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MIDDLE EAST AND AFRICA

26 - 28 NOVEMBER 2024
RIYADH, SAUDI ARABIA

Harnessing Large Language Models for Detecting Malicious Attachments

Abhishek Singh, Kalpesh Mantri | InceptionCyber.ai

ORGANISED BY: Riyadh Alotaibi

tahaluf تحالف an informa company

الاتحاد السعودي للأمن السيبراني والبرمجة والدرونز
SAUDI FEDERATION FOR CYBERSECURITY, PROGRAMMING & DRONES

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Abhishek Singh

- CTO and Founder of InceptionCyber.ai
- Led Research and Engineering at Cisco, FireEye, Microsoft
- Holds 40+ patents in cyber security, generative and predictive AI
- Authored 2 books on information security
- 2019 Reboot leadership award (Innovation category) SC Media, nominee for Peter Szor award
- Double MS in Computer Science & Information Security, Georgia Tech
- B.Tech in EE from IIT-BHU
- Post-graduate certificate in AI from IIT Guwahati

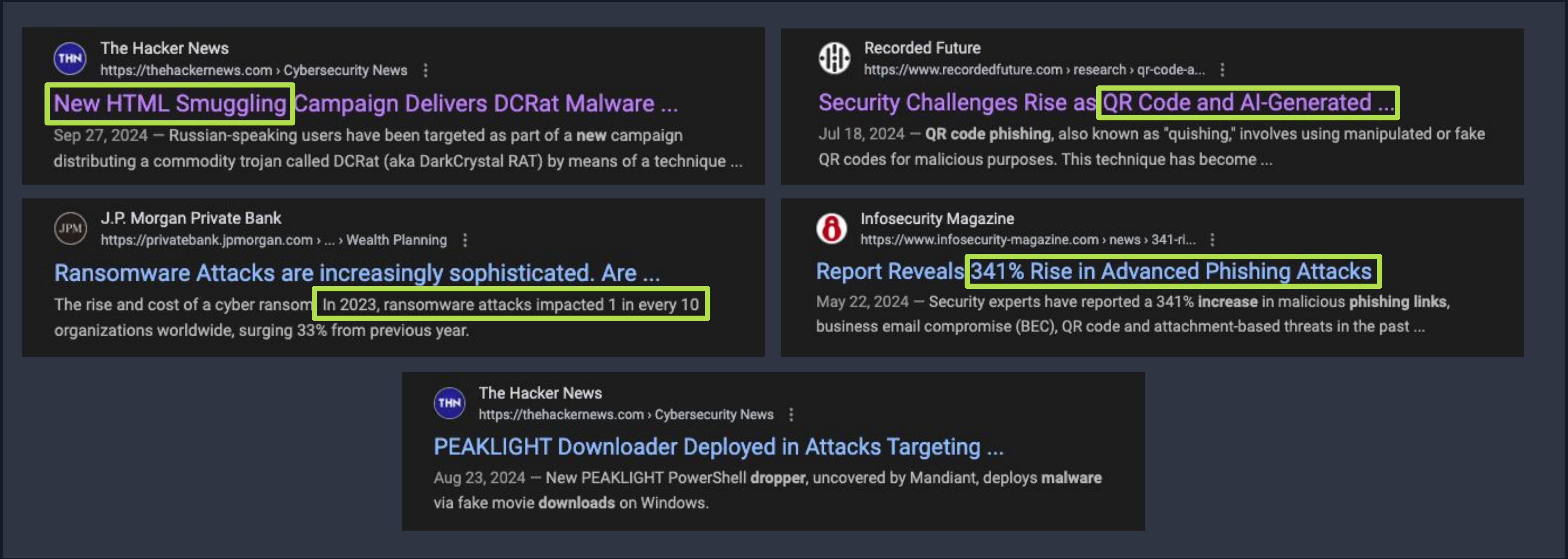
LinkedIn https://www.linkedin.com/in/abhisheksingh1/

Kalpesh Mantri

- Founding Principal Security Research Engineer at InceptionCyber.ai
- 12+ years of experience in Research and Engineering at McAfee, Quick Heal, Cisco
- Holds 3 patents in Design of Engine to Detect Malware and AI
- Presented research at Virus Bulletin, AVAR and CARO Workshop
- Led APT research and uncovered critical APT operations ‘Operation Side Copy’ and ‘Operation Honey Trap’ that target defense sectors
- Advance courses in AI from prestigious IIM Kozhikode

LinkedIn www.linkedin.com/in/kalpeshmantri

Current Threat landscape: Evasive Threats



The Hacker News
https://thehackernews.com › Cybersecurity News

New HTML Smuggling Campaign Delivers DCRat Malware ...

Sep 27, 2024 — Russian-speaking users have been targeted as part of a **new** campaign distributing a commodity trojan called DCRat (aka DarkCrystal RAT) by means of a technique ...

Recorded Future
https://www.recordedfuture.com › research › qr-code-a...

Security Challenges Rise as QR Code and AI-Generated ...

Jul 18, 2024 — **QR code phishing**, also known as "quishing," involves using manipulated or fake QR codes for malicious purposes. This technique has become ...

J.P. Morgan Private Bank
https://privatebank.jpmorgan.com › ... › Wealth Planning

Ransomware Attacks are increasingly sophisticated. Are ...

The rise and cost of a cyber ransom In 2023, ransomware attacks impacted 1 in every 10 organizations worldwide, surging 33% from previous year.

Infosecurity Magazine
https://www.infosecurity-magazine.com › news › 341-ri...

Report Reveals 341% Rise in Advanced Phishing Attacks

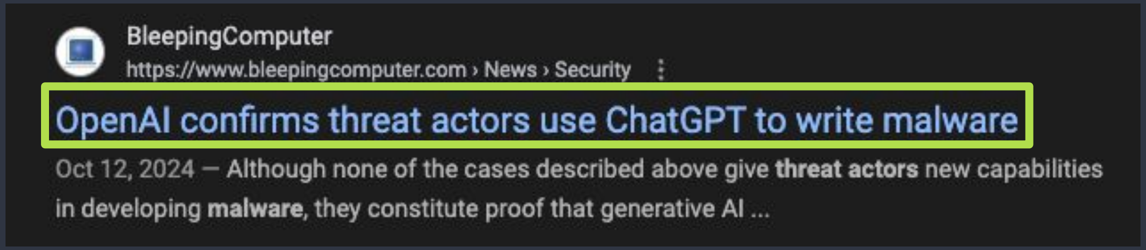
May 22, 2024 — Security experts have reported a 341% **increase** in malicious **phishing links**, business email compromise (BEC), QR code and attachment-based threats in the past ...

The Hacker News
https://thehackernews.com › Cybersecurity News

PEAKLIGHT Downloader Deployed in Attacks Targeting ...

Aug 23, 2024 — New PEAKLIGHT PowerShell **dropper**, uncovered by Mandiant, deploys **malware** via fake movie **downloads** on Windows.

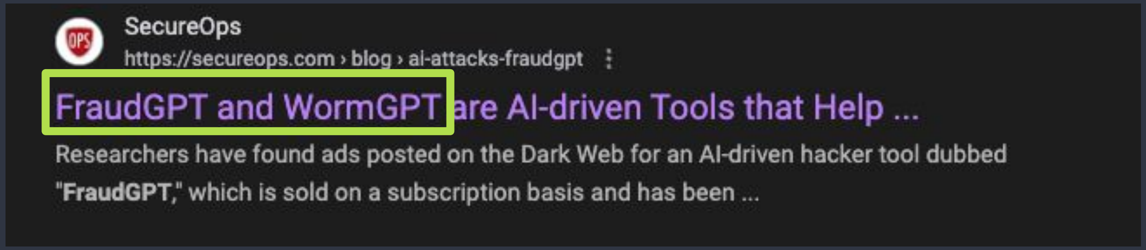
Future Threat landscape: Generative AI for Attacks



BleepingComputer
https://www.bleepingcomputer.com › News › Security

OpenAI confirms threat actors use ChatGPT to write malware

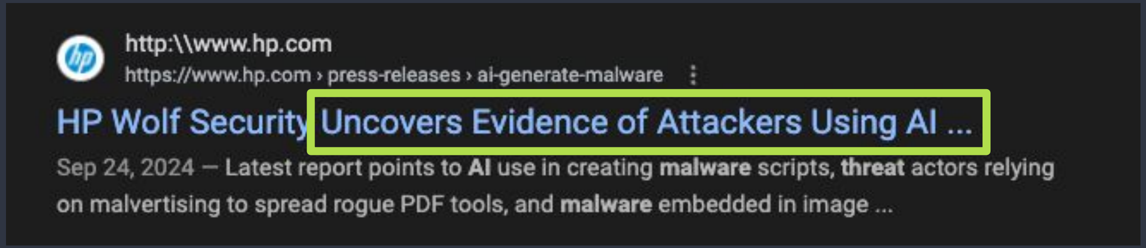
Oct 12, 2024 — Although none of the cases described above give **threat actors** new capabilities in developing **malware**, they constitute proof that generative AI ...



SecureOps
https://secureops.com › blog › ai-attacks-fraudgpt

FraudGPT and WormGPT are AI-driven Tools that Help ...

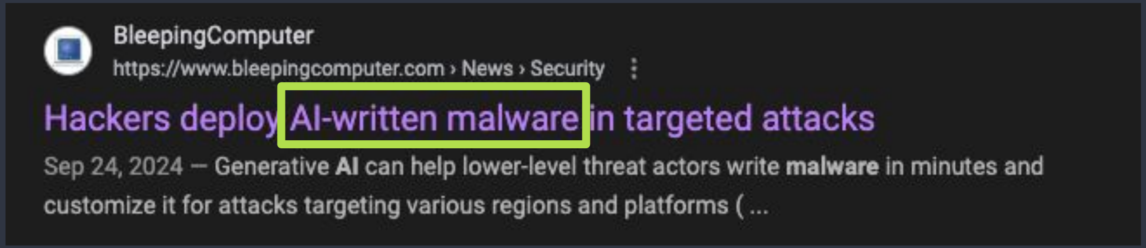
Researchers have found ads posted on the Dark Web for an AI-driven hacker tool dubbed "**FraudGPT**," which is sold on a subscription basis and has been ...



http:\\www.hp.com
https://www.hp.com › press-releases › ai-generate-malware

HP Wolf Security Uncovers Evidence of Attackers Using AI ...

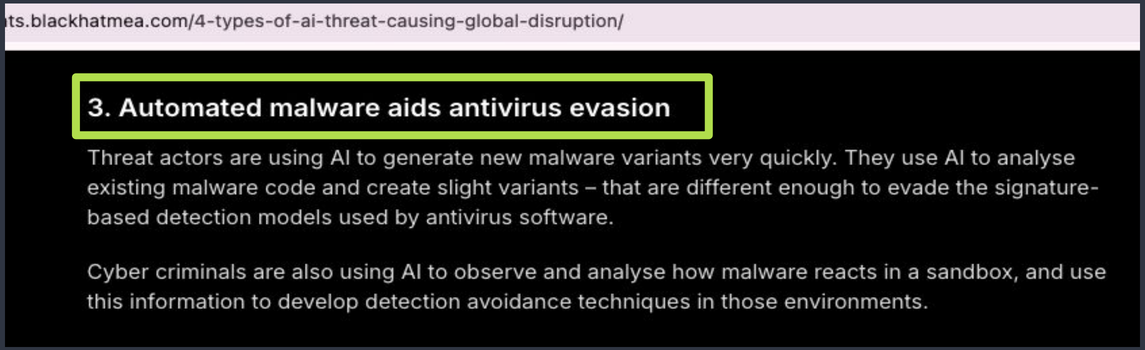
Sep 24, 2024 — Latest report points to **AI** use in creating **malware** scripts, **threat** actors relying on malvertising to spread rogue PDF tools, and **malware** embedded in image ...



BleepingComputer
https://www.bleepingcomputer.com › News › Security

Hackers deploy AI-written malware in targeted attacks

Sep 24, 2024 — Generative **AI** can help lower-level threat actors write **malware** in minutes and customize it for attacks targeting various regions and platforms (...



ts.blackhatmea.com/4-types-of-ai-threat-causing-global-disruption/

3. Automated malware aids antivirus evasion

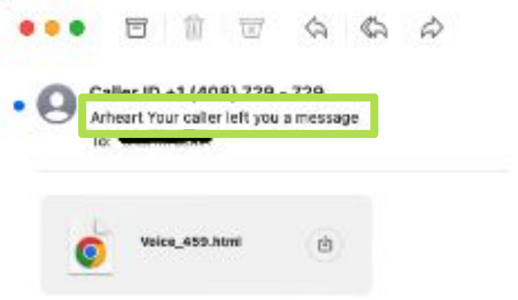
Threat actors are using AI to generate new malware variants very quickly. They use AI to analyse existing malware code and create slight variants – that are different enough to evade the signature-based detection models used by antivirus software.

Cyber criminals are also using AI to observe and analyse how malware reacts in a sandbox, and use this information to develop detection avoidance techniques in those environments.

Generative AI will be used to Learn, Adapt, and Craft Evasive Malicious Payloads at Unprecedented Scale

Understanding the Problem

Evasions (human or AI) hide malicious payloads in multi-stage attacks

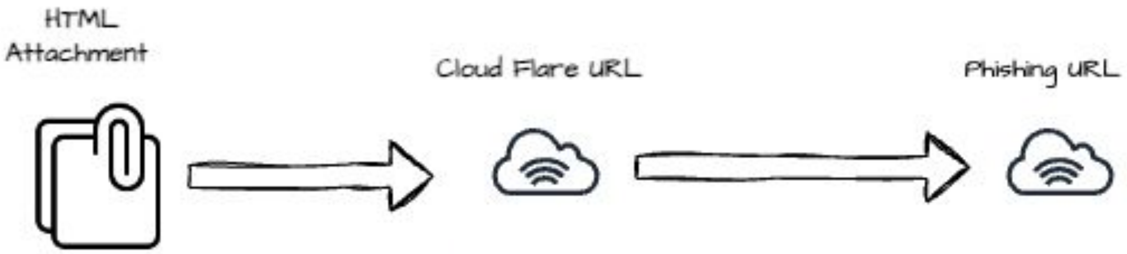


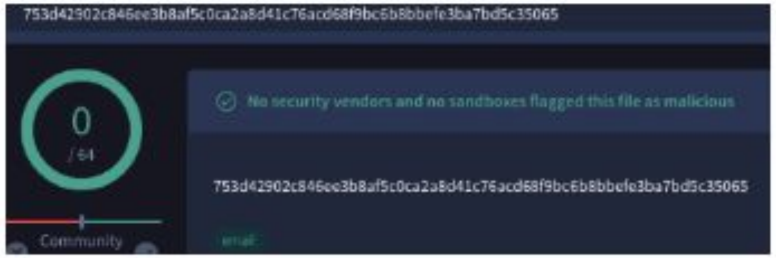
Caller ID +1 (408) 729 - 729

Arheart Your caller left you a message

To: [redacted]

Voice_459.html





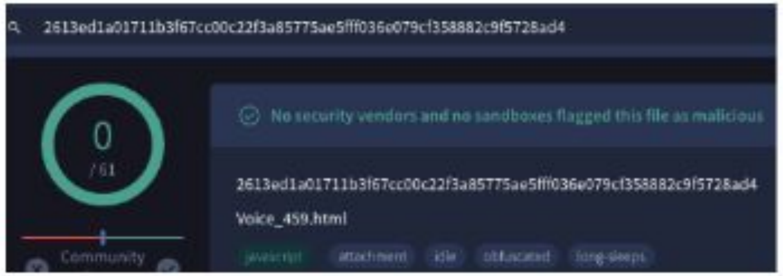
753d42902c846ee3b8af5c0ca2a8d41c76acd68f9bc6b8bbefe3ba7bd5c35065

0 / 64

No security vendors and no sandboxes flagged this file as malicious

753d42902c846ee3b8af5c0ca2a8d41c76acd68f9bc6b8bbefe3ba7bd5c35065

email



2613ed1a01711b3f67cc00c22f3a85775ae5fff036e079cf358882c9f5728ad4

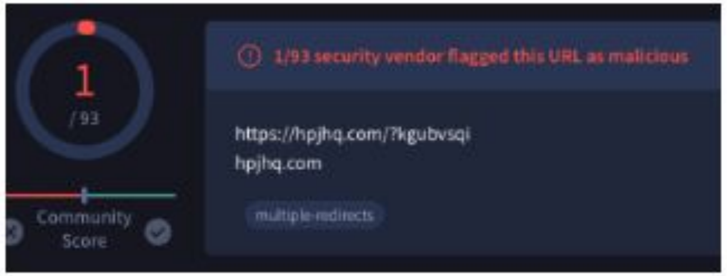
0 / 61

No security vendors and no sandboxes flagged this file as malicious

2613ed1a01711b3f67cc00c22f3a85775ae5fff036e079cf358882c9f5728ad4

Voice_459.html

javascript attachment idle obfuscated long-sleeps



1 / 93

1/93 security vendor flagged this URL as malicious

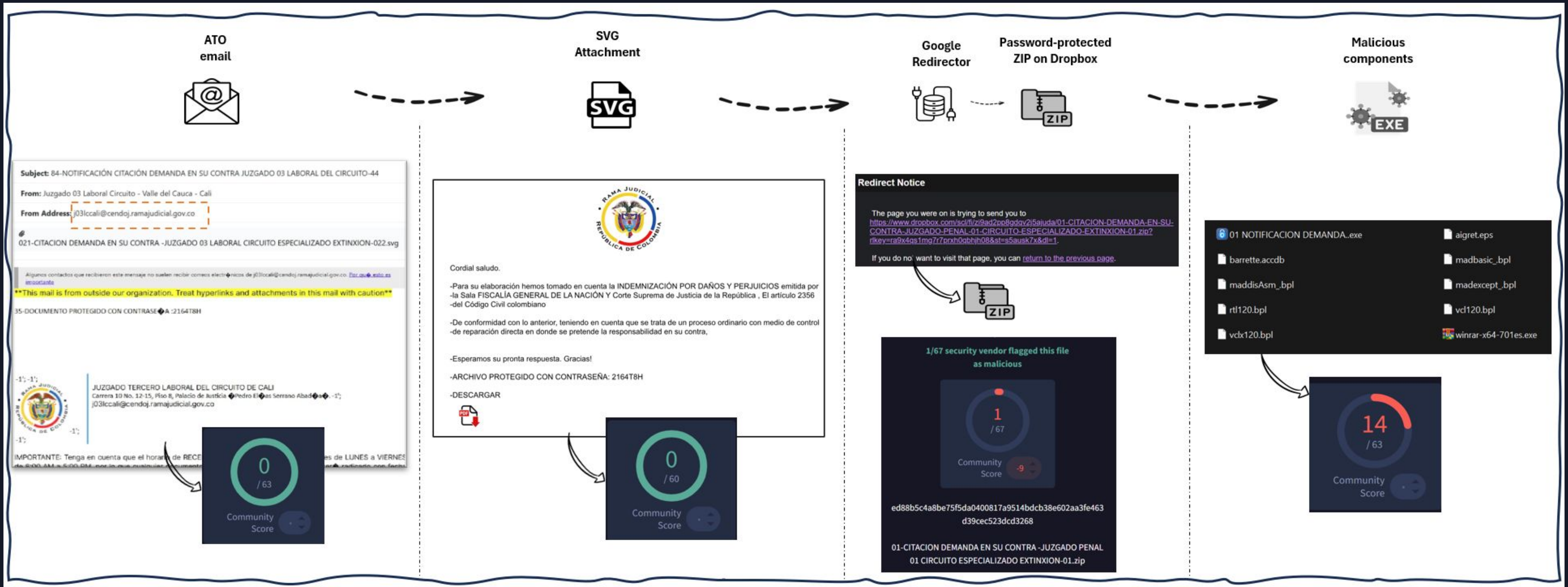
https://hpjhq.com/?kgubvsqi

hpjhq.com

multiple-redirects

Understanding the Problem

Evasions (human or AI) hide malicious payloads in multi-stage attacks



Subject: 84-NOTIFICACIÓN CITACIÓN DEMANDA EN SU CONTRA JUZGADO 03 LABORAL DEL CIRCUITO-44

From: Juzgado 03 Laboral Circuito - Valle del Cauca - Cali

From Address: j03lccali@cendoj.ramajudicial.gov.co

021-CITACION DEMANDA EN SU CONTRA -JUZGADO 03 LABORAL CIRCUITO ESPECIALIZADO EXTINXION-022.svg

Algunos contactos que recibieron este mensaje no suelen recibir correos electr�nicos de j03lccali@cendoj.ramajudicial.gov.co. Por qu� esto es importante

This mail is from outside our organization. Treat hyperlinks and attachments in this mail with caution

35-DOCUMENTO PROTEGIDO CON CONTRASE�A :2164T8H

-1';-1';

JUZGADO TERCERO LABORAL DEL CIRCUITO DE CALI
Carrera 10 No. 12-15, Piso 8, Palacio de Justicia �Pedro El�as Serrano Abad�a�. -1';
j03lccali@cendoj.ramajudicial.gov.co

-1';

-1';

IMPORTANTE: Tenga en cuenta que el horario de RECE … es de LUNES a VIERNES

RAMA JUDICIAL · REPÚBLICA DE COLOMBIA ·

Cordial saludo.

-Para su elaboración hemos tomado en cuenta la INDEMNIZACIÓN POR DAÑOS Y PERJUICIOS emitida por
-la Sala FISCALÍA GENERAL DE LA NACIÓN Y Corte Suprema de Justicia de la República , El artículo 2356
-del Código Civil colombiano

-De conformidad con lo anterior, teniendo en cuenta que se trata de un proceso ordinario con medio de control
-de reparación directa en donde se pretende la responsabilidad en su contra,

-Esperamos su pronta respuesta. Gracias!

-ARCHIVO PROTEGIDO CON CONTRASEÑA: 2164T8H

-DESCARGAR

Redirect Notice

The page you were on is trying to send you to https://www.dropbox.com/scl/fi/zi9ad2pp8gdqv2j5ajuda/01-CITACION-DEMANDA-EN-SU-CONTRA-JUZGADO-PENAL-01-CIRCUITO-ESPECIALIZADO-EXTINXION-01.zip?rlkey=ra9x4qs1mg7r7prxh0qbhjh08&st=s5ausk7x&dl=1.

If you do not want to visit that page, you can return to the previous page.

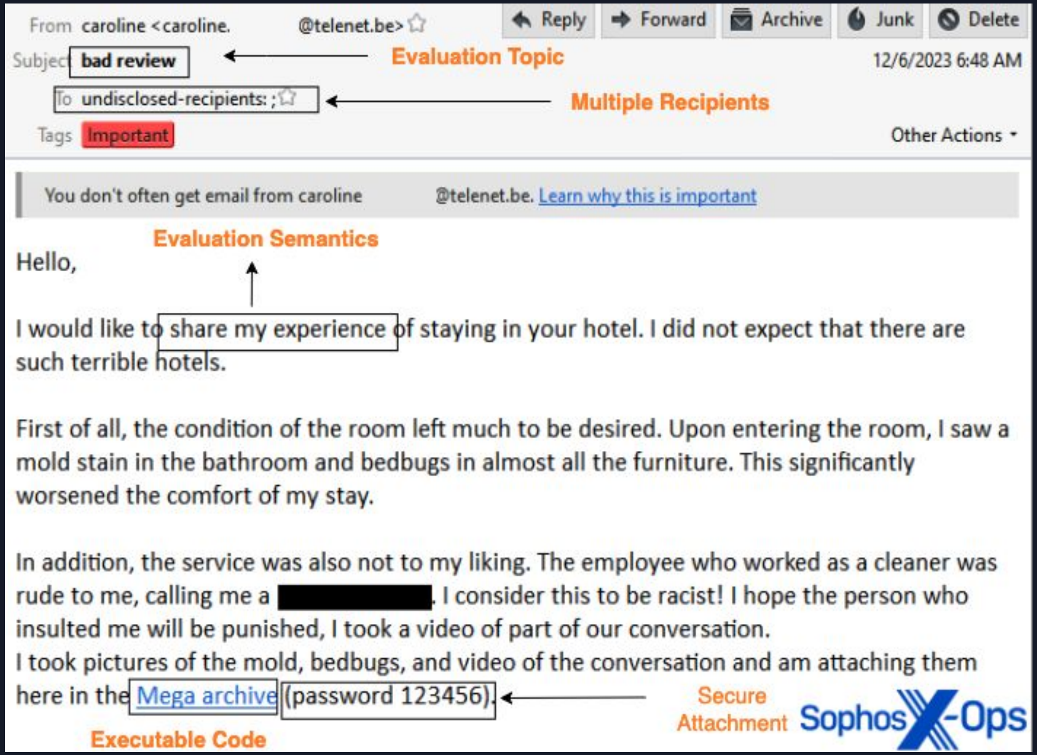
1/67 security vendor flagged this file as malicious

ed88b5c4a8be75f5da0400817a9514bdcb38e602aa3fe463d39cec523dcd3268

01-CITACION DEMANDA EN SU CONTRA -JUZGADO PENAL 01 CIRCUITO ESPECIALIZADO EXTINXION-01.zip

01 NOTIFICACION DEMANDA..exe
barrette.accdb
maddisAsm_.bpl
rtl120.bpl
vclx120.bpl
aigret.eps
madbasic_.bpl
madexcept_.bpl
vcl120.bpl
winrar-x64-701es.exe

Becoming Immune to Evasion: Solving From First Principles



From caroline <caroline.   @telenet.be>

Subject bad review

12/6/2023 6:48 AM

To undisclosed-recipients: ;

Tags Important

You don't often get email from caroline   @telenet.be. Learn why this is important

Hello,

I would like to share my experience of staying in your hotel. I did not expect that there are such terrible hotels.

First of all, the condition of the room left much to be desired. Upon entering the room, I saw a mold stain in the bathroom and bedbugs in almost all the furniture. This significantly worsened the comfort of my stay.

In addition, the service was also not to my liking. The employee who worked as a cleaner was rude to me, calling me a [redacted]. I consider this to be racist! I hope the person who insulted me will be punished, I took a video of part of our conversation.
I took pictures of the mold, bedbugs, and video of the conversation and am attaching them here in the Mega archive (password 123456).

Stopping threats has been focused on analyzing subsequent stages till malicious payload is seen.

Extract executable → detonate in sandbox → monitor behavior (Password Exfiltration)

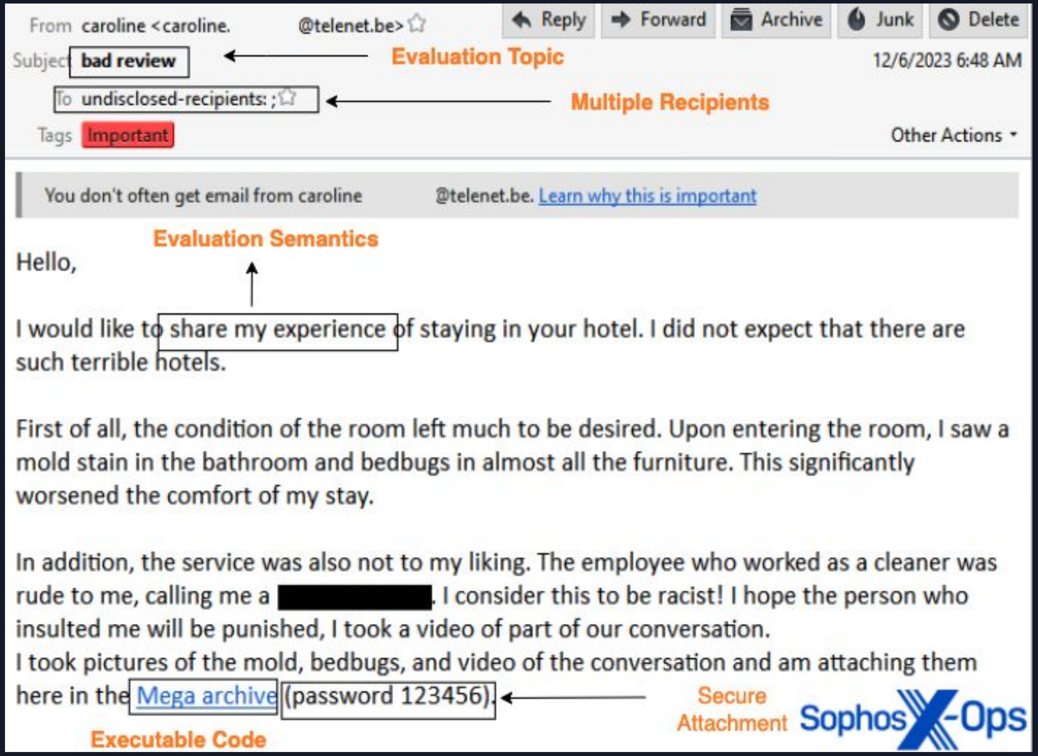
Therefore, evasions (human or AI) **Hide Malicious Payload** ⇒ Bypass Technology ⇒ Breach

Attack employed evasions (Signed files, large size, password protected, etc) → bypass sandboxes → Breach.

To change this paradigm, we must solve from first principles

A new methodology that doesn't require malicious payload/behavior ⟹ Immune to evasions ⇒ Inspection ⇒ Detection

Becoming Immune to Evasion: Intent-based Analysis



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Derive Intent via Semantic and Thematic Analysis

Analysis

- Evaluation Communication having an executable code
- Sent to undisclosed recipients
- Sent from an external account

Verdict

- Unlikely behavior ⇒ Malicious Attachment

Leveraging **Semantic Analysis** as feature set removes reliance on Malicious Payload / fetching subsequent stages

⇒ Immune to Evasions

Design Steps : Semantics and Thematic Analysis for Classification

Step 1: Analyze Historic Threat Actor Emails

- Design a framework to extract semantic and thematic meaning from emails.

Step 2: Design an analysis system which does not need a malicious payload

- Examine emails to determine if they have semantic / thematic tactics used by threat actors
- Perform deep file parsing and analyze URLs
- Perform SMTP Header Analysis

Leverage learnings from email semantics, deep file parsing and header analysis
to classify attachments as malicious

Design Steps : Semantics and Thematic Analysis for Classification

Step 1: Analyze Historic Threat Actor Emails

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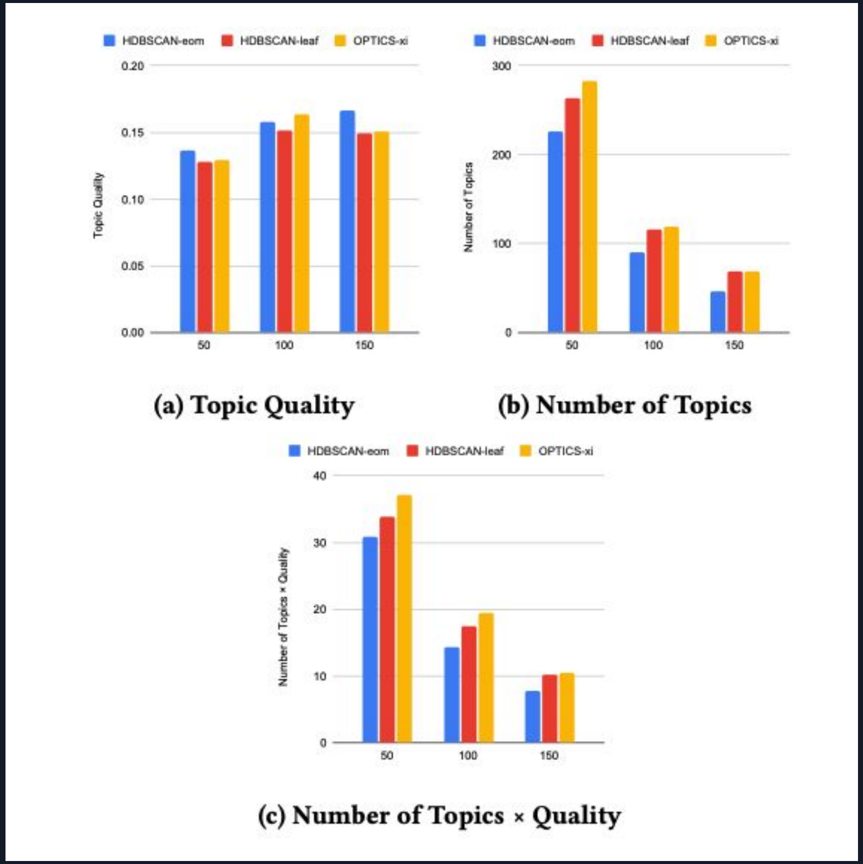
Becoming Immune to Evasion: Solving From First Principles



(a) Topic Quality

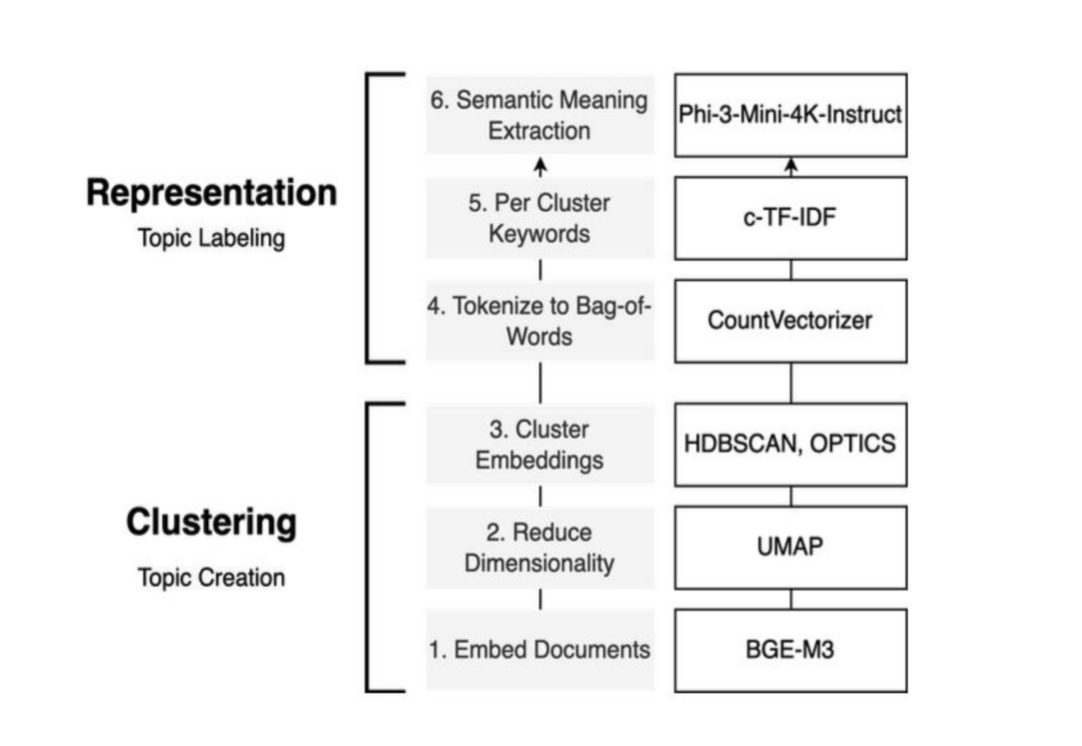
(b) Number of Topics

(c) Number of Topics × Quality

Experimentation with Unsupervised Clustering Algorithms

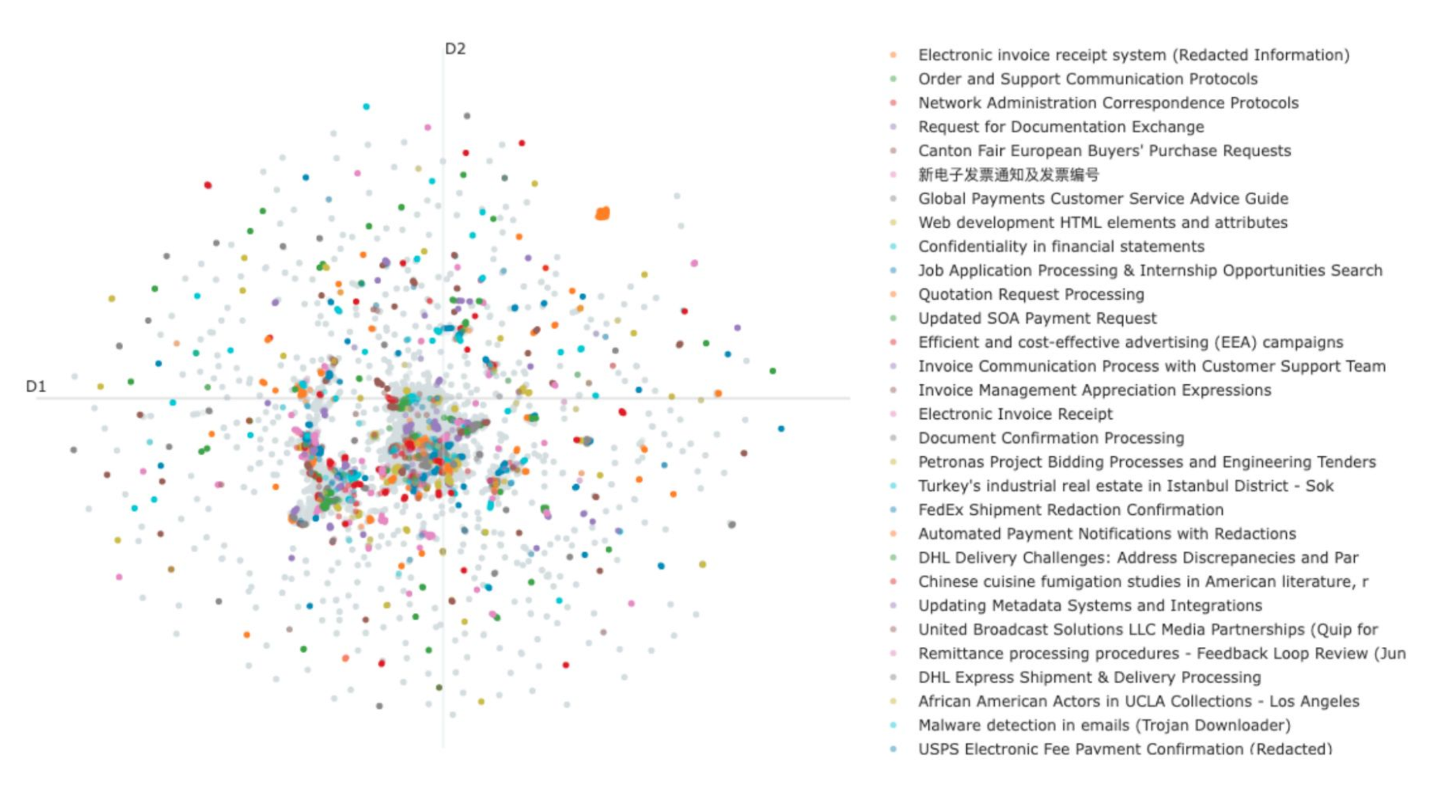
- Data Source:
  - Extracted email bodies, subject from historic emails used to deliver malware
- Algorithms Evaluated:
  - HDBSCAN - EOM
  - HDBSCAN - Leaf
  - OPTICS
- Evaluation Metrics:
  - Topic Quality - Measurement of granularity of cluster
  - Topic Coherence - Interpretability of a topic, closeness of words in topic
  - Topic Diversity - Unique words for all topics
- Result for Deciding OPTICS:
  - OPTICS produced 25% more topics while retaining 94.9% of the quality of HDBSCAN - EOM

Framework for extracting semantics from historic emails sent by threat actors to deliver malicious attachments



Name	c-TF-IDF Keyword Representation	Phi-3-Mini-4K-Instruct Semantic Meaning	Topic Hierarchy / Thematic Analysis
financial responding disapproval	[‘financial’, ‘responding’, ‘disapproval’, ‘very’, ‘topic’, ‘reporthello’, ‘monthly’]	Monthly Financial Response Evaluation Processing	‘financial’: [‘informational’]

Extracting semantics from clusters of historic malicious emails



Inferences

- Clusters denote topics which are getting repeated by threat actors to deliver malicious attachments and call to action URLs.

- **Extracted 250+ semantics**
  Semantics which are extensively used by threat actors to deliver malicious attachments, across languages.

  Details are in our arXiv:2407.08888 paper
  A. Yakymovych, A. SIngh et.al "Uncovering Topics and Semantics Utilized by threat actor to deliver Malicious Attachments"

Design Steps : Semantics and Thematic Analysis for Classification

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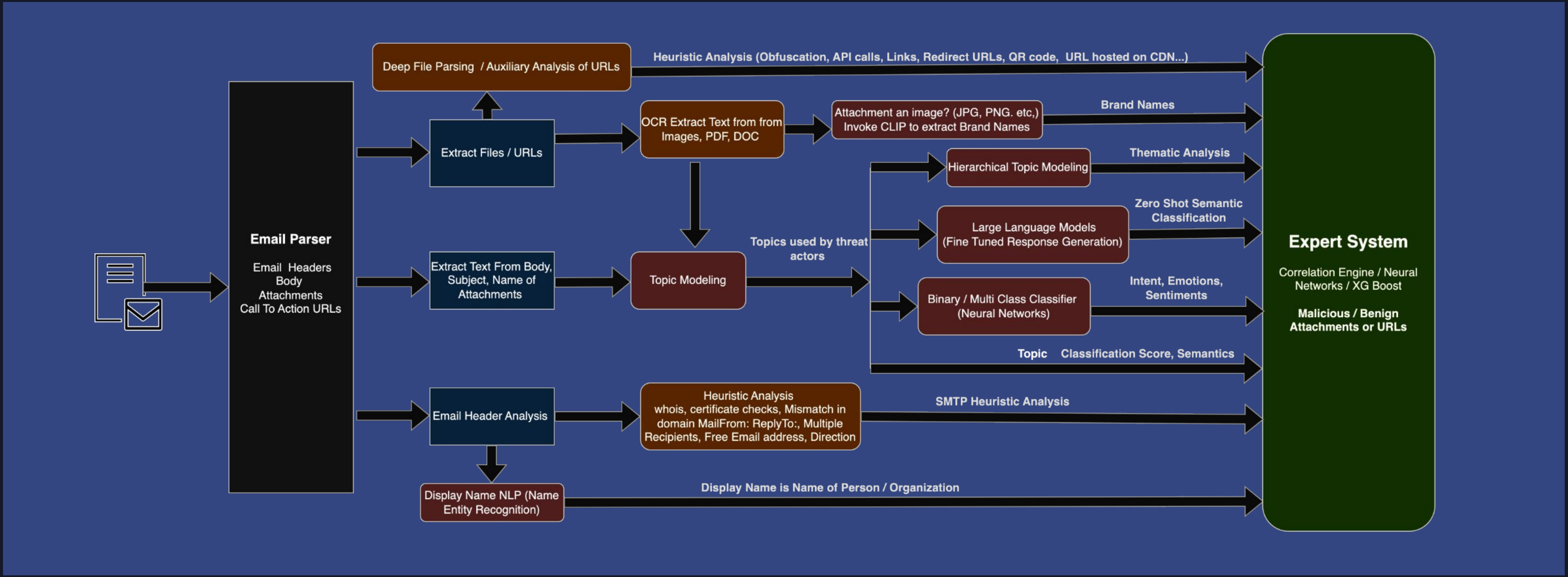
Leverage combination of learnings from email semantics, file parsing results, and header analysis to classify attachments or URLs as malicious

Design of a Neural Analysis and Correlation Engine (NACE)

Leveraging Topics and Semantics to detect Malicious Attachments and URLs



Email Parser

Email Headers
Body
Attachments
Call To Action URLs

Extract Files / URLs

Deep File Parsing / Auxiliary Analysis of URLs

Heuristic Analysis (Obfuscation, API calls, Links, Redirect URLs, QR code, URL hosted on CDN...)

OCR Extract Text from from Images, PDF, DOC

Attachment an image? (JPG, PNG. etc,) Invoke CLIP to extract Brand Names

Brand Names

Extract Text From Body, Subject, Name of Attachments

Topic Modeling

Topics used by threat actors

Hierarchical Topic Modeling

Thematic Analysis

Large Language Models (Fine Tuned Response Generation)

Zero Shot Semantic Classification

Binary / Multi Class Classifier (Neural Networks)

Intent, Emotions, Sentiments

Topic Classification Score, Semantics

Email Header Analysis

Heuristic Analysis
whois, certificate checks, Mismatch in domain MailFrom: ReplyTo:, Multiple Recipients, Free Email address, Direction

SMTP Heuristic Analysis

Display Name NLP (Name Entity Recognition)

Display Name is Name of Person / Organization

Expert System

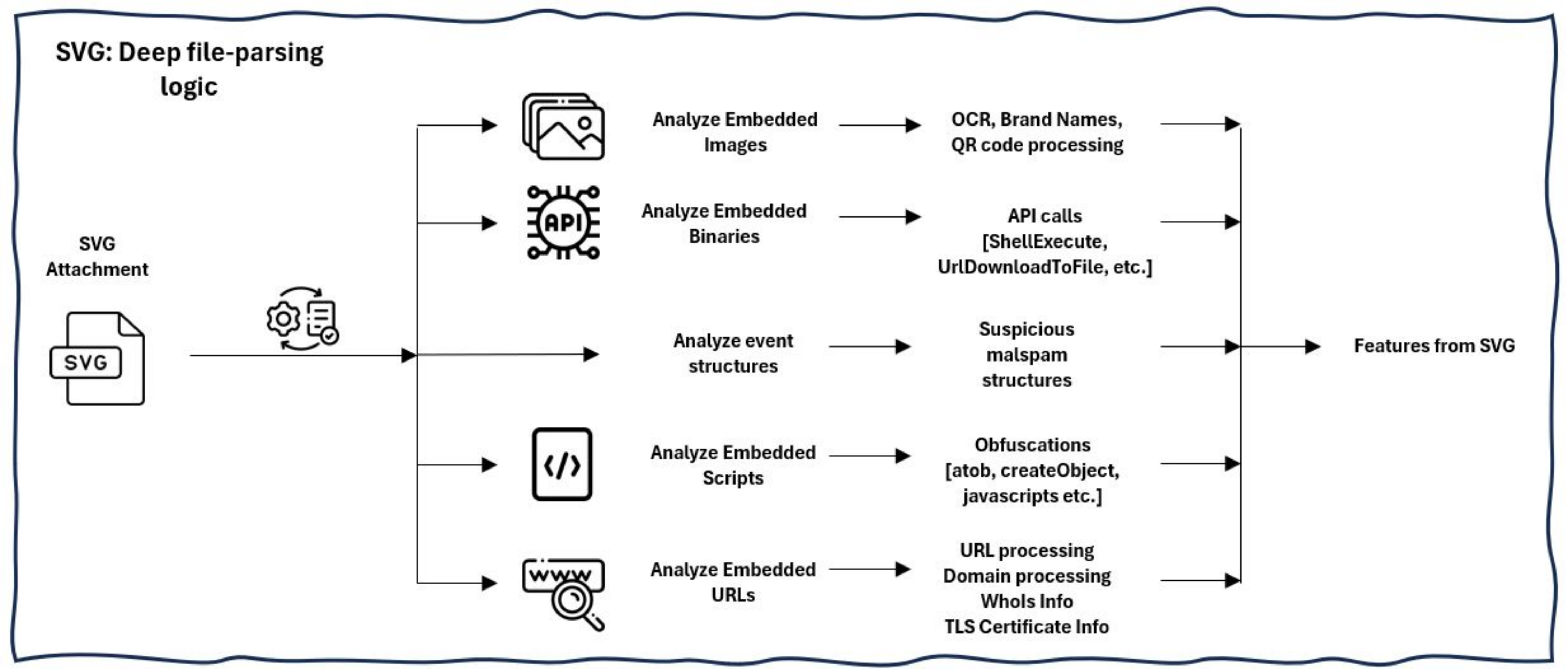
Correlation Engine / Neural Networks / XG Boost

Malicious / Benign Attachments or URLs

Deep File Analysis of NACE

NACE performs deep file parsing, text extraction via OCR,, Brand Extraction using CLIP, API Invocation, Obfuscation, gathering auxiliary information (whois, certificates etc....) of any embedded URLs in a file for 20+ file formats:

- Document File Formats (Office file types, PDF, OneNote, etc.)
- Archive File Formats (ZIP, RAR, ISO, ZPAQ, etc.)
- Image File Formats (PNG, JPEG)
- Script File Formats (VBS, JS, PY, etc.)
- Markup and Web File Formats (HTML, SVG, HTA, XML, etc.)
- Executables (EXE, LNK, VBE, BAT, etc.)



SVG: Deep file-parsing logic

SVG Attachment

Analyze Embedded Images

OCR, Brand Names, QR code processing

Analyze Embedded Binaries

API calls [ShellExecute, UrlDownloadToFile, etc.]

Analyze event structures

Suspicious malspam structures

Analyze Embedded Scripts

Obfuscations [atob, createObject, javascripts etc.]

Analyze Embedded URLs

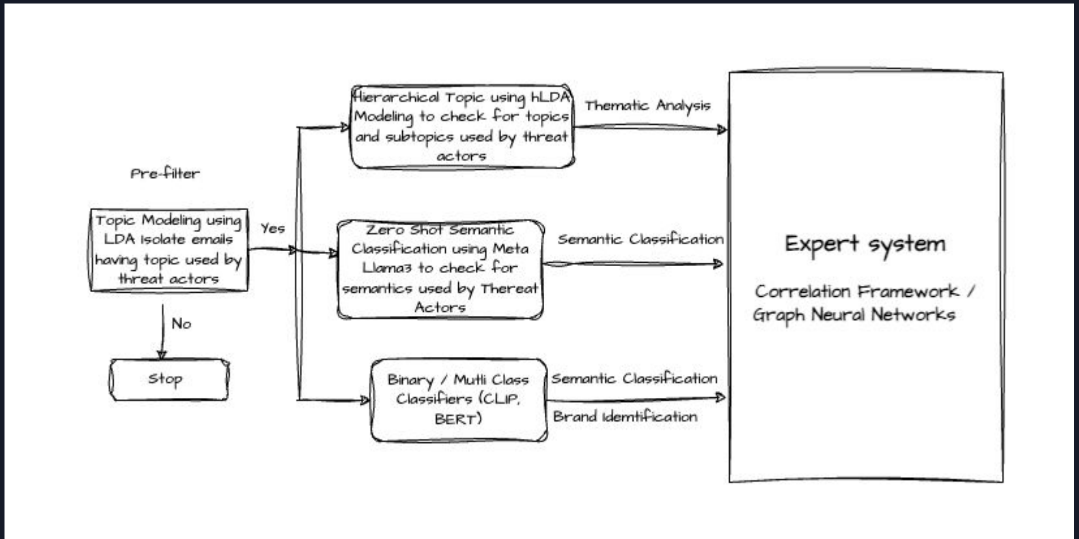
URL processing
Domain processing
WhoIs Info
TLS Certificate Info

Features from SVG

Semantic & Thematic Analysis of NACE

Isolate Embedded Semantics & Thematic meaning in an Email

- **Topic Modeling prefilter to Invoke Semantic Analysis**
  - LDA: Excels in Identifying distinct topics . Suitable
  - BERT Topic: Excels in identifying semantic similarity and not distinct topics. Lack of fine tuned Topic result in FP in detections.
- **Hierarchical Topic Modeling : Topic & Subtopic in a text**
  - hLDA: Consistent results with fixed seed, fine-tuned Topic/Subtopics
  - HDP: Non-parametric Bayesian Approach, Random sampling, Inconsistent Results across multiple runs. Not suitable
- **Zero Shot Semantic Classification: Semantic embedded in an email**
  - Leverages prompt engineering for fine -tuned response generation
    - Fine tuning parameters (temp, top_p) passed to Large Language Model. (LLMs) restricted creativity mode.
    - Identified precise semantics embedded in text,
    - Immune to variations


Pre-filter
Topic Modeling using LDA isolate emails having topic used by threat actors
Yes
No
Stop
Hierarchical Topic using hLDA Modeling to check for topics and subtopics used by threat actors
Thematic Analysis
Zero Shot Semantic Classification using Meta Llama3 to check for semantics used by Thereat Actors
Semantic Classification
Binary / Mutli Class Classifiers (CLIP, BERT)
Semantic Classification
Brand Idemtification
Expert system
Correlation Framework / Graph Neural Networks

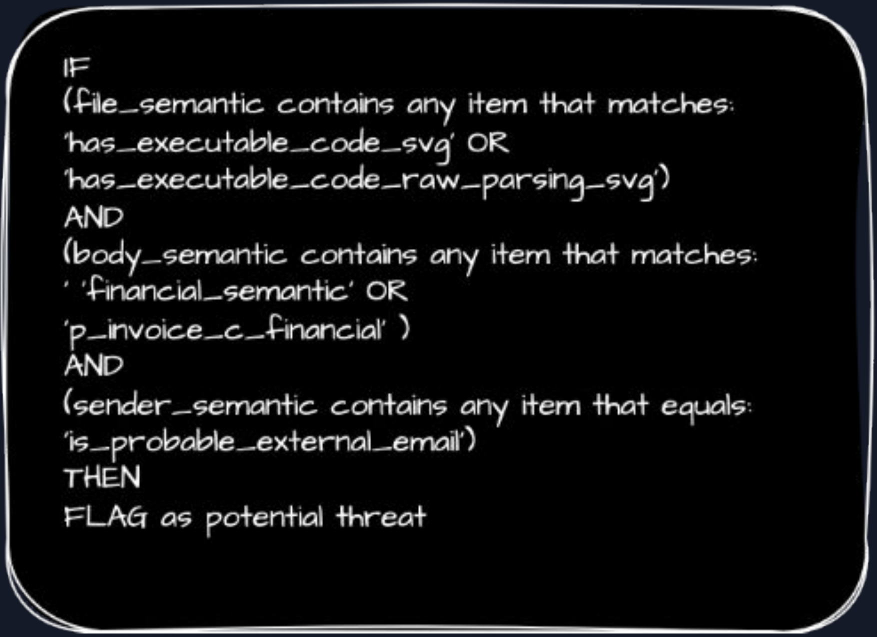
Expert System for Decision Making

Correlation Engine

- Correlates Semantic analysis, Thematic Analysis, Topic Modeling, Deep File Parsing, SMTP Headers to decide if Attachment is malicious

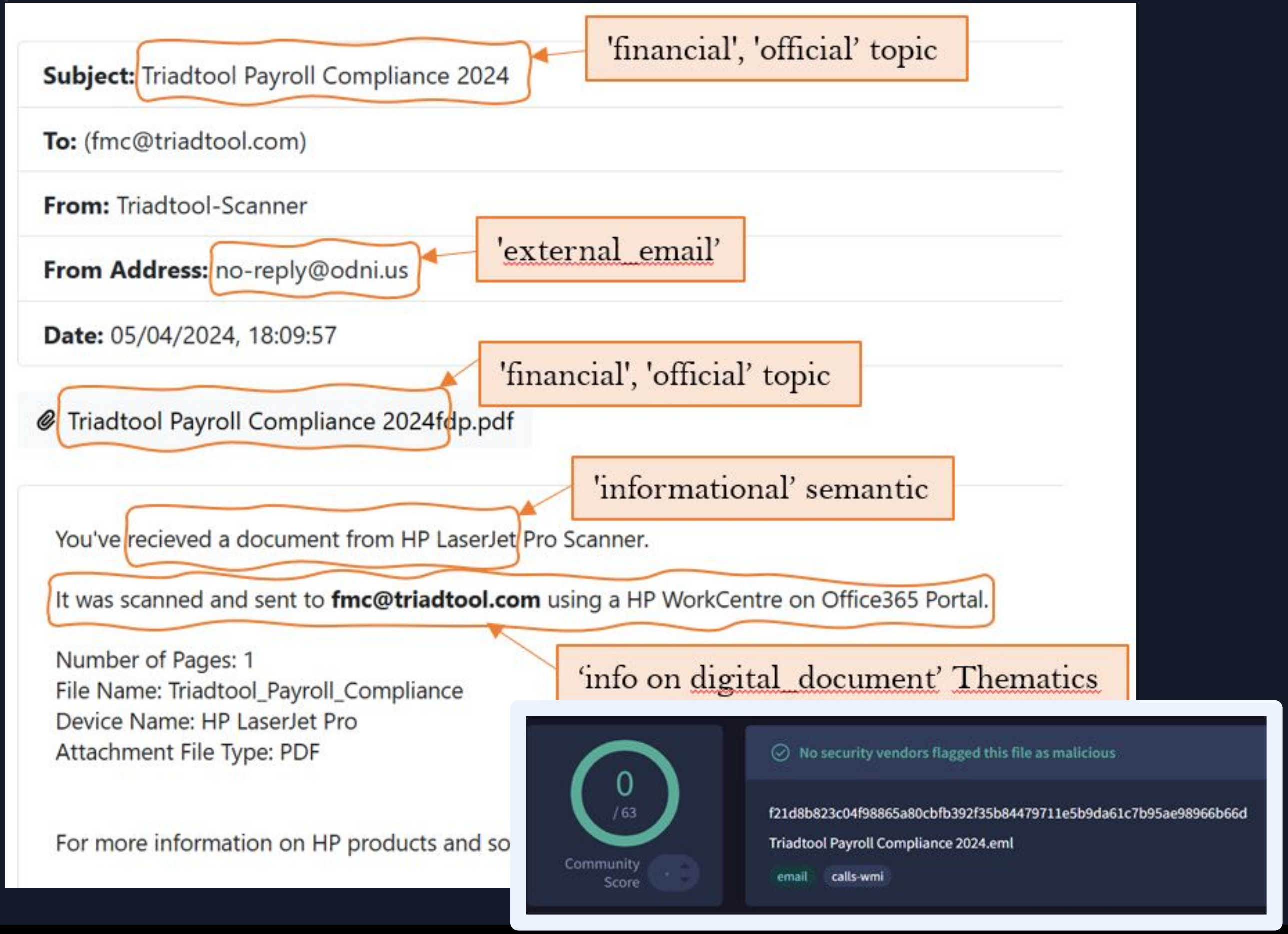
Graph Neural Networks

- Nodes Semantic Analysis, Deep File Parsing and SMTP Headers to decide malicious or benign files / URLs



```
IF
(file_semantic contains any item that matches:
'has_executable_code_svg' OR
'has_executable_code_raw_parsing_svg')
AND
(body_semantic contains any item that matches:
' 'financial_semantic' OR
'p_invoice_c_financial' )
AND
(sender_semantic contains any item that equals:
'is_probable_external_email')
THEN
FLAG as potential threat
```

Case-Study:
Topics, Semantics, Thematic Analysis



Subject: Triadtool Payroll Compliance 2024

'financial', 'official' topic

To: (fmc@triadtool.com)

From: Triadtool-Scanner

From Address: no-reply@odni.us

'external_email'

Date: 05/04/2024, 18:09:57

Triadtool Payroll Compliance 2024fdp.pdf

'financial', 'official' topic

You've recieved a document from HP LaserJet Pro Scanner.

'informational' semantic

It was scanned and sent to **fmc@triadtool.com** using a HP WorkCentre on Office365 Portal.

'info on digital_document' Thematics

Number of Pages: 1
File Name: Triadtool_Payroll_Compliance
Device Name: HP LaserJet Pro
Attachment File Type: PDF

For more information on HP products and so

No security vendors flagged this file as malicious

f21d8b823c04f98865a80cbfb392f35b84479711e5b9da61c7b95ae98966b66d

Triadtool Payroll Compliance 2024.eml

Header Semantics

Sender Domain analysis:
- WhoIs info, Newly registered, Cloud name_servers etc.
- TLS certificates, Free email domain, Domain buckets etc.
- ...

Header:
- Anomalies identification (Sender is Non-Permitted IP, Return Address / MessageID Anomaly etc.)
- XMailer, UserAgent, Multi-Recipients identifications etc.
- Mail directions
- ...

Subject Topic Identification

Attachment-Name Meta

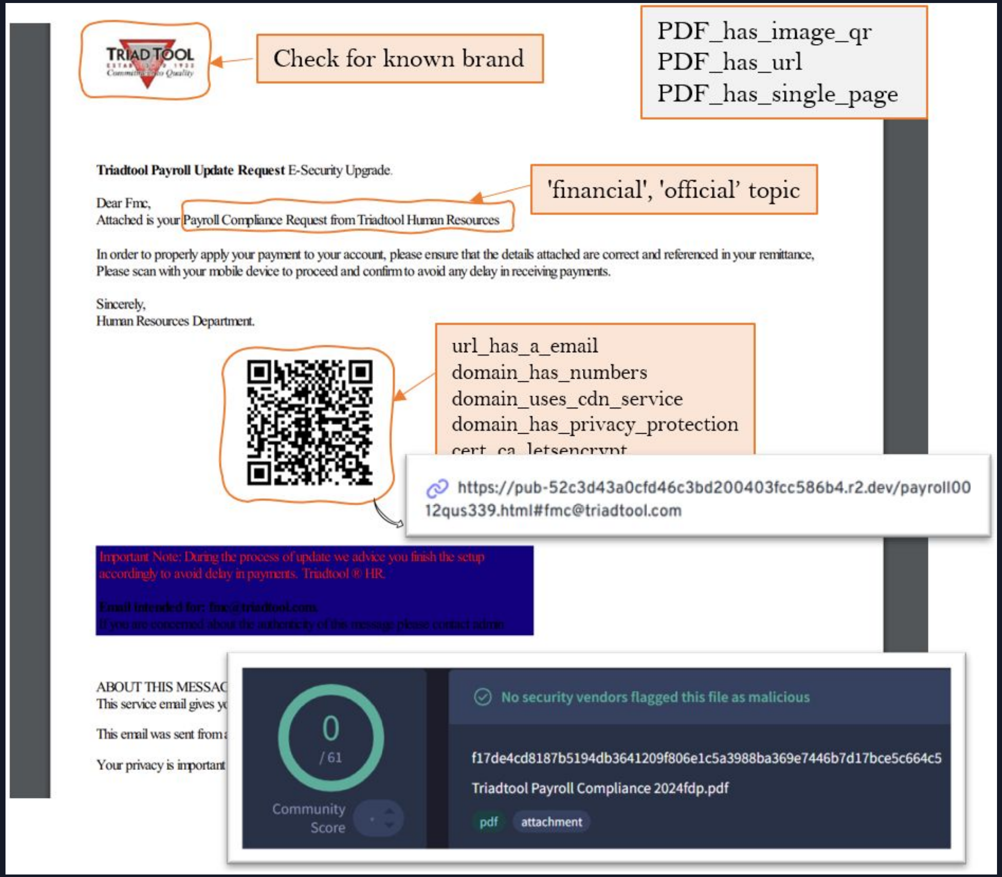
Subject Topic Identification Financial, Official

Body Semantics and Thematics

Topic modeling: Official, Financial
Thematics Analysis : Informational [Digital_Communication]
LLM Classification (Zero-Shot Semantics): Informational Semantics
URL extraction and analysis

Image analytics:
- Text extraction / OCR
- QR code analysis
- Brand Identification

Case-Study Continued:
Attachment Semantics, Image Processing, URL analysis



Check for known brand

PDF_has_image_qr
PDF_has_url
PDF_has_single_page

Triadtool Payroll Update Request E-Security Upgrade.

Dear Fmc,
Attached is your Payroll Compliance Request from Triadtool Human Resources

'financial', 'official' topic

In order to properly apply your payment to your account, please ensure that the details attached are correct and referenced in your remittance, Please scan with your mobile device to proceed and confirm to avoid any delay in receiving payments.

Sincerely,
Human Resources Department.

url_has_a_email
domain_has_numbers
domain_uses_cdn_service
domain_has_privacy_protection
cert_ca_letsencrypt

https://pub-52c3d43a0cfd46c3bd200403fcc586b4.r2.dev/payroll0012qus339.html#fmc@triadtool.com

Important Note: During the process of update we advice you finish the setup accordingly to avoid delay in payments. Triadtool ® HR.

Email intended for: fmc@triadtool.com
If you are concerned about the authenticity of this message please contact admin

ABOUT THIS MESSAC
This service email gives y
This email was sent from
Your privacy is important

0
/ 61
Community Score

No security vendors flagged this file as malicious

f17de4cd8187b5194db3641209f806e1c5a3988ba369e7446b7d17bce5c664c5

Triadtool Payroll Compliance 2024fdp.pdf

pdf attachment

Attachment Semantics

PDF Structural Analysis
PDF Metadata identification
PDF Tags Counter
Image extraction
URL extraction
PDF Topic identification
...

Image Processing

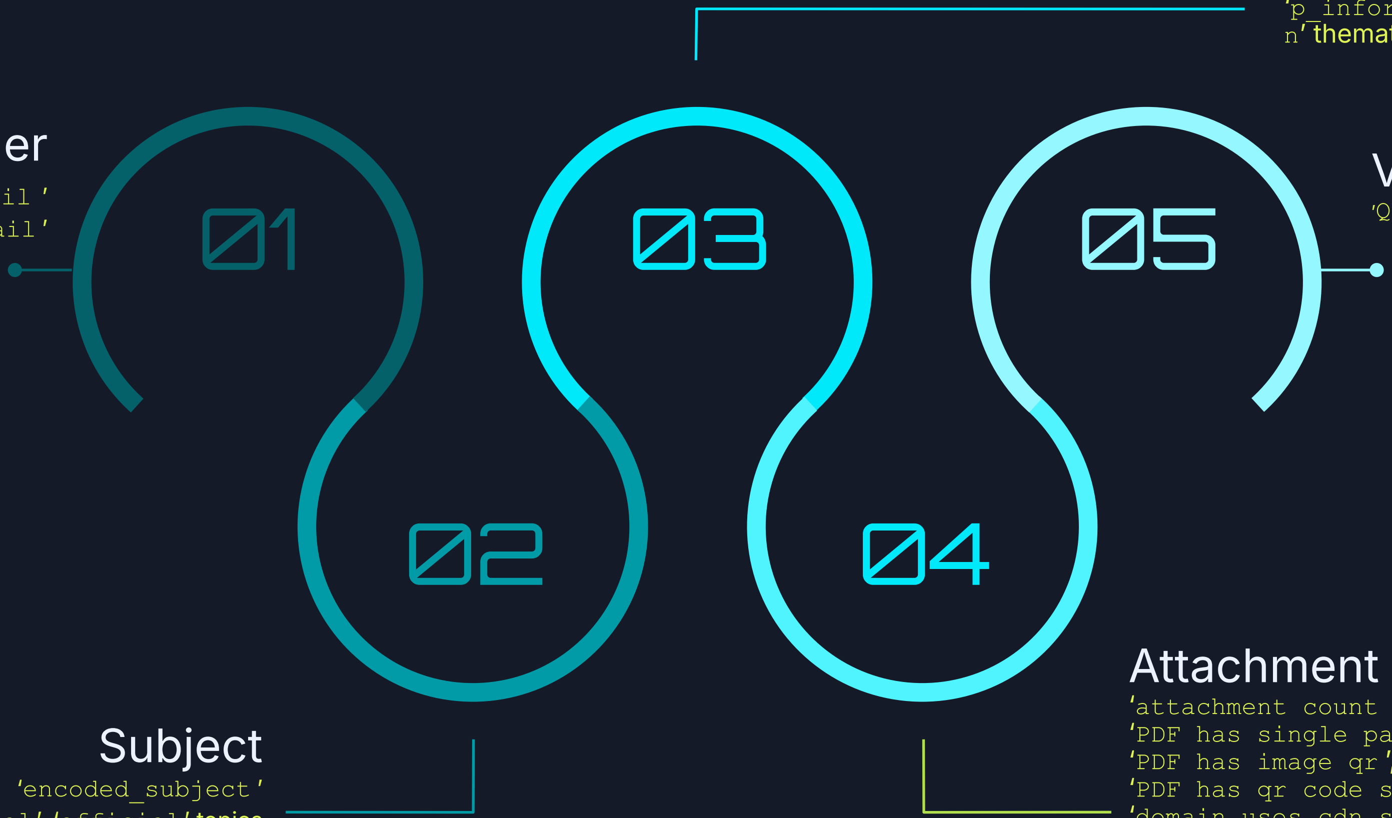
OCR, Brand Identification, QR Code Identification, etc.

URL Analysis

Suspicious URL format analysis
Identification of suspicious domains
WhoIs information
Domain Creation info
Domain Categories
TLS Certificates analysis
Analyzing Document sent as URLs
...

black hat
MIDDLE EAST AND AFRICA

Case-Study Continued: Expert System



Header

‘is_probable_external_email ’
‘is_first_email’

Subject

‘encoded_subject’
‘financial’,‘official’topics

Body

‘informational semantic ’semantics
‘p_informational_c_digital_communication’thematics

Attachment

‘attachment count == 1 ’,
‘PDF has single page ’
‘PDF has image qr ’,
‘PDF has qr code semantic ’
‘domain uses cdn service ’,
‘cert_ca_letsencrypt ’
...

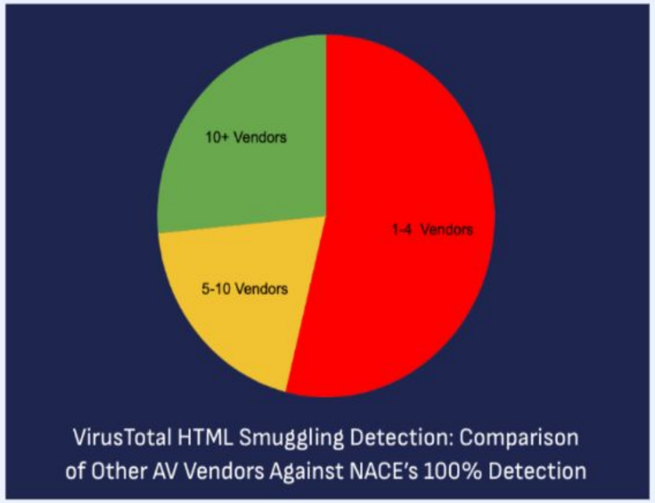
Verdict

‘QR code phishing detection ’

An external email exhibits language patterns that suggest a call to action on a financial semantic on a PDF attachment, generated using digital communication technology. The attachment contains an embedded QR code hosted on a content delivery network (CDN) and secured with a certificate from a free provider. These factors collectively result in the email being classified as QR code phishing Scam.

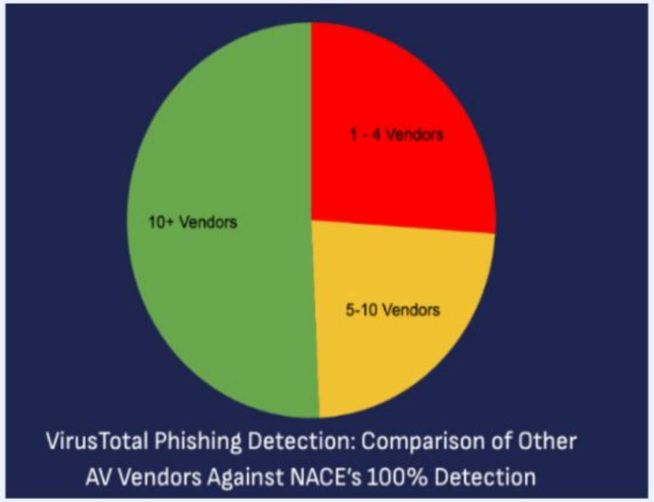
Benchmark against other Technologies

- Data Source: ~13K Samples, 2024 Evasive threats (HTML Smuggling, Phishing, Downloaders, Dropper, etc) from Viru Total
- VirusTotal: 70 AV Vendors, 70 URL Black List, 10 Sandboxes
- Results: 99% of coverage, ~44% of the evasive threats detected by NACE were missed by 95% of the AV Technologies



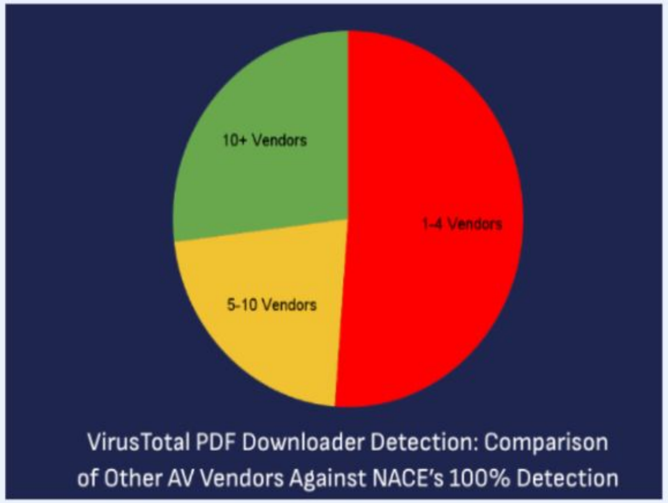
VirusTotal HTML Smuggling Detection: Comparison of Other AV Vendors Against NACE's 100% Detection

51% of HTML smuggling detected by NACE missed by ~95% of AV



VirusTotal Phishing Detection: Comparison of Other AV Vendors Against NACE's 100% Detection

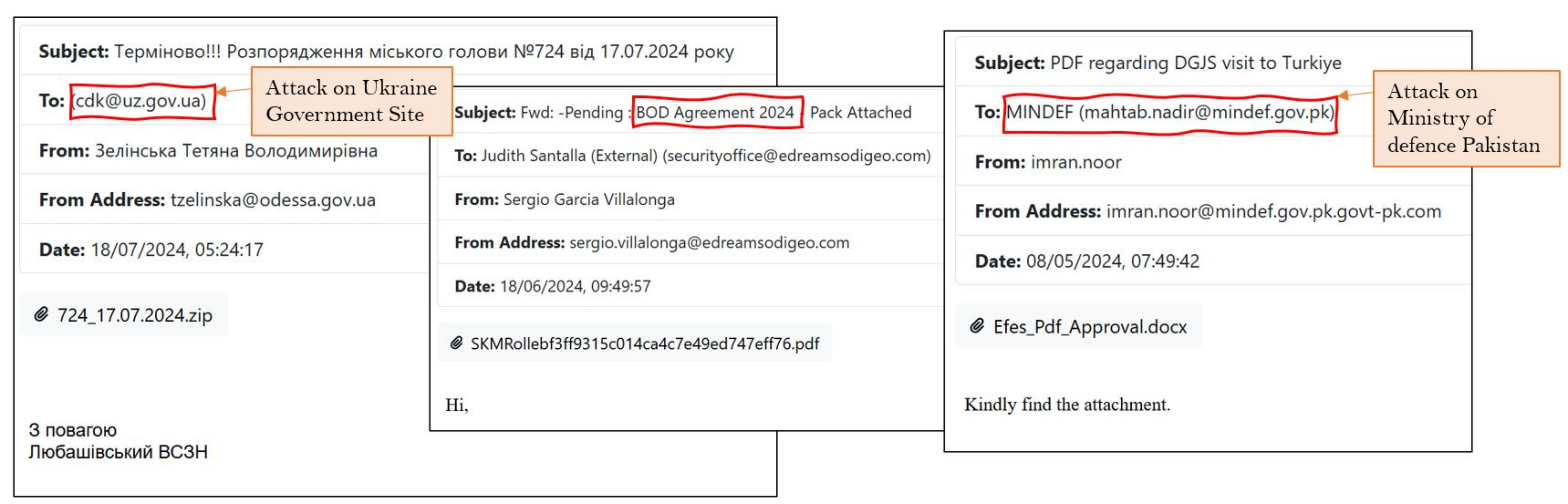
26% of phishing detected by NACE missed by ~95% of AV



VirusTotal PDF Downloader Detection: Comparison of Other AV Vendors Against NACE's 100% Detection

54% of PDF downloaders detected by NACE missed by ~95%

NACE: Detection of Advanced Persistent Threats



Subject: Терміново!!! Розпорядження міського голови №724 від 17.07.2024 року

To: (cdk@uz.gov.ua)

From: Зелінська Тетяна Володимирівна

From Address: tzelinska@odessa.gov.ua

Date: 18/07/2024, 05:24:17

724_17.07.2024.zip

З повагою
Любашівський ВСЗН

Attack on Ukraine Government Site

Subject: Fwd: -Pending : BOD Agreement 2024 - Pack Attached

To: Judith Santalla (External) (securityoffice@edreamsodigeo.com)

From: Sergio Garcia Villalonga

From Address: sergio.villalonga@edreamsodigeo.com

Date: 18/06/2024, 09:49:57

SKMRollebf3ff9315c014ca4c7e49ed747eff76.pdf

Hi,

Subject: PDF regarding DGJS visit to Turkiye

To: MINDEF (mahtab.nadir@mindef.gov.pk)

From: imran.noor

From Address: imran.noor@mindef.gov.pk.govt-pk.com

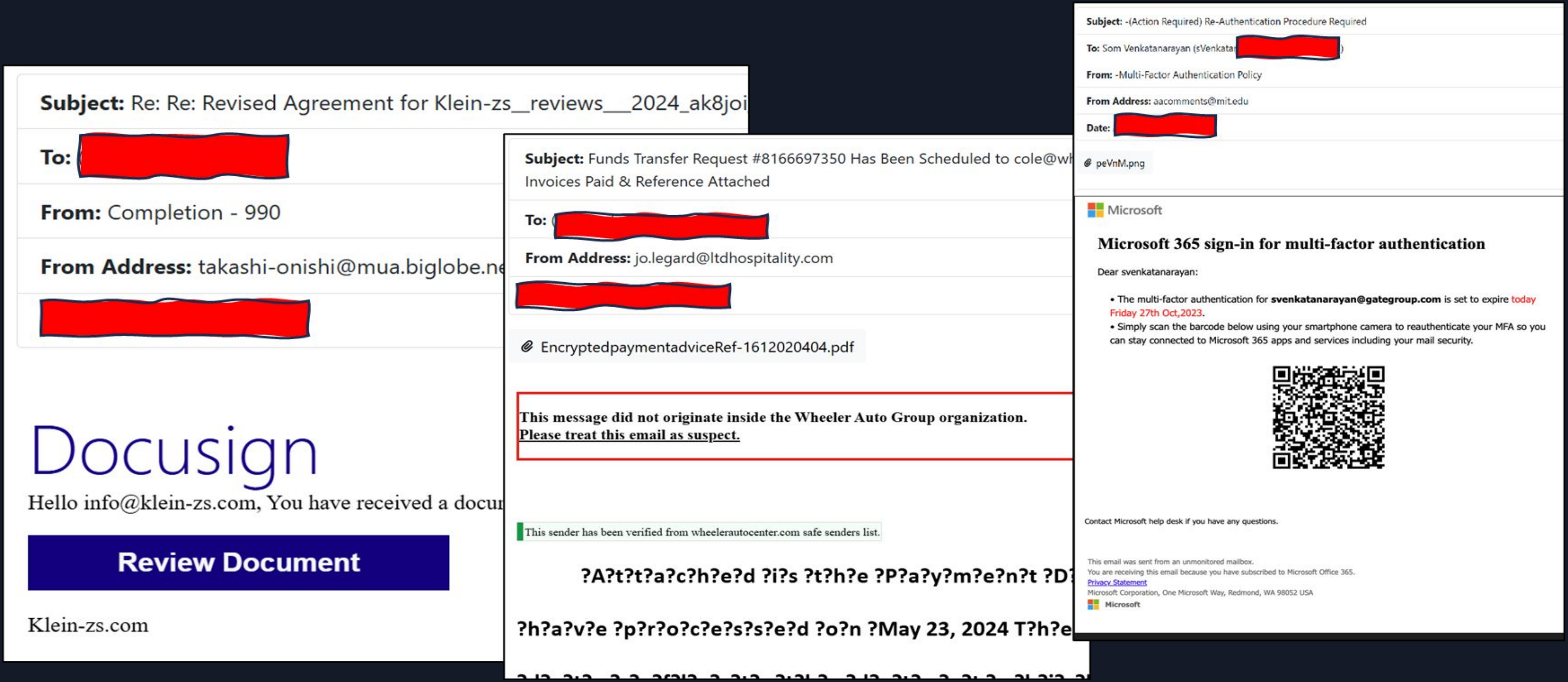
Date: 08/05/2024, 07:49:42

Efes_Pdf_Approval.docx

Kindly find the attachment.

Attack on Ministry of defence Pakistan

NACE: Detection of Malicious Samples Unknown to AV



Subject: Re: Re: Revised Agreement for Klein-zs__reviews___2024_ak8joi

To: [redacted]

From: Completion - 990

From Address: takashi-onishi@mua.biglobe.ne

[redacted]

Docusign

Hello info@klein-zs.com, You have received a docu

Review Document

Klein-zs.com

Subject: Funds Transfer Request #8166697350 Has Been Scheduled to cole@wh
Invoices Paid & Reference Attached

To: [redacted]

From Address: jo.legard@ltdhospitality.com

[redacted]

EncryptedpaymentadviceRef-1612020404.pdf

This message did not originate inside the Wheeler Auto Group organization.
Please treat this email as suspect.

This sender has been verified from wheelerautocenter.com safe senders list.

?A?t?t?a?c?h?e?d ?i?s ?t?h?e ?P?a?y?m?e?n?t ?D?

?h?a?v?e ?p?r?o?c?e?s?s?e?d ?o?n ?May 23, 2024 T?h?e

Subject: -(Action Required) Re-Authentication Procedure Required

To: Som Venkatanarayan (sVenkata[redacted])

From: -Multi-Factor Authentication Policy

From Address: aacomments@mit.edu

Date: [redacted]

peVnM.png

Microsoft

Microsoft 365 sign-in for multi-factor authentication

Dear svenkatanarayan:

- The multi-factor authentication for **svenkatanarayan@gategroup.com** is set to expire today Friday 27th Oct,2023.
- Simply scan the barcode below using your smartphone camera to reauthenticate your MFA so you can stay connected to Microsoft 365 apps and services including your mail security.

Contact Microsoft help desk if you have any questions.

This email was sent from an unmonitored mailbox.
You are receiving this email because you have subscribed to Microsoft Office 365.
Privacy Statement
Microsoft Corporation, One Microsoft Way, Redmond, WA 98052 USA
Microsoft

Summary

	Signature	Sandbox	ML applied on files	NGAV, EDR, XDR, MDR, Deception	Neural Analysis and Correlation Engine (NACE)
Evasive Threat Response	False Neg	Partial Detect Respond	False Neg	Detect Remediate	Detect Prevent
	Multi-stage malware's first stage is benign, making detection challenging. Out of Scope - Identity based attacks - First stage of AI generated multi-stage malware having evasive malicious payloads.	Pre-filters optimizes scanning, allowing malicious attachments/ URLs to evade the sandbox. Never ending evasions to bypass sandbox (AI or non-AI generated), conceal the malicious payload leading to false negatives. Out of Scope - Identity based attacks.	Multi-stage malware's first stage is benign, making detection challenging. Out of Scope - Identity based attacks - First stage of AI generated multi-stage malware having evasive malicious payloads.	Post- execution detection. Dwell time, critical for response. Not every event can be extracted and sent to the cloud.	Learns from semantics and thematic structure embedded in emails to make decisions about attachments, independent of final malicious payload, landing URL for detection.
Identifies **Without** Malicious Payload/Landing URL?	No	No	No	No	Yes

ACKNOWLEDGEMENTS

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