

Where did I leave my phone ?

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Abstract

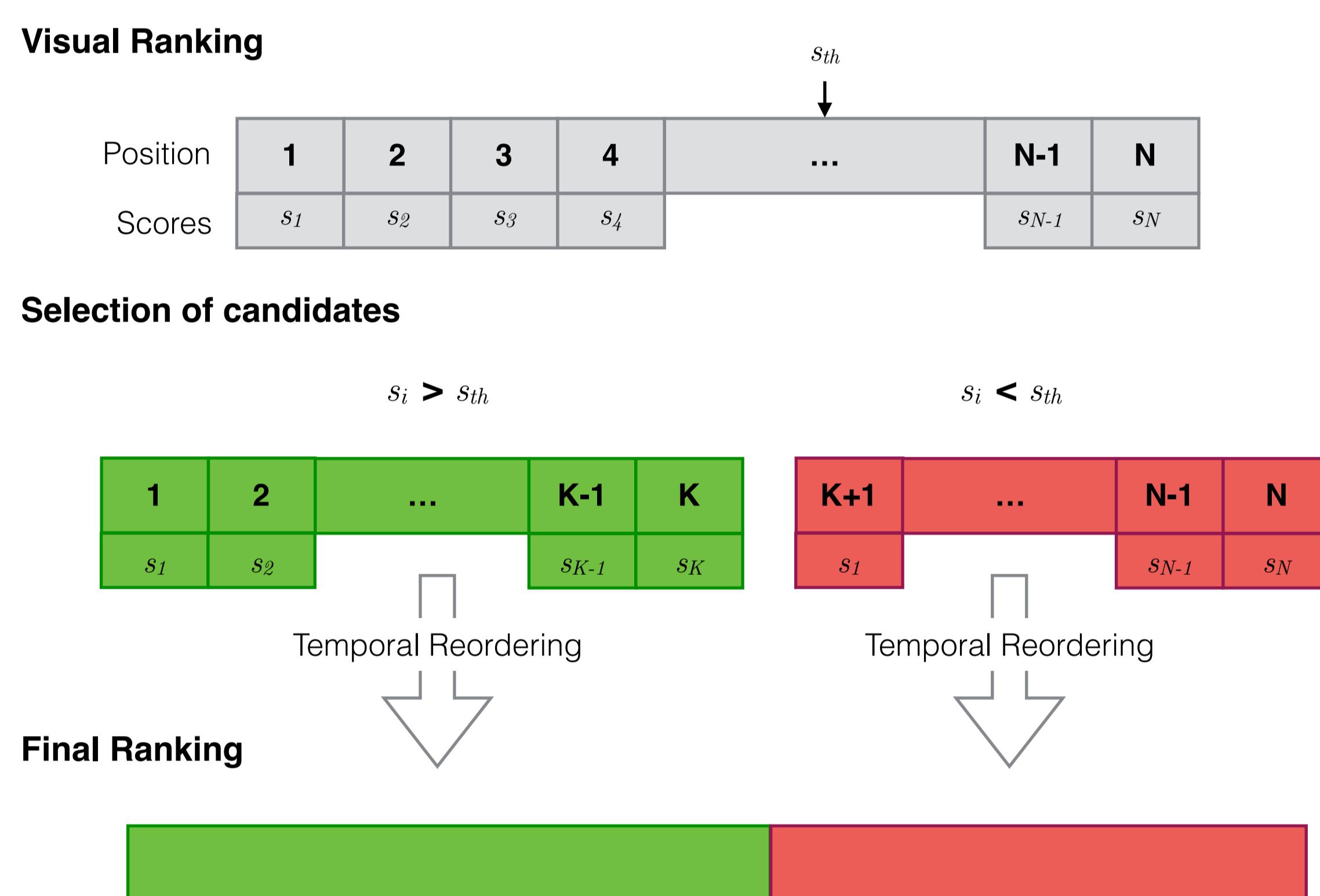
In this work we explore the potential of wearable cameras to find the last appearance of personal objects among a large volume of images that are generated every day.

This application could help into developing personal assistants capable of helping users when they do not remember where they left their personal objects.

Methodology

Our goal is to rank the egocentric images captured during a day based on their likelihood to depict the location of a personal object.

The whole pipeline is composed of the following stages:



Visual Ranking

- **Bag of Words** structure for encoding the features extracted by a **Convolutional Neural Network**.
- Different **masking strategies** to extract properly the CNN features for the queries:



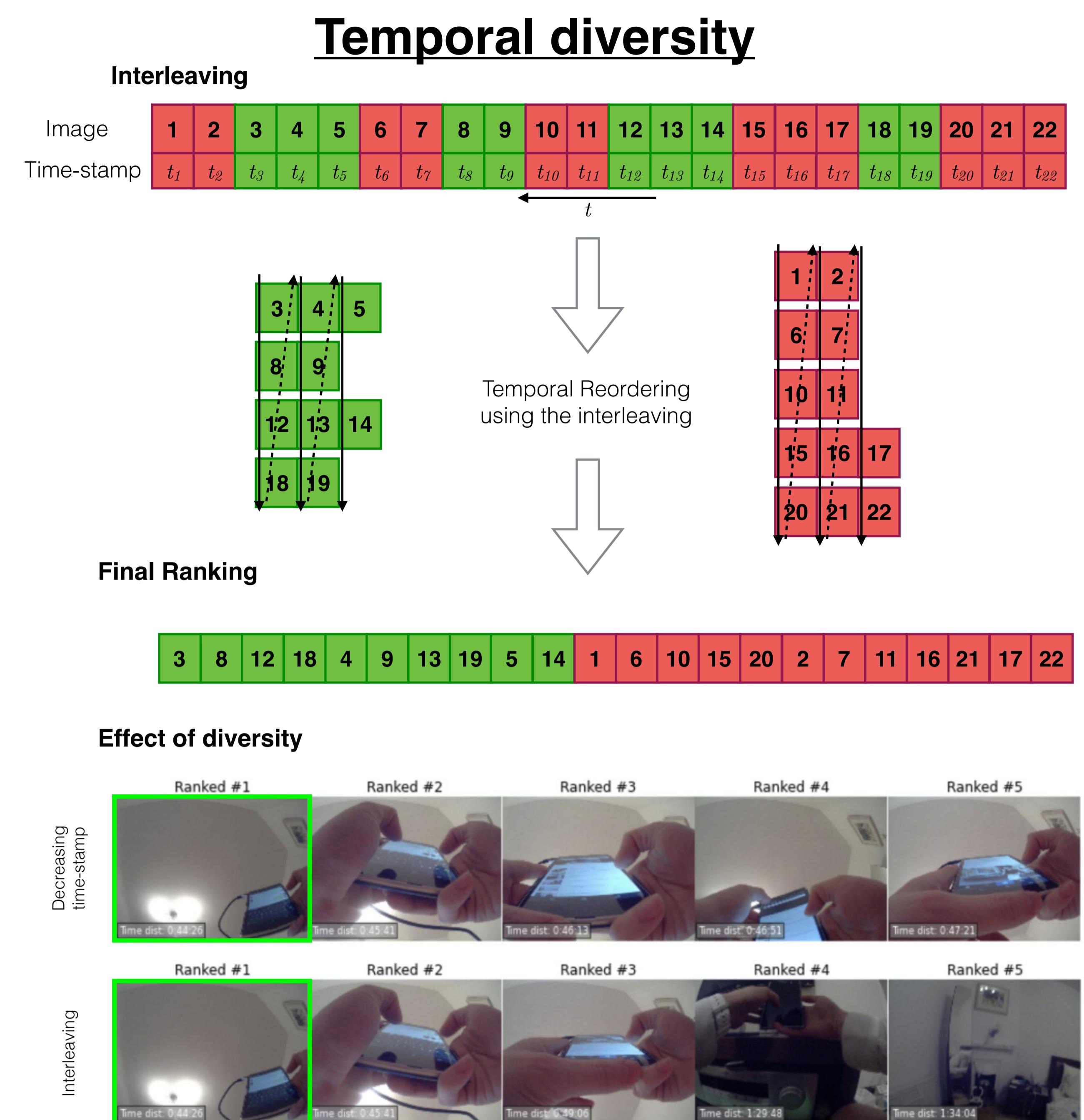
- Using from 3 to 5 images per category to depict the object from different points of view and build the queries.



Selection of candidates

Learned thresholds on the visual ranking to build a Candidates set and a Discarded set:

- **Absolute threshold (TVSS)**
- **Adaptive threshold (NNDR)**



Dataset Anotation

- NTCIR Lifelogging Dataset
- Annotating around 35,000 egocentric images from 30 days
- Last daily appearance for categories: watch, phone, laptop and headphones.

Results

	No Mask	Mask	Weighted Mask
Temporal Ordering	0.051	0.051	0.051
Visual Similarity	0.102	0.082	0.111
TVSS	0.113	0.111	0.139
NNDR	0.086	0.176	0.093
TVSS + Div	0.096	0.082	0.118
NNDR + Div	0.066	0.166	0.049

Table 2. mAP results obtained when testing over 15 days.

Conclusions

Good baseline for further research on this problem. Instance search based on bags of convolutional local features has shown promising results on egocentric images. Thresholding and temporal diversity techniques have improved the performance of visual only cues.