Logo detection and identification

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The main goal is to detect logos overlaid on videos.
The system consists in two distinct parts:

- candidate region *detection*: returns clean version of regions which will most likely contain a logo,

- logo *identification*: use the candidate regions to query the logo database and return the logo identification and information.
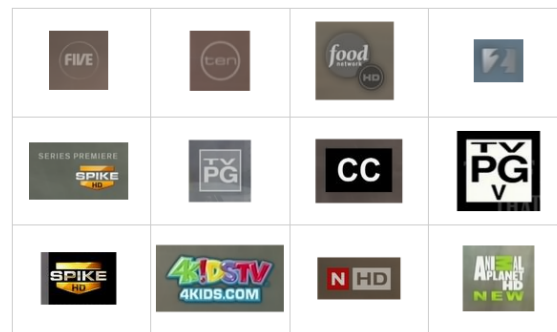
LDI overview
Specification and annotation

- Specification of logos of interest
- Annotation of the video set
- Define objectives and strategies
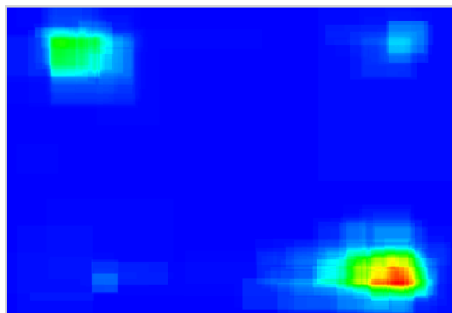
Figure 1 : *Probability map of logo presence*

Figure 2 : *Example of logos.*

LDI overview

Region extraction module:

- average frame computation,
- MSER extraction,
- region filtering and merging,
- region list update.

Figure 3 : *Preprocessed average frame.*

Identification module:

- add margin, normalize and scale up,
- query regions with FLANN,
- brute force rematching,
- geometry check or simple threshold.

The method:

- works very well for fast detection,
- is more time consuming and returns a few false positives for fine processing,

Annotation:

- 3 days and 19 hours of video,
- GUI to navigate in the videos, select and annotate logos,
- tools to create and manage classes.

Figure 4 : *Example of logo classes.*
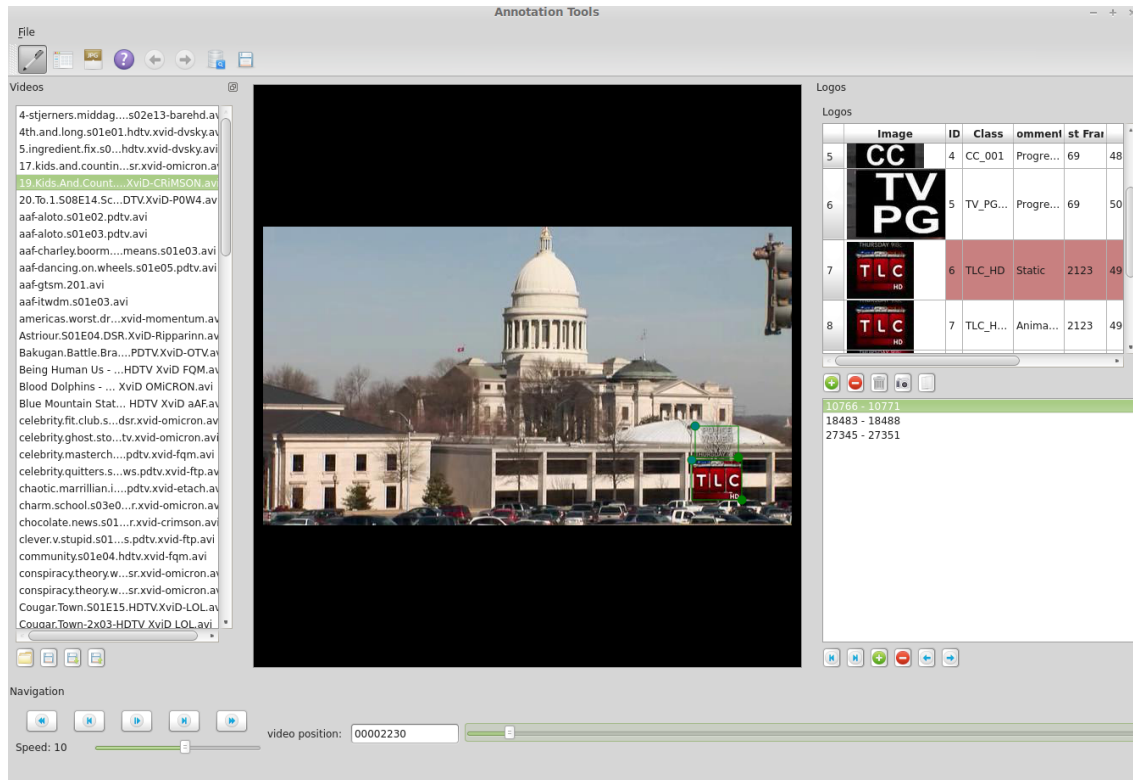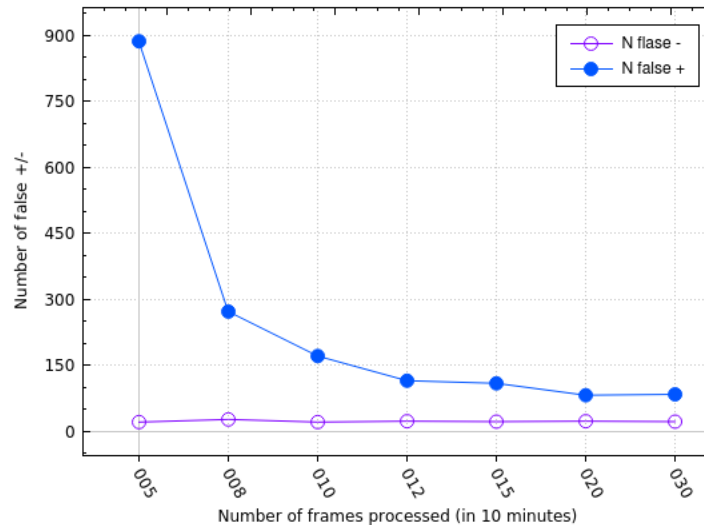
Project management

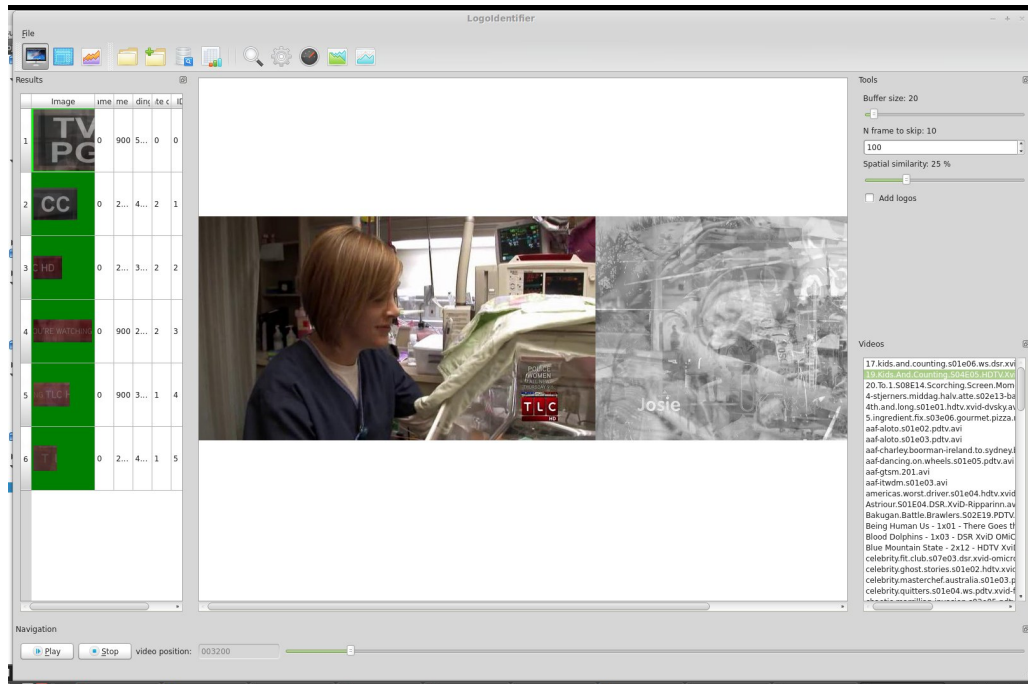**Figure 5 :** *Annotation tool.*

Project management

Evaluation:

- GUI to test each algorithm,
- process the entire dataset for each set of parameters,
- GUI to view and analyze resulting data,

Figure 6 : *False positives / negatives*

Project management

Figure 7 : *Evaluation GUI*

Project management

Optimization:

- test each step of the system thanks to the evaluation framework,
- tune parameters,
- adjust strategies,
- iterate (evaluation and optimization).

Retrospective

- working logo detection and identification tool,
- lot of time spent to define the strategy,
- time spent on the algorithm $\ll$ time spent on the evaluation and optimization,
- nice team, nice work environment, thank you everybody!