/p | astebin.com_pro/2019/04/2 | 20/AQd0qGVQ.gz    |                 |            |        |  |
| ['tish']       |            | Similarity: [20]%  |         | 2019-04-20     |           | archive/p | astebin.com_pro/2019/04/2 | 20/6DDc13b8.gz    |                 |            |        |  |
| ['tish']       |            | Similarity: [21]%  |         | 2019-05-05     |           | alerts/pa | tebin.com_pro/2019/05/05  | /X8nJLzda.gz      |                 |            |        |  |
| ('tish')       |            | Similarity: [7]%   |         | 2019-04-13     |           | archive/p | astebin.com_pro/2019/04/1 | 13/Lyp4FVWW.gz    |                 |            |        |  |
|                |            |                    |         |                |           |           |                           |                   |                 |            |        |  |

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Example: Items Metadata (1)

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## Example: Items Metadata (2)

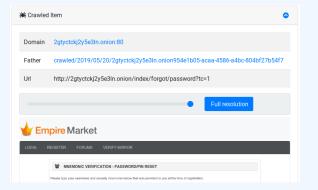
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Example: Items Metadata (2)

| Hash files:<br>Nov 1 James |                                |  | 141   |
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| Hash files:<br>Show 5 • entries |  | Se   | arch:                |
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| estimated type                  | hash 🕌                                       | saved_path   | Virus Total          |
| application/octet-<br>stream    | 3975f058bb0d445b60c10a11f1a5d88e19e4fa84 (1) | HASHS/application/octet-stream<br>/39/3975f058bb0d445b60c10a11f1a5d88e19e4fa84 | Send this file to VT |
| application/octet-<br>stream    | fed93c1753270fc849a4db37027b569cdd9a6108 (1) | HASHS/application/octet-stream<br>/le/led93c1753270fc849a4db37027b569cdd9a6108 | Send this file to VT |
| Showing 1 to 2 of 2 entries     | S  |  | Previous 1 Next      |

## EXAMPLE: ITEMS METADATA (3)



- Data mining Tor, social networks, OSINT with AIL Project └─Live demo!
  - Example: Items Metadata (3)

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#### **EXAMPLE: BROWSING CONTENT**

#### Content:

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http://members.naughtyamerica.com/index.php?m=login gernblanston:3unc2352 Janhuss141200:310675 igetalliwant:1377zeph pwilks89:mno22key Bman1551:hockey

MoFos IKnowThatGirl PublicPickUps http://members2.mofos.com Chrismagg40884:10ganm48 brando1:zzbrando1 aacoen:1q2W3e4r irstunkle23:my8self

BraZZers http://ma.brazzers.com gcjensen:gcj21pva skycsc17:rbcdnd

>| Get Daily Update Fresh Porn Password Here |<

=> http://www.erq.io/4mF1

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Example: Browsing content

| Content:                 |  |
|--------------------------|--|
| http://www.st.adunters.c | who are right                                      |
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#### **EXAMPLE: BROWSING CONTENT**

#### Content:

Over 50000+ custom hacked xxx passwords by us! Thousands of free xxx passwords to the hottest paysites!

>| Get Fresh New Premium XXX Site Password Here |<

=> http://www.erq.io/4mF1

http://ddfnetwork.com/home.html eu172936:hCSBgKh UecwB6zs:159X0\$!r#6K78FuU

http://pornxn.stiffia.com/user/login feldwWek8939:RObluJ8XtB dabudka:17891789 brajits:brajits1

http://members.pornstarplatinum.com/sblogin/login.php/ gigiriveracom:xxxjay jayx123:xxxjay69

http://members.vividceleb.com/ Rufio99:fairhaven ScHiFRvi:102091 Chaos84:HOLE5244 Riptor795:blade7 Dom180:harkonnen GaggedUK:alk8chan

http://www.ariellaferrera.com/

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Example: Browsing content

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2022-10

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#### EXAMPLE: SEARCH BY TAGS

| Search Tags by d                         | ate range :  |        |            |            |            |
|--|--|--------|------------|------------|------------|
| <ul><li>2019-05-19</li></ul>             |  |        | 2019-05-21 |            |            |
| infoleak automatic-detecti Q Search Tags | on="cve" $\times$ [infoleak.automatic-detection="bitcoin-address" $\times$ |        |            |            | *          |
| Show<br>10  ¢<br>entries                 |  | Searc  | 1:         |            |            |
| Date                                     | Path   |        |            | # of lines | Action     |
| 2019/05/19                               | archive/pastebin.com_pro/2019/05/19/ej67tQ4                                | lb.gz  |            | 71         | <b>0</b> Q |
| 2019/05/21                               | archive/pastebin.com_pro/2019/05/21/vM2Sw<br>cvo bitcoin-address           | yTe.gz |            | 69         | 0 @        |
| 2019/05/21                               | archive/pastebin.com_pro/2019/05/21/rsnHnp:<br>cve_bitcoin-address         | 5L.gz  |            | 71         | <b>6</b> Q |
| Showing 1 to 3 of 3 entri                | es Previous  | 1      | Next       |            |            |

Data mining Tor, social networks, OSINT with AIL Project Live demo!

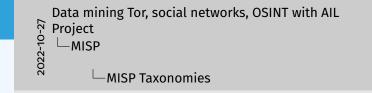
-Example: Search by tags

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Data mining Tor, social networks, OSINT with AIL Project MISP

#### **MISP TAXONOMIES**



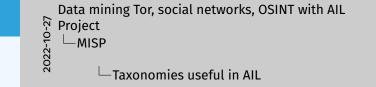
#### MISP TAXONOMIES

 Tagging is a simple way to attach a classification to an event or anatribude. Bobably used to be efficient. Provide a set of already defined classifications modeling estimative language Taxonomiss are implemented in a simple JSON format<sup>3</sup>. Can be easily cherry-picked or extended

https://github.com/MISP/misp-taxonomies

- **Tagging** is a simple way to attach a classification to an event or anattribute.
- Classification must be globally used to be efficient.
- Provide a set of already defined classifications modeling estimative language
- **Taxonomies are implemented in a simple JSON format** <sup>5</sup>.
- Can be easily cherry-picked or extended

#### **TAXONOMIES USEFUL IN AIL**

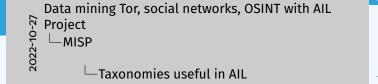


- infoleal: Information classified as being potential leak.
   estimative-language: Describe quality and credibility of underlying sources, data, and methodologies.
   admiraty-scale: Rank the reliability of a source and the credibility of an information
- fpf<sup>6</sup>: Evaluate the degree of identifiability of personal data and the types of pseudonymous data, de-identified data and anonymous data.

<sup>4</sup>Future of Privacy Forum

- infoleak: Information classified as being potential leak.
- estimative-language: Describe quality and credibility of underlying sources, data, and methodologies.
- admiralty-scale: Rank the reliability of a source and the credibility of an information
- **fpf**<sup>6</sup>: Evaluate the degree of identifiability of personal data and the types of pseudonymous data, de-identified data and anonymous data.

#### **TAXONOMIES USEFUL IN AIL**



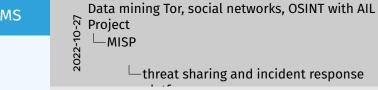
tor: Describe Tor network infrastructure.
 dark-web: Criminal motivation on the dark web.
 copine-scale?: Categorise the severity of images of child sex
 abuse.

Combating Paedophile Information Networks in Europe

- **tor**: Describe Tor network infrastructure.
- **dark-web**: Criminal motivation on the dark web.
- **copine-scale**<sup>7</sup>: Categorise the severity of images of child sex abuse.

<sup>7</sup>Combating Paedophile Information Networks in Europe

#### THREAT SHARING AND INCIDENT RESPONSE PLATFORMS







Goal: submission to threat sharing and incident response platforms.



**Goal:** submission to threat sharing and incident response platforms.

#### THREAT SHARING AND INCIDENT RESPONSE PLATFORMS



- 1. Use infoleak taxonomy<sup>8</sup>
- 2. Add your own tags
- 3. Export AIL objects to MISP core format
- 4. Download it or Create a MISP Event<sup>9</sup>

<sup>8</sup>https://www.misp-project.org/taxonomies.html
<sup>9</sup>https://www.misp-standard.org/rfc/misp-standard-core.txt

Data mining Tor, social networks, OSINT with AIL Project MISP



Use infoleak taxonomy<sup>a</sup>
 Add your own tags
 Export AlL objects to MISP core format
 Download it or Create a MISP Event<sup>9</sup>

<sup>4</sup>https://www.misp-project.org/taxonomies.html <sup>9</sup>https://www.misp-standard.org/rfc/misp-standard-core.tx

## **MISP Export**

| 1G                                | IGt545E48EPsyTC8voKQDCFfpTkwiuXduw :  |            |            |  |                                       |  |
|-----------------------------------|---|------------|------------|--|---------------------------------------|--|
|                                   | Object type   | type       | First seen | Last seen                              | Nb seen                               |  |
| cryptocurrency <b>B</b> bitcoin 2 |   | 2020/01/17 | 2020/02/20 | 5                                      |                                       |  |
| Ex                                | pand Bitcoin address  |            |            |  |                                       |  |
| Sr Graph Add to ∰ Export          |   |            |            |  |                                       |  |
|                                   | B<br>B<br>B<br>B<br>B<br>B<br>B<br>B<br>B<br>B<br>B<br>B<br>B<br>B<br>B<br>B<br>B<br>B<br>B | B          | B          | BB<br>BB<br>BB<br>BB<br>BB<br>BB<br>BB | B B B B B B B B B B B B B B B B B B B |  |

```
Data mining Tor, social networks, OSINT with AIL
Project
└─MISP
```

-MISP Export



### **MISP Export**

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| First Seen                 | Last Check         | Ports            |  |  |  |
|----------------------------|--------------------|------------------|--|--|--|
| 2020/02/19                 | 2020/02/19         | ['80']           |  |  |  |
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| Last Origin: cra           | wled/2020/02/19/da | rk.failc126d     |  |  |  |
| Q Show Domain Correlations |                    |                  |  |  |  |
| <b>Q</b> Show Dom          | ain Correlation    | s <mark>4</mark> |  |  |  |
| Q Show Dom<br>Add to       | ain Correlations   | s <mark>4</mark> |  |  |  |
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| Copyright 0 2020 Empire Market   |            |

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Data mining Tor, social networks, OSINT with AIL Project

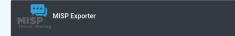
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#### **MISP EXPORT**



#### Select a list of objects to export

| Object Type    | Object ID  | Lv | rl |   |
|----------------|--|----|----|---|
| Object type +  |  | 0  | <  | + |
| Object type \$ | 1Gt545E48EPsyTC8voKQDCFfpTkwiuXduw ✓                           | 1  | *  | m |
| Domain \$      | nttfj36sp47cw2yecop572zjvjeazgazieunllouudplzqt2m5h465yd.onion | 0  | <  | m |

#### JSON Export 💽 Export to MISP Instance

|   | Distribution: | Your organisation only                   |
|---|---------------|--|
|   | Threat Level: | Medium ~                                 |
|   | Analysis:     | Initial v                                |
|   | Event Info:   | Quick Event Description or Tracking Info |
|   | Publish Event |  |
| l |               |  |

#### Export Objects

Data mining Tor, social networks, OSINT with AIL Project MISP

-MISP Export

| New York Company |                                |  |
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#### AUTOMATIC SUBMISSION ON TAGS

|                      | <b>MISP</b><br>Threat Sharing                      |                      |  |
|----------------------|--|----------------------|--|
| letadata :<br>Show 5 | entries Search:                                    | Metadata :<br>Show 5 | entries Search:                                    |
| Whitelist            | Tag 👫  | Whitelist            | Tag 👫  |
|                      | infoleak:automatic-detection="api-key"             |                      | infoleak:automatic-detection="api-key"             |
|                      | infoleak:automatic-detection="aws-key"             |                      | infoleak:automatic-detection="aws-key"             |
|                      | infoleak:automatic-detection="base64"              |                      | infoleak:automatic-detection="base64"              |
| 0                    | infoleak:automatic-detection="bitcoin-address"     |                      | infoleak:automatic-detection="bitcoin-address"     |
| 0                    | infoleak:automatic-detection="bitcoin-private-key" |                      | infoleak:automatic-detection="bitcoin-private-key" |
| Showing 1 to         | o 5 of 25 entries Previous 1 2 3 4 5<br>Next       | Showing 1 to 5       | i of 25 entries Previous 1 2 3 4 5<br>Next         |

Data mining Tor, social networks, OSINT with AIL Project └─MISP

Automatic submission on tags

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Data mining Tor, social networks, OSINT with AIL Project API

AIL exposes a ReST API which can be used to interact with the back-end<sup>10</sup>.

■ AIL API is currently covering 60% of the functionality of back-end.

<sup>10</sup>https://github.com/ail-project/ail-framework/blob/ master/doc/README.md Data mining Tor, social networks, OSINT with AIL Project API

AlL exposes a ReST API which can be used to interact with the back-end\*\*.

curl https://127.0.0.1:7000/api/v1/get/item/default --header "Authorization: iHc1\_ChZxjtaXmiFiFt -H "Content-Type: application/json" --data @input.json -X POST

 AIL API is currently covering 60% of the functionality of back-end.

"https://github.com/ail-project/ail-framework/blob/ master/doc/README.md

Data mining Tor, social networks, OSINT with AIL Project Setting up the framework

SETTING UP THE FRAMEWORK

## **SETTING UP THE FRAMEWORK**

#### SETTING UP AIL-FRAMEWORK FROM SOURCE

Data mining Tor, social networks, OSINT with AIL Project

└─Setting up the framework

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Setting up AIL-Framework from source



#### Setting up AIL-Framework from source

1 git clone https://github.com/ail-project/ail-framework.git 2 cd AIL-framework 3 ./installing\_deps.sh

Data mining Tor, social networks, OSINT with AIL Project Feeding the framework

FEEDING THE FRAMEWORK

# **FEEDING THE FRAMEWORK**

Data mining Tor, social networks, OSINT with AIL Project Feeding the framework DING AIL

1. Setup pystemon and use the custom feede

4. Feed your own file/text using the UI (Submit section)

- There are different way to feed AIL with data:
  - 1. Setup *pystemon* and use the custom feeder
    - pystemon will collect items for you
  - 2. Use the new JSON Feeder (twitter)
  - 3. Feed your own data using the API or the import\_dir.py
     script
  - 4. Feed your own file/text using the UI (Submit section)

## VIA THE UI (1)

Submit this paste

| Files submission         |  | Tags :                |   |
|--------------------------|--|-----------------------|---|
| Submit a file            |  |                       | ¥ |
| Browse No file selected. |  | Taxonomie Selection 🗸 |   |
| Archive Password         |  |                       | - |
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```
Data mining Tor, social networks, OSINT with AIL
Project
Feeding the framework
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```
└─Via the UI (1)
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## VIA

| THE UI (2)  | Data mining Tor, social networks, OSINT with AIL<br>? Project |
|---|---|
|   | Project<br>Feeding the framework                              |
|   |   |
| Submitting Pastes   |   |
| Files Submitted (T) Submitted pastes  |   |
| /home/all/git/AlL/ramework/PASTES/submitted/2018/06/29/02/071570-b464-4bbb-be59-37c58c5be925.gz |   |

Submitting Pastus ... Nacional CD 

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#### FEEDING AIL WITH YOUR OWN DATA - API

Data mining Tor, social networks, OSINT with AIL Project

Feeding the framework

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Feeding AIL with your own data - API



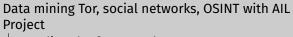
#### api/v1/import/item

2

6 7

"type": "text",
"tags": [
 "infoleak:analyst-detection=\"private-key\""
],
"text": "text to import"

# FEEDING AIL WITH YOUR OWN DATA import\_dir.py(1)



└─Feeding the framework

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```
Feeding AIL with your own data -
```

FEEDING ALL WITH YOUR OWN DATA import\_dir.py(1)

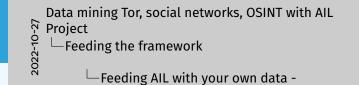
#### /!\ requirements

- Each file to be fed must be of a reasonable size:
- ~ 3 Hb / file is already large
   This is because some modules are doing recey mat
- If you want to feed a large file, better split it in multiple on

#### *I*\ requirements:

- Each file to be fed must be of a reasonable size:
  - $\blacktriangleright$  ~ 3 Mb / file is already large
  - ► This is because some modules are doing regex matching
  - If you want to feed a large file, better split it in multiple ones

# FEEDING AIL WITH YOUR OWN DATA import\_dir.py(2)



FEEDING AIL WITH YOUR OWN DATA import\_dir.py(2)

- Check your local configuration configs/core.cfg
- In the file contigs/core.ctg,
   Add 127.0.0.1:5556 in ZMQ\_Global
- (should already be set by default)
   Launch import, dir, nu with de directory you want
- Launch import\_dir.py with de directory you want import
- ▶ import\_dir.py -d dir\_path

### 1. Check your local configuration configs/core.cfg

- In the file configs/core.cfg,
- Add 127.0.0.1:5556 in ZMQ\_Global
- (should already be set by default)
- 2. Launch import\_dir.py with de directory you want to
   import
  - import\_dir.py -d dir\_path