

## Challenge

- **Few resources and speakers** (around 140 hours of video data from different corpora)
- **Limited availability of annotations**: Existing annotations are essential for training and for creating automatic annotators
- Annotation: a valuable but **costly** resource
- Interpreted LSF: shift between videos and subtitles

➔ How can the annotation process be automated?

## Datasets and Resources

### Matignon-LSF : a dataset to annotate



La France poursuivra son engagement, [...]  
Screenshot of Matignon-LSF videos with associated subtitles

- 39h of interpreted LSF
- Subtitles:
  - Tokens: 447k
  - Voc: 10k
- From the reports of the Council of Ministers

### Mediapi-RGB signary



Example of a sign from the class VENDREDI (*friday*)

- 444 classes, 15k signs
- From the deaf media: Médiapi

➔ Features **Video Swin Transformers** to represent the videos

## Sign Spotting from words in subtitles

### With a signary



- **236 classes** (3k signs)
- Precision (manual evaluation) : 72%
- Recall (from subtitles) : 21%



**Limit** : No exact match between the words in the subtitles and the signs in the signing sequence.

## Enhanced subtitles

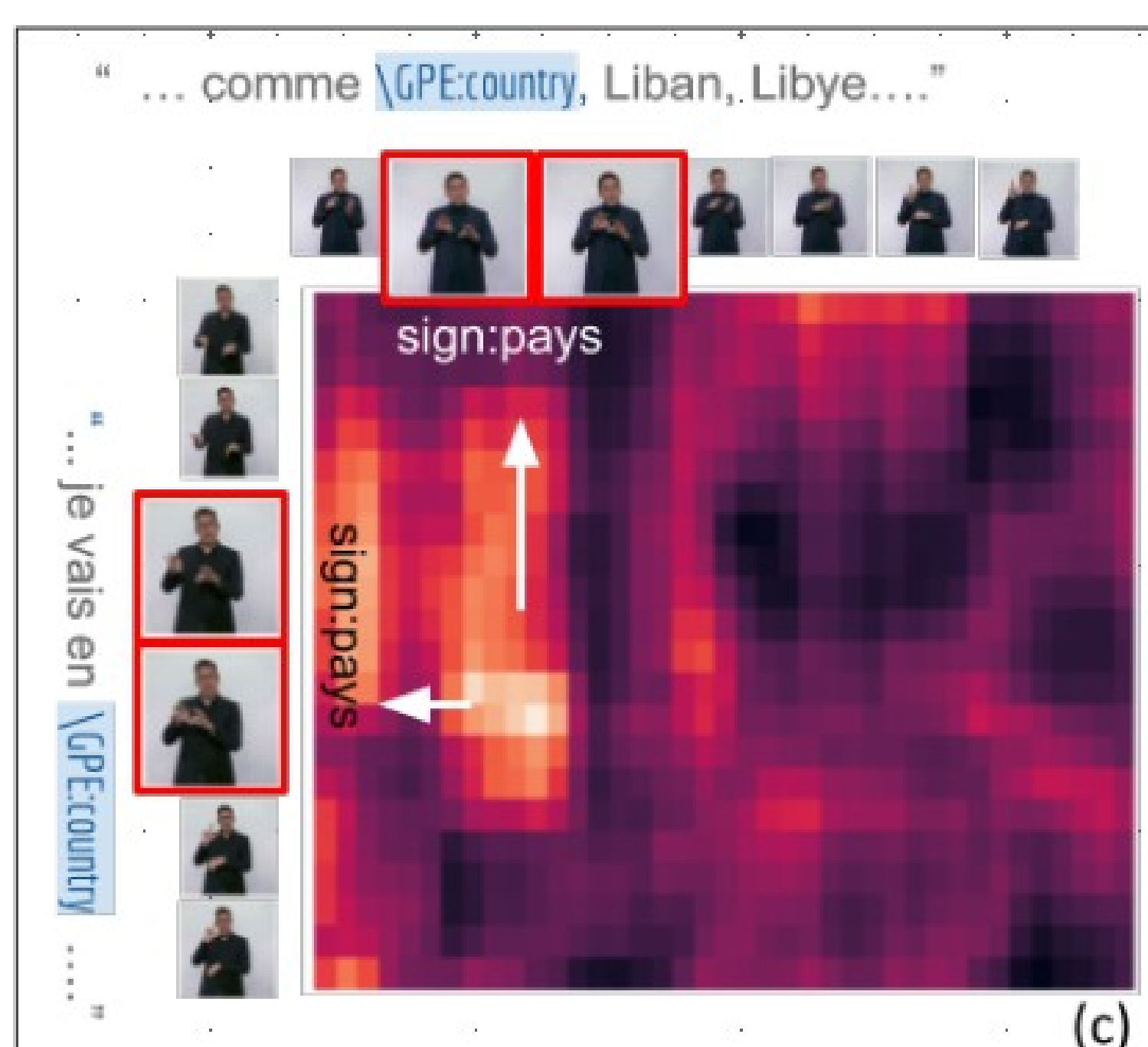
- Study on the Named Entities and their structures
  - Focus on geopolitical entities (**GPE**), companies (**ORG**) and persons (**PER**)
  - Introduction of the Named Entities by an **hypernym** sign
- **Annotation** in the subtitles of countries (**416**), administrative regions (**58**), departments (**99**), persons (**2313**) and companies (**813**)

COUNTRY LIBYA

«France will continue its commitment to ensure that **Libya/GPE:country** has the necessary resources to overcome this unprecedented disaster.»

## Sign Spotting from Named Entities

### (1) Sign Spotting using Paring to Confirm Hypothesis



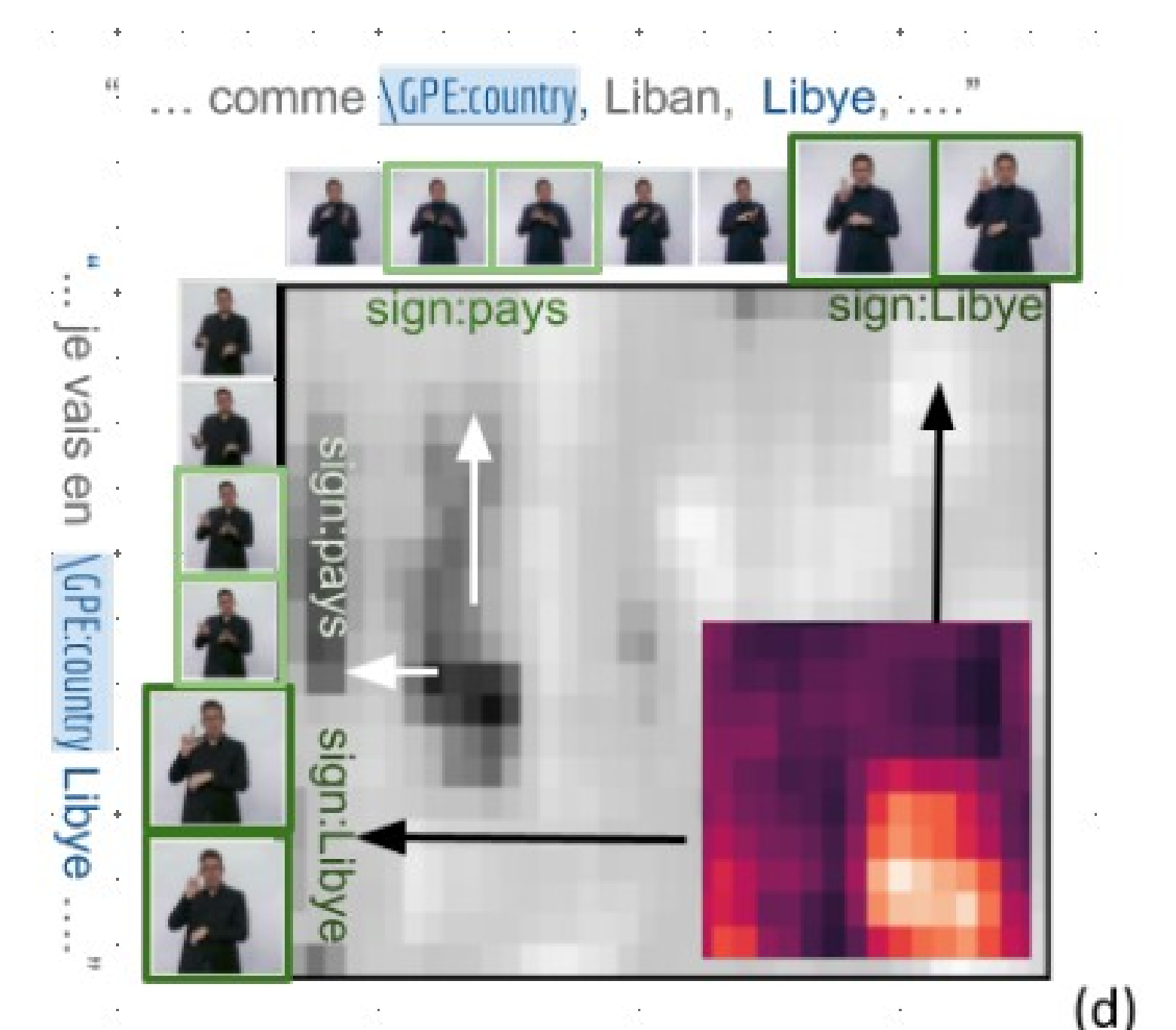
We find a hypernym marker (such as **COUNTRY, REGION, DEPARTMENT, COMPANY** or **PERSON**) in the signed sequence before the mention of the corresponding entity.

### (2) Sign Spotting with a Signary



- **798 new signs spotted**:
  - 90 COUNTRY (+29%)
  - 7 REGION (+30%)
  - 39 DEPARTMENT (+65%)
  - 100 COMPAGNY (+80%)
  - 563 PERSON (+100%)
- **Manual Evaluation**:
  - Precision: 80 %
  - Recall (from videos): 70 %

### (3) Sign Spotting through Targeted Pairing



**New rare classes spotted**: BELARUS, LYBIA (les) LANDES

## Next Steps

- Automate detection through similarity with anchoring and detect new classes to enrich the vocabulary
- Continue exploring named entities in other categories (companies, people, roles/functions)
- Use synonyms to improve annotation from subtitles with the sign lexicon
- Use this data for future NLP (Natural Language Processing) work (data alignment, translation, etc.)