\Orchestrating a brighter world NEC

Net2Vec
Deep Learning for 5G network security

Roberto Bifulco
roberto.bifulco@neclab.eu

How many “smart” devices do you have, **right now**?

2

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How many “smart” devices do you have, **at home**?

2+3

Tablet
TV
Home Router

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How many "smart" devices will you have, **tomorrow**?

>10

Tablet, TV, Home Router, Dishwasher, Vacuumcleaner, Home assistant, SmartLightbulb, SmartPlug, SmartWatch, Fridge, Air Conditioneer, VideoGame console, …

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Who checks them?
Who updates them?
Who fixes them?

After a while, nobody

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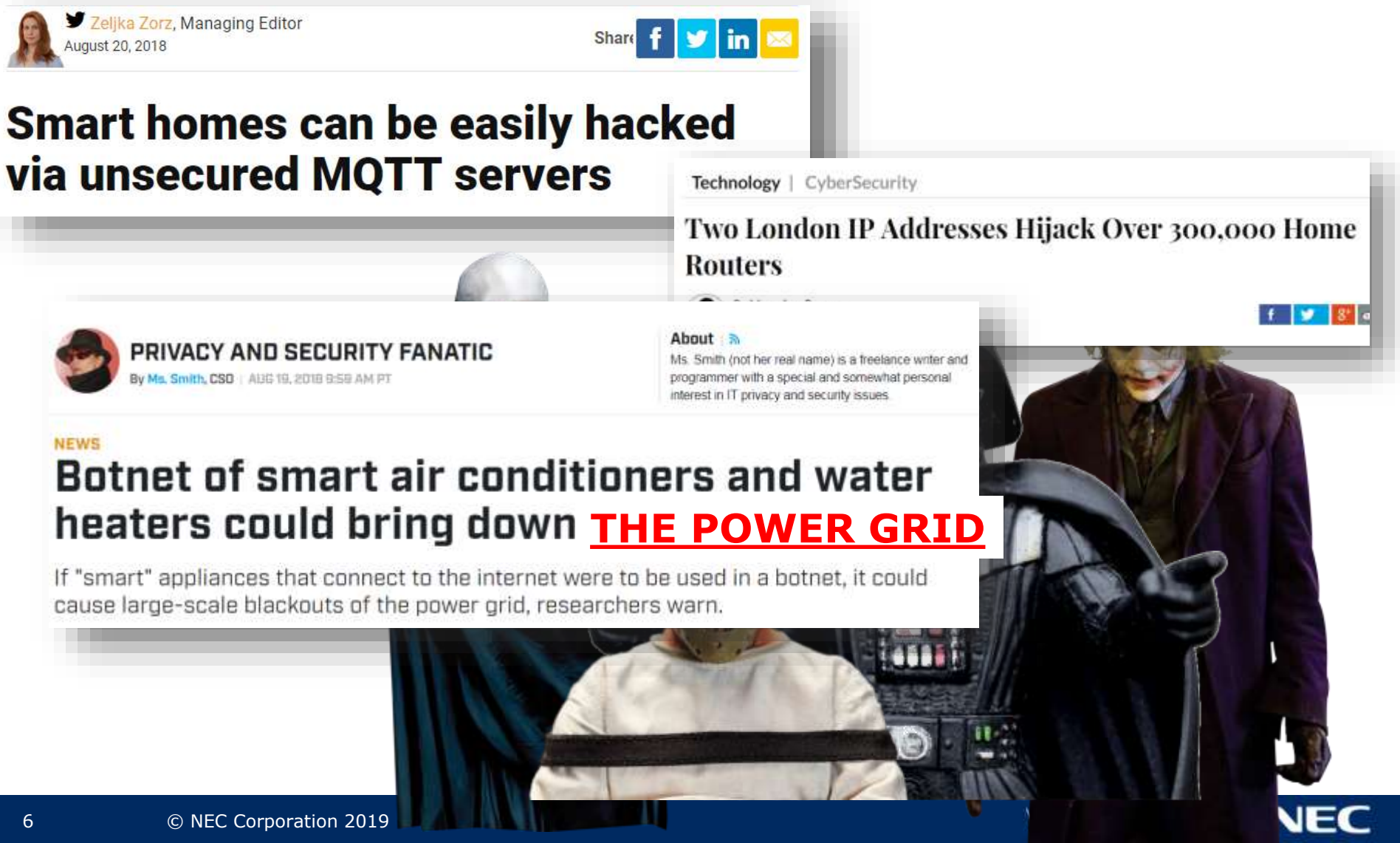
Who cares?



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What can we do?

It’s time to get serious

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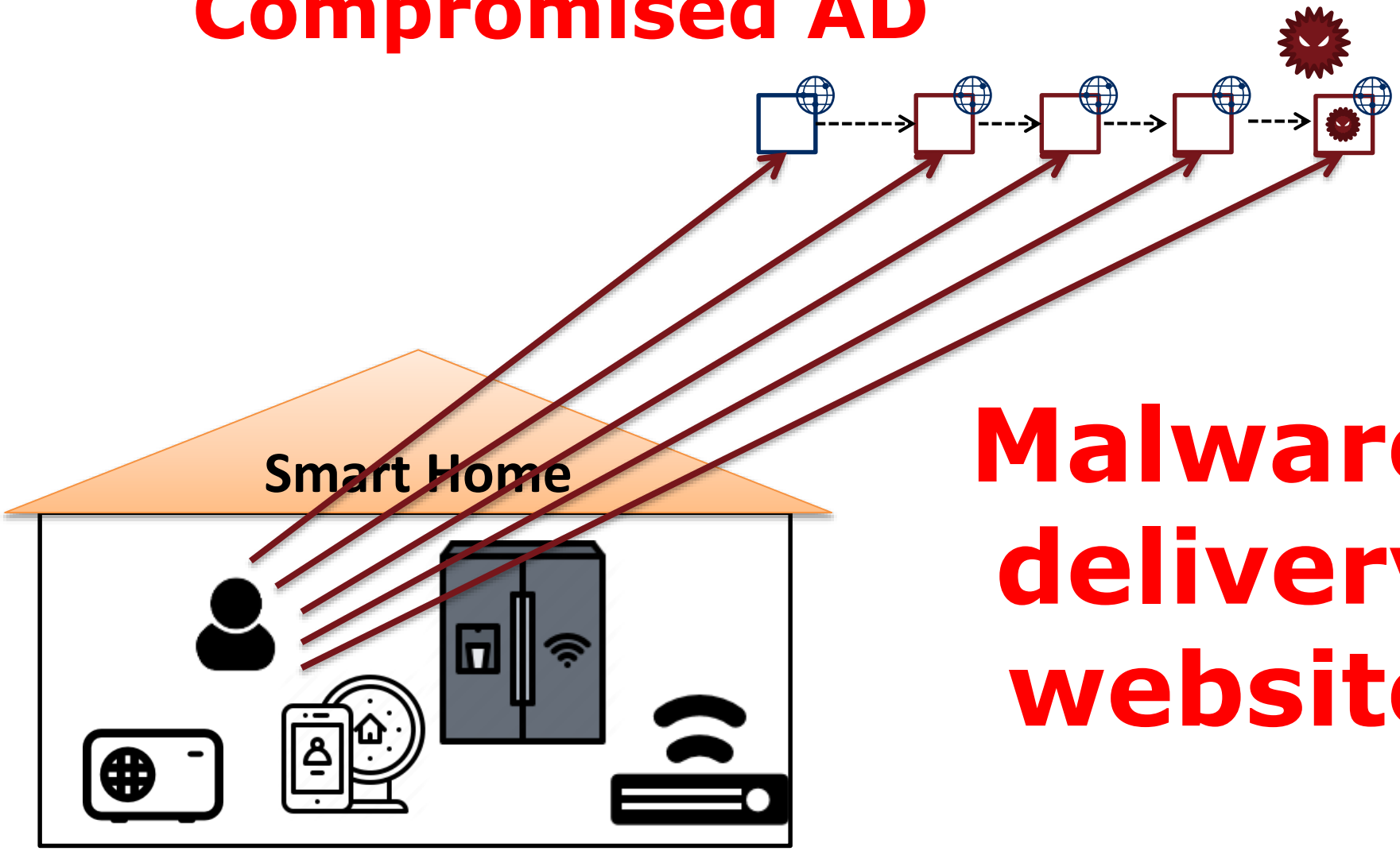
Compromised AD



Malware delivery website

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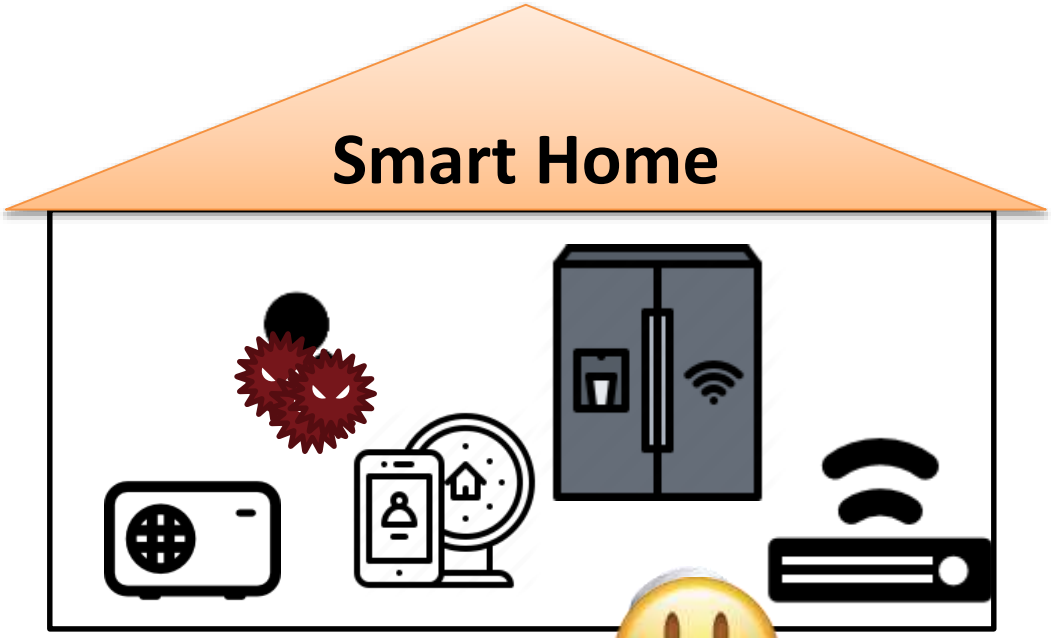

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Net2Vec makes the bad ones sad

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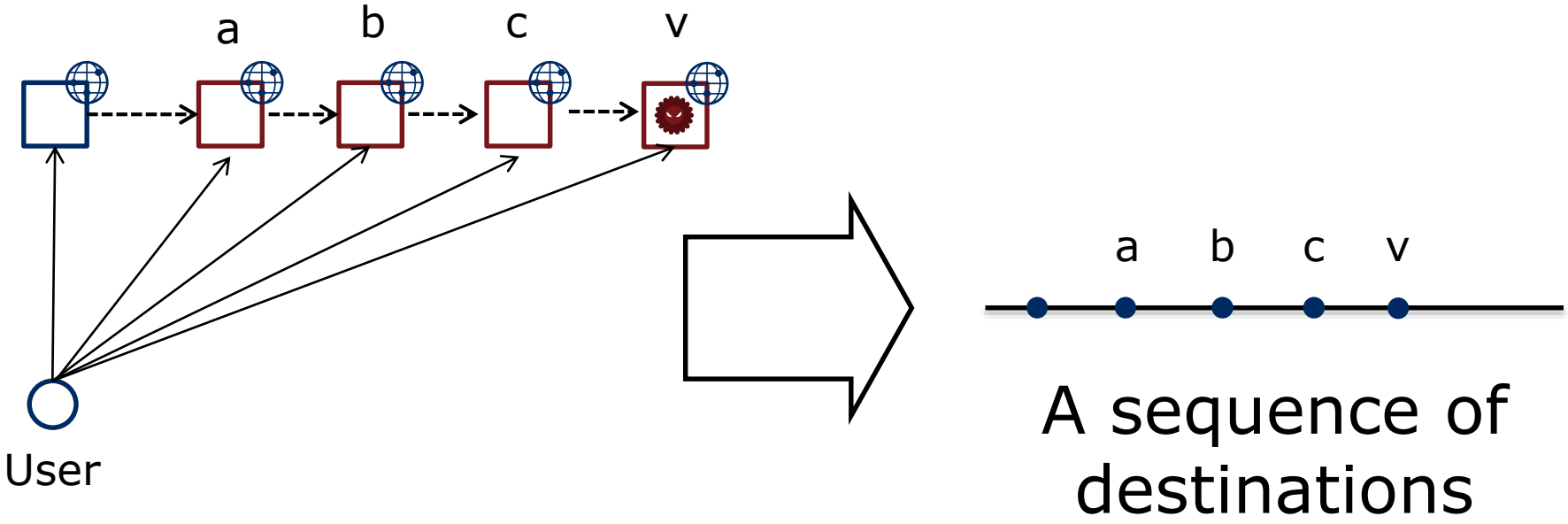

How are these destinations related to each other?

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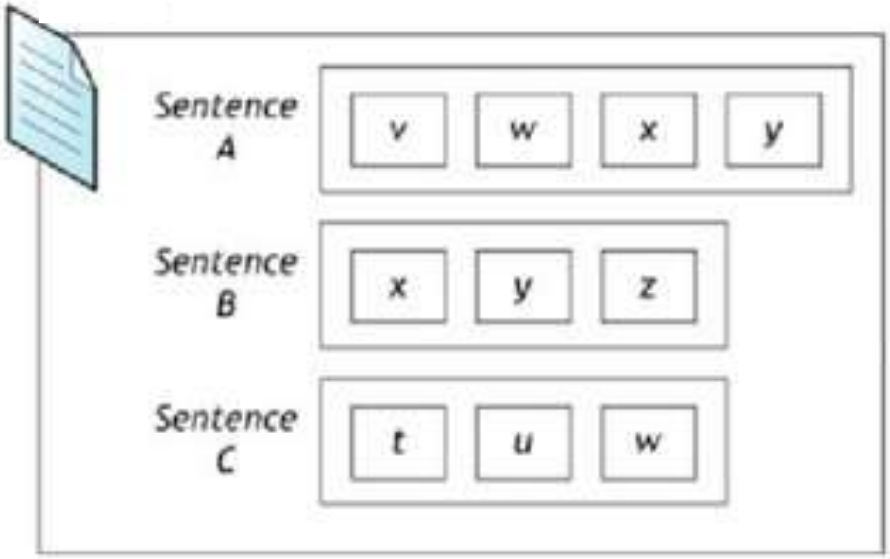
sequences

destinations



Co-occurrence matrix

destinations

	v	w	x	y	z	t	u
v	0	1	1	1	0	0	0
w	1	0	1	1	0	1	1
x	1	1	0	2	1	0	0
y	1	1	2	0	1	0	0
z	0	0	1	1	0	0	0
t	0	1	0	0	0	0	1
u	0	1	0	0	0	1	0

Image from: https://link.springer.com/article/10.1007/s11192-010-0303-8

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In 1 week,
2 millions of
destinations

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$2*10^6 \times 2*10^6 =$

$4*10^{12}$

$4\text{Bytes} * 4*10^{12}$

$=$ **16TeraBytes**

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Natural language processing

"Hello, how are you?"

"Hello, I'm good!"

Natural language processing for non natural language

"10001010100010…"

"11111010101010…"

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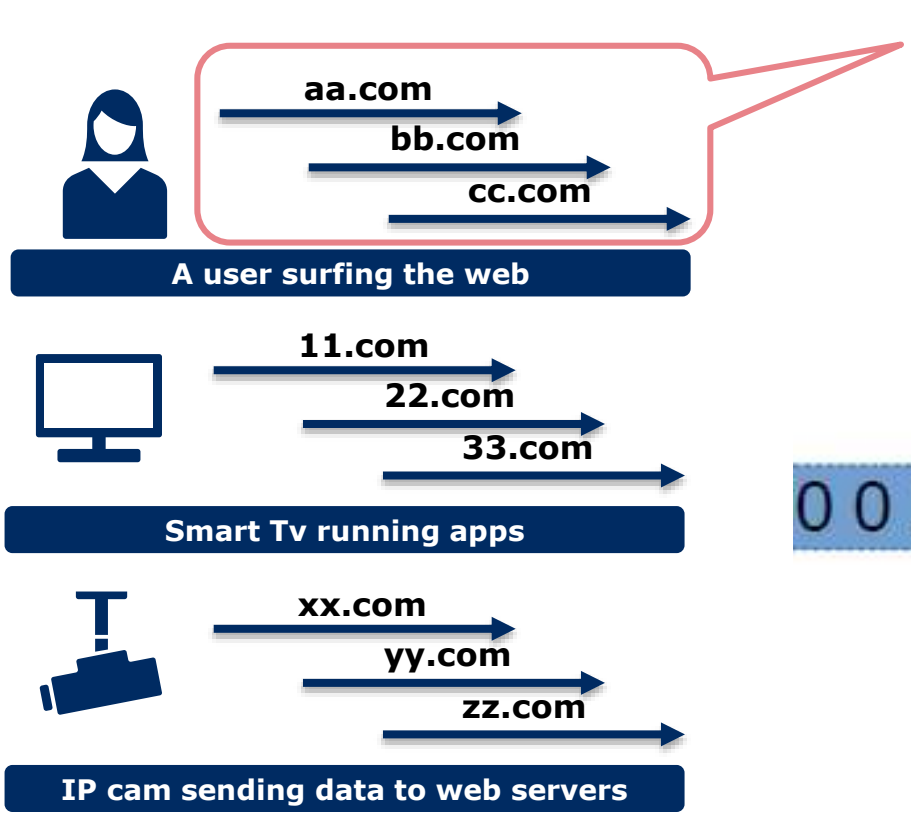

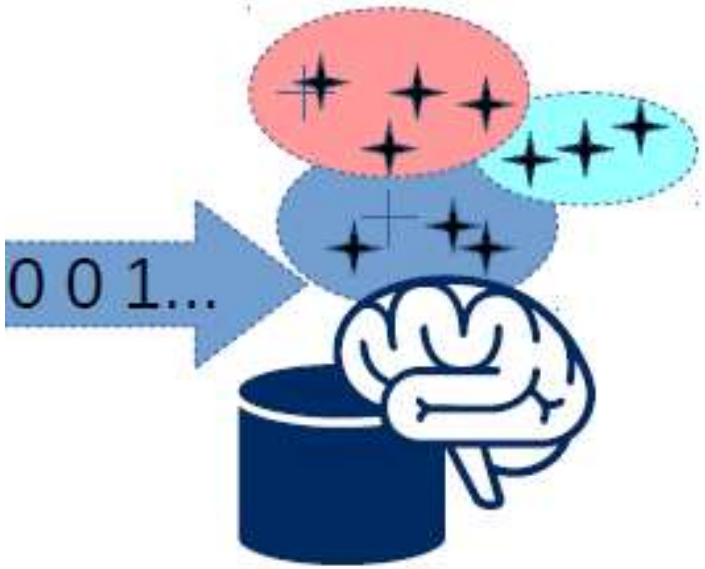

AI model for natural language processing

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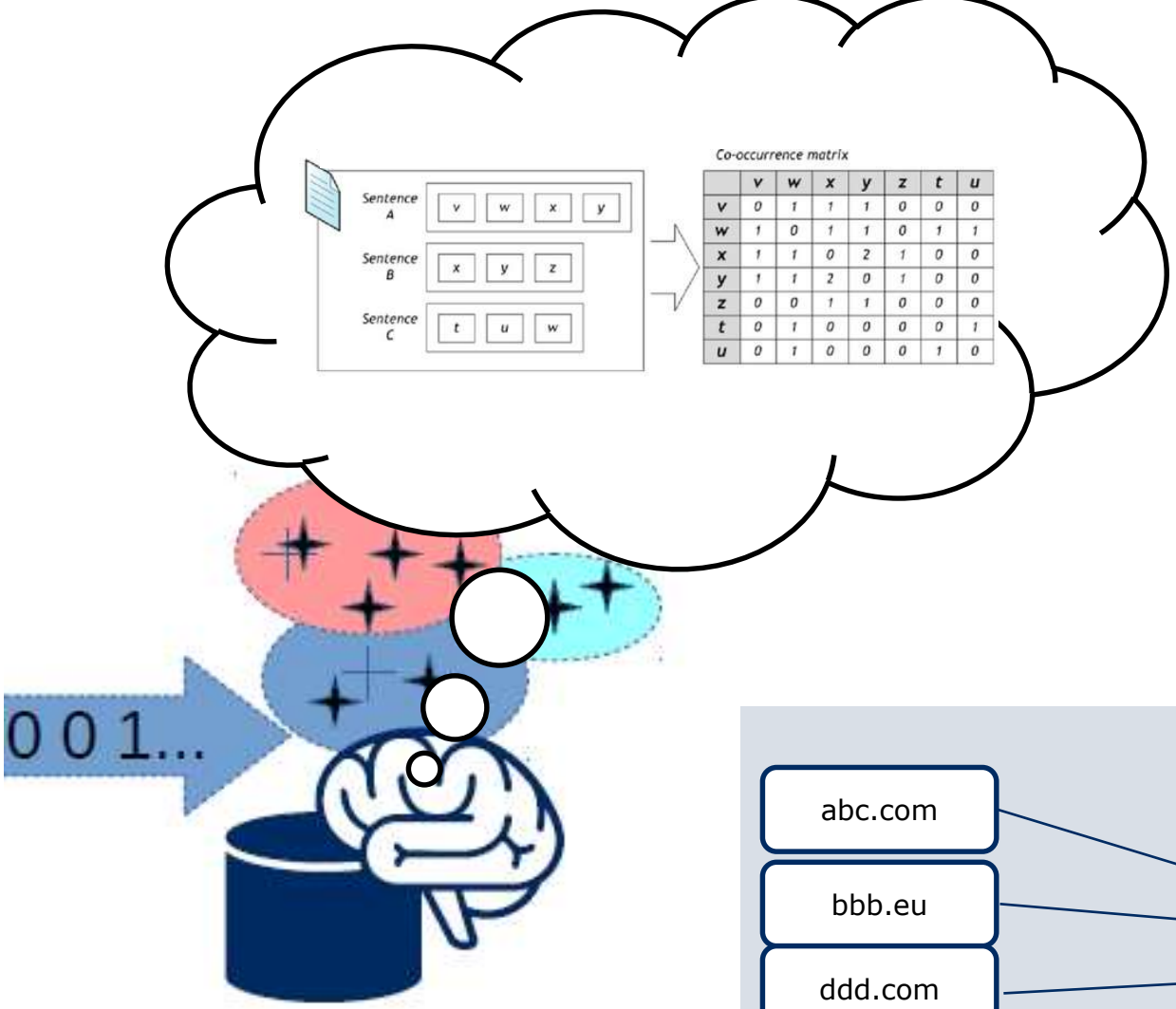
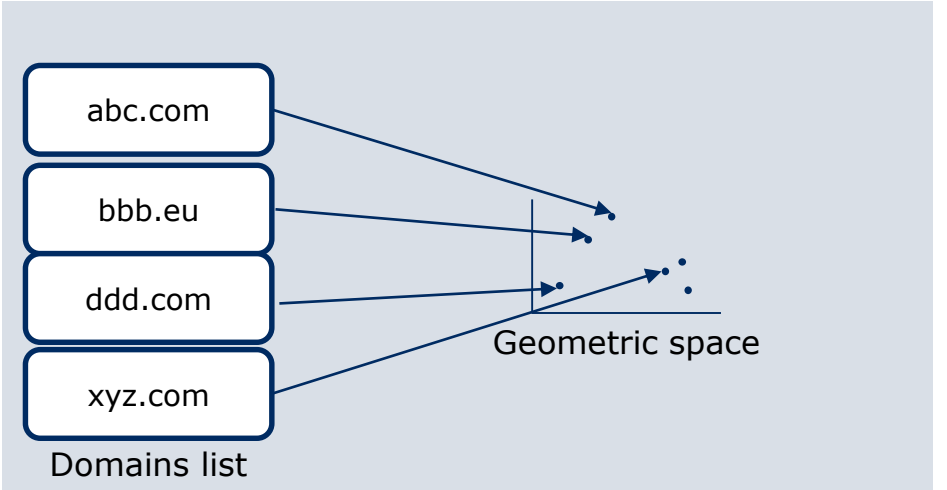


	v	w	x	y	z	t	u
v	0	1	1	1	0	0	0
w	1	0	1	1	0	1	1
x	1	1	0	2	1	0	0
y	1	1	2	0	1	0	0
z	0	0	1	1	0	0	0
t	0	1	0	0	0	0	1
u	0	1	0	0	0	1	0



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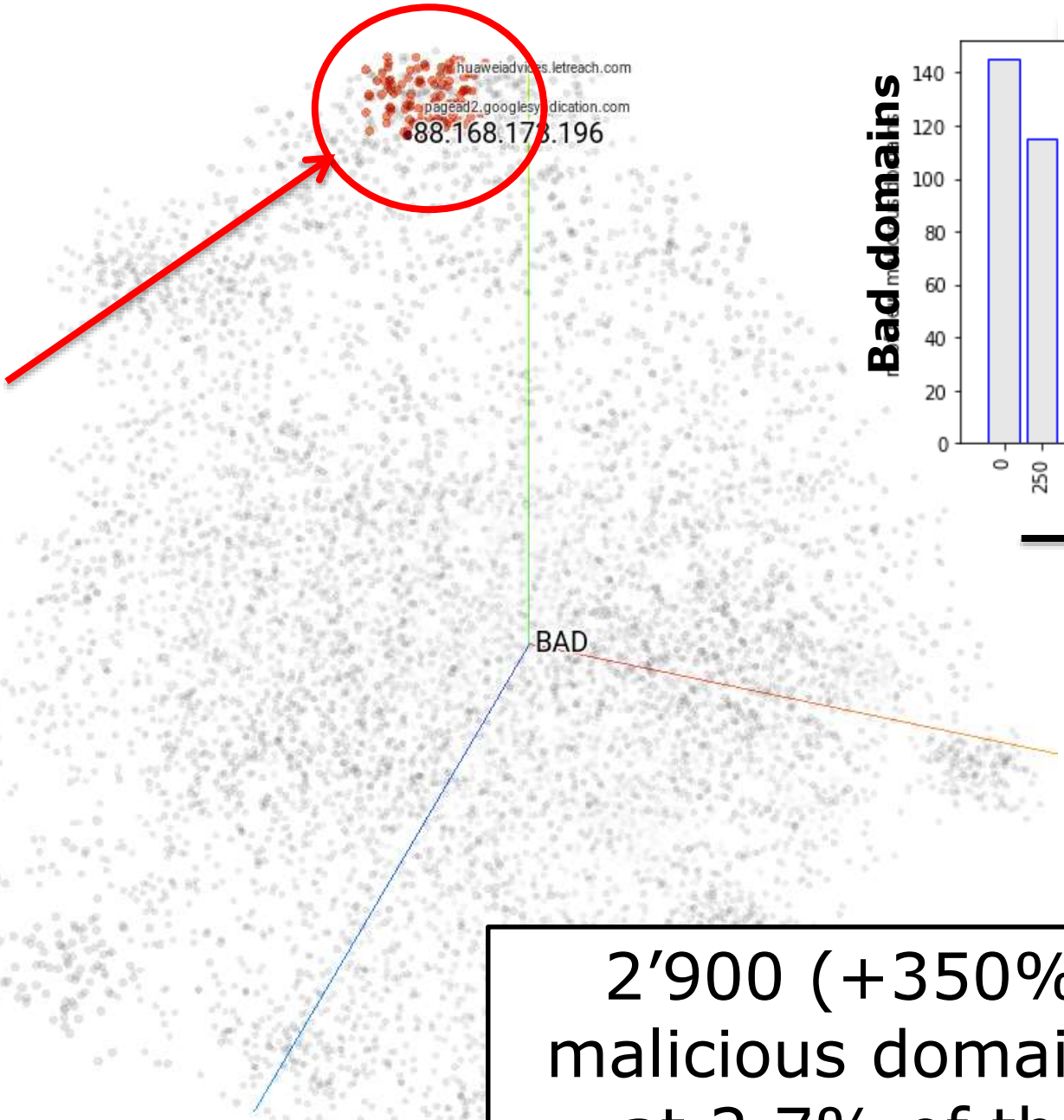

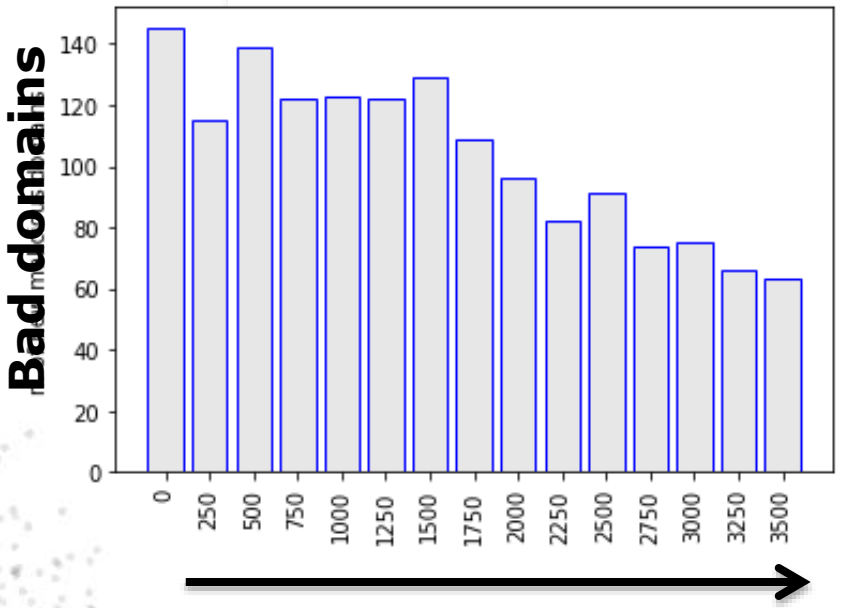

Distance from cluster's center

2'900 (+350%) new unknown malicious domains, looking only at 2.7% of the total observed

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The web is a big place to hide…

Net2Vec tells you where to look

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