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*AI solutions to tackle operational challenges*

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*Europol Innovation Lab*

*eu-LISA Industry Roundtable*

*13/11/2024*

Europol Unclassified - Basic Protection Level

# Innovation Lab
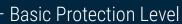# OBSERVATORY

## foresight and technology monitoring

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– Basic Protection Level

# AI and policing

**The benefits and challenges of artificial intelligence for law enforcement**

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# HOW CAN AI
## SUPPORT POLICE WORK?

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# Encrochat / SkyECC

Encrypted communication networks used by criminals, mostly for drug trafficking

Over **50** analysts,

working on Operational Task Forces at Europol HQ

# Encrochat / SkyECC

## Encrochat
**100m** text messages
**500m** images
**100m** geolocation points



## SkyECC
**1b** text messages
**10m** images
**15m** voice messages

# Police work without AI

*AI is crucial to shift through* **vast amount of data,**

*especially when dealing with* **time-sensitive situations**

# I HAVE A LARGE AMOUNT OF...

## DOCUMENTS

### I want to do

- Translation
- Entity Extraction
- Semantic Search
- Summarization
- Classification
- Asking questions to text documents
- Making sense of unstructured data

## IMAGES

### I want to do

- Geolocation
- Face Extraction
- Face Recognition
- Fingerprint Extraction
- Anonymisation
- Retrieval
- Similarity
- Captioning
- Aging
- Satellite images

## VIDEO

### I want to do

- Object detection
- Classification
- Face Recognition
- Video-to-text

## AUDIO

### I want to do

- Speech-to-text
- Speaker recognition
- Audio enhancement
- Classification
- Speaking to the audio files

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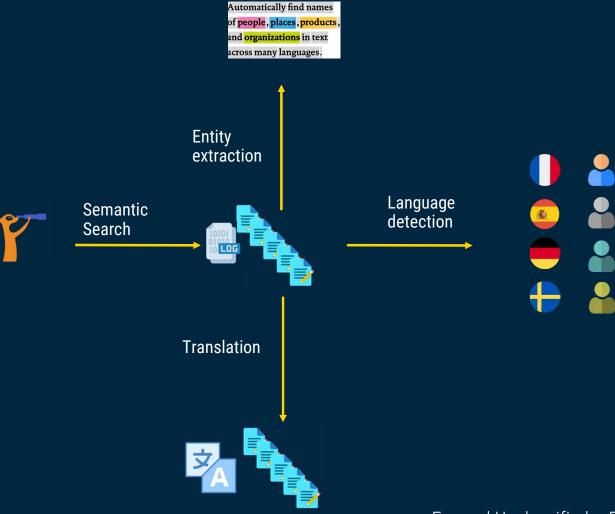
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# TEXT PROCESSING

To get started, the investigators want to:

- Extract all relevant information

- Classify users by language spoken

- Translate all text documents

- Index and search all text documents including logs

- Identify messages that would require immediate action

- Chat with the data



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# TEXT PROCESSING

Automatically find names of **people**, **places**, **products**, and **organizations** in text across many languages.

Entity extraction

Semantic Search

Language detection

Translation

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# TEXT PROCESSING

## Text classification

automatically classify text messages among a set of predefined classes with NLP

**THREAT TO LIFE**

Someone said they was gonna kill his kids

**DRUGS**

Also did you ask if where kush or hazes?

**BIRTHDAY**

Sretan rodendan frende moj

# Large language Models (LLMs)

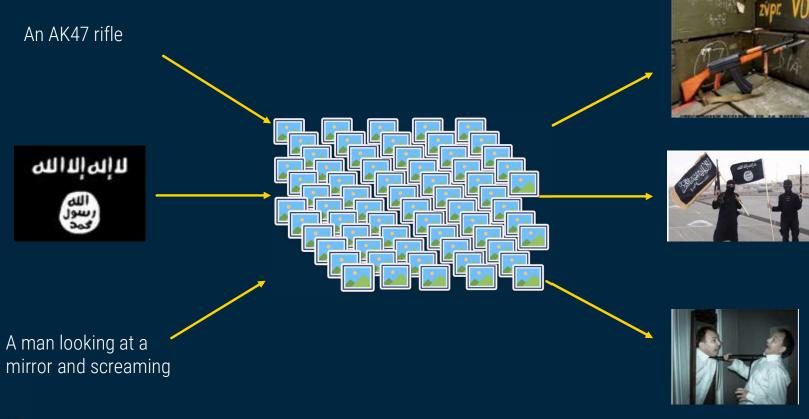## Support for administrative and investigative work

Summarization

Classification &
Entity extraction

Drafting notes, emails
Proof-reading, translating

Summarization of
audio transcripts

Asking questions to
documents

Making sense of
unstructured data

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# TEXT PROCESSING



LLM

- Threat to life
- Potential threat
- Non dangerous

# IMAGE PROCESSING

# IMAGE/VIDEO PROCESSING

Based on chat conversations analysed by another team, investigators want to:

- Retrieve images of interest

- Extract all the faces for further processing

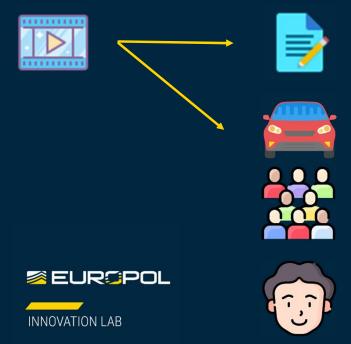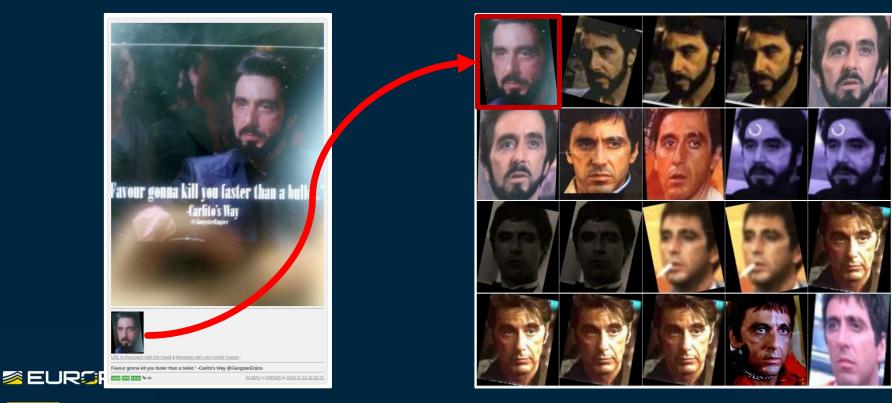- Extract all the data from the thousands of images of stolen ID documents



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# IMAGE/VIDEO PROCESSING

An AK47 rifle

A man looking at a mirror and screaming

# IMAGE/VIDEO PROCESSING

Facial Recognition Tool

Extract faces

Facial Recognition

# IMAGE/VIDEO PROCESSING

# IMAGE/VIDEO PROCESSING

**Facial recognition**: automatically detect faces and search for similar ones
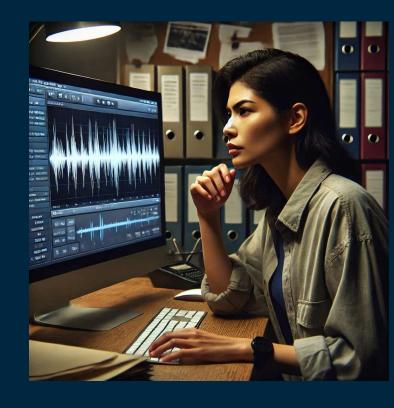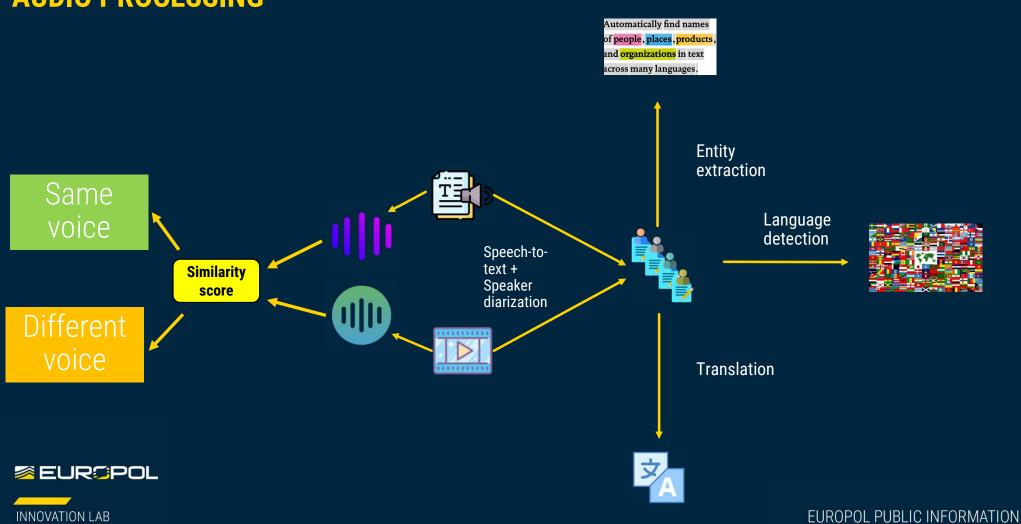
# AUDIO PROCESSING

# AUDIO PROCESSING
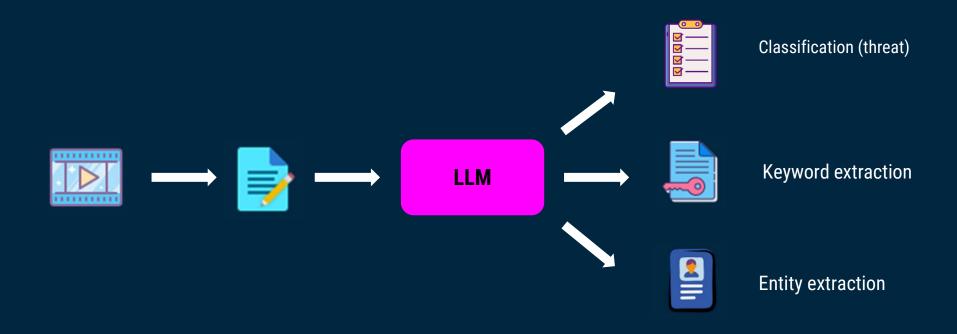
The audio processing wants to:

- Transcribe all audio files

- Detect the language spoken

- Separate speakers in audio recordings

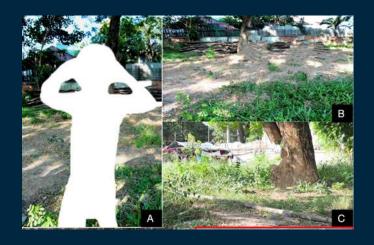- Find the similarity between 2 voices from 2 different audio files

# AUDIO PROCESSING

Same voice

Different voice

**Similarity score**

Speech-to-text + Speaker diarization

Automatically find names of people, places, products, and organizations in text across many languages.

Entity extraction

Language detection

Translation

# AUDIO PROCESSING



Classification (threat)

**LLM**

Keyword extraction

Entity extraction

## GEOLOCATION

The investigators found several images they want to geolocate:

- One picture of a fugitive

- One picture of a victim of CSE

# GEOLOCATION

## Data anonymisation

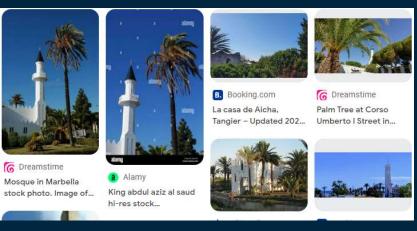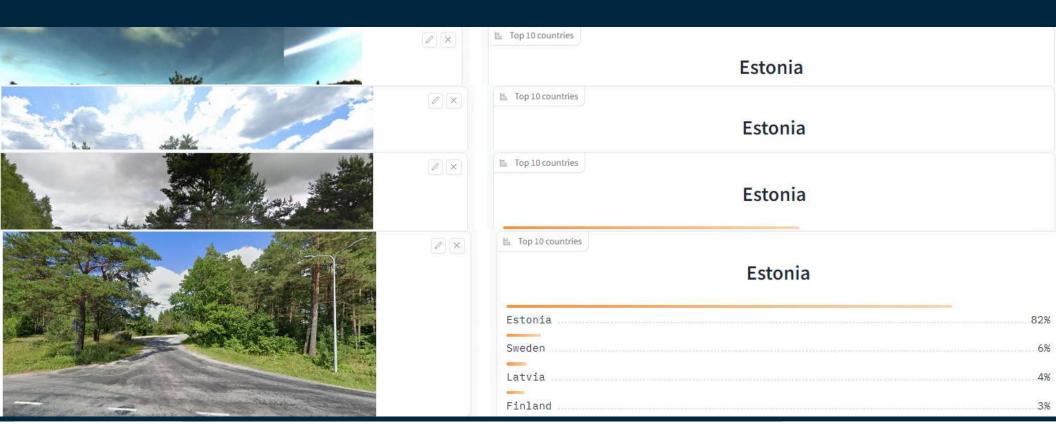automatically remove picture of individuals from images and reconstruct the background – image inpainting

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# GEOLOCATION

# GEOLOCATION

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# GEOLOCATION



| Top 10 countries | |
|---|---|
| Estonia | 82% |
| Sweden | 6% |
| Latvia | 4% |
| Finland | 3% |

# CONCLUSION

- AI is very powerful and improving every day police work

- AI can help sift through vast amount of data

- AI can reason over complex data

- AI will not replace humans

- If you are not using AI, you will be replaced by someone who does.

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# THANK YOU

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