Newsletter N.7

Dear Reader,

In this moment of lockdown, the publication of interesting insights on research topics under development in the laboratories of ANITA partners continues, waiting to be presented in public and used for training.

The focus is on the automatic black market tracking (Expert System) and on pupils as a window to the unconscious mind (IBEC).

Deep understanding of unstructured content and analysis of unconscious movements of our body, contribute to give innovative tools for the Leas of Europe.

Investigation 2.0: Automatic Black Market Tracking

Illicit trafficking is a complex and dynamic phenomenon and many factors are involved in the evolution of black markets, very common on dark web. They are short-lived because LEAs pay great attention on monitoring and identifying them, since tracking illegal activities plays a key role to progress in fighting online crime: through intelligent systems, LEAs can investigate and deal with the issue with better results, in terms of timeliness, completeness, consistency and accuracy.

So, ANITA has a twofold objective: when the market is open and accessible, we try to get as much information as possible on it, above all on the vendors present and active in selling suspicious products; when the marketplace is closed, we try to trace vendors of interest on other marketplaces, both on dark web and on surface web.

Therefore, Expert System aims at answering these questions: *WHO?* and *WHERE?* And we can answer the former using stylometric analysis (Newsletter No 5) to verify the vendors' identity, by comparing what known about their activities on dark web with what discovered about them on surface web, and the latter using AI algorithms to reconstruct vendors' movements. The text analysis and mechanisms of reasoning enable this goal achievement: performing the complete process you get the so-called *inferences*, which are automatically generated by logical rules characterizing the used reasoner, contain information on hidden and/or implicit knowledge and are thus used to enrich the knowledge of domain.

To further clarify and above all to highlight the added value provided by this research activity to LEAs, let's take a look at the figure below.
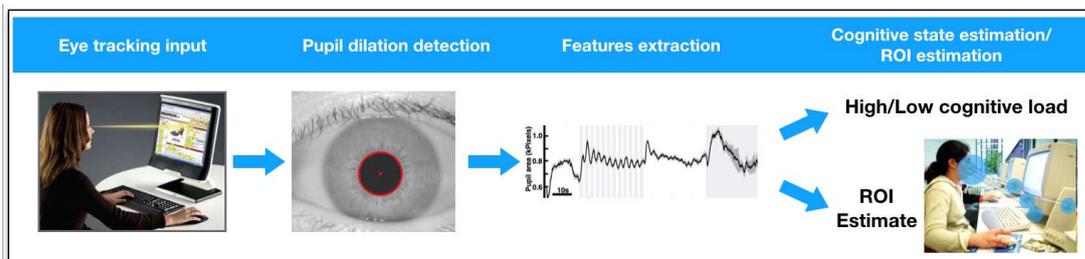

Pupils as a window to the unconscious mind

Your pupils react to the environment by changing their size: they constrict when it is bright and dilate when it is dark to regulate the amount of light your eyes receive, allowing you to see better. But this is not all: your pupils also react to changes within you. When you are doing mental effort or you experience an emotionally stimulating event, your pupils react accordingly. Controlled by the autonomic nervous system, these responses happen unconsciously, just like your heartbeat, and occur at the small scale of fractions of millimeters.

Within the ANITA project, we are exploring solutions that use this information to aid LEAs in the data exploration process. By using special infrared cameras known as eye-trackers, we can record the eyes of the users with high precision and process this information in real time to compute how the pupil size is changing throughout the interaction. Thus, if a user is looking at series of images searching for some small details and we detect that her pupils dilated at a specific one, we can deduce that this image is particularly relevant, even if the user is not aware of it. Then, the system can suggest this image for further consideration.

UPCOMING EVENTS

The planned dissemination and training events are suspended. The new dates will be communicated as soon as possible.
An updated list with all dissemination activities is available here: https://www.anita-project.eu/events.html

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