

**Extracting knowledge on land use  
and occupation changes from  
textual data**

By Raham Saleem

**supervised by**

**VALENTIN Sarah, INTERDONATO Roberto**

# Project Objective

Automate the extraction of LULC entities (LULC Types, Processes, Changes, Quantities & Locations) and their relationships from unstructured text :

- Build a knowledge base of land-use events
- Enable trend analysis across geographic regions, sectors, and time

## Example

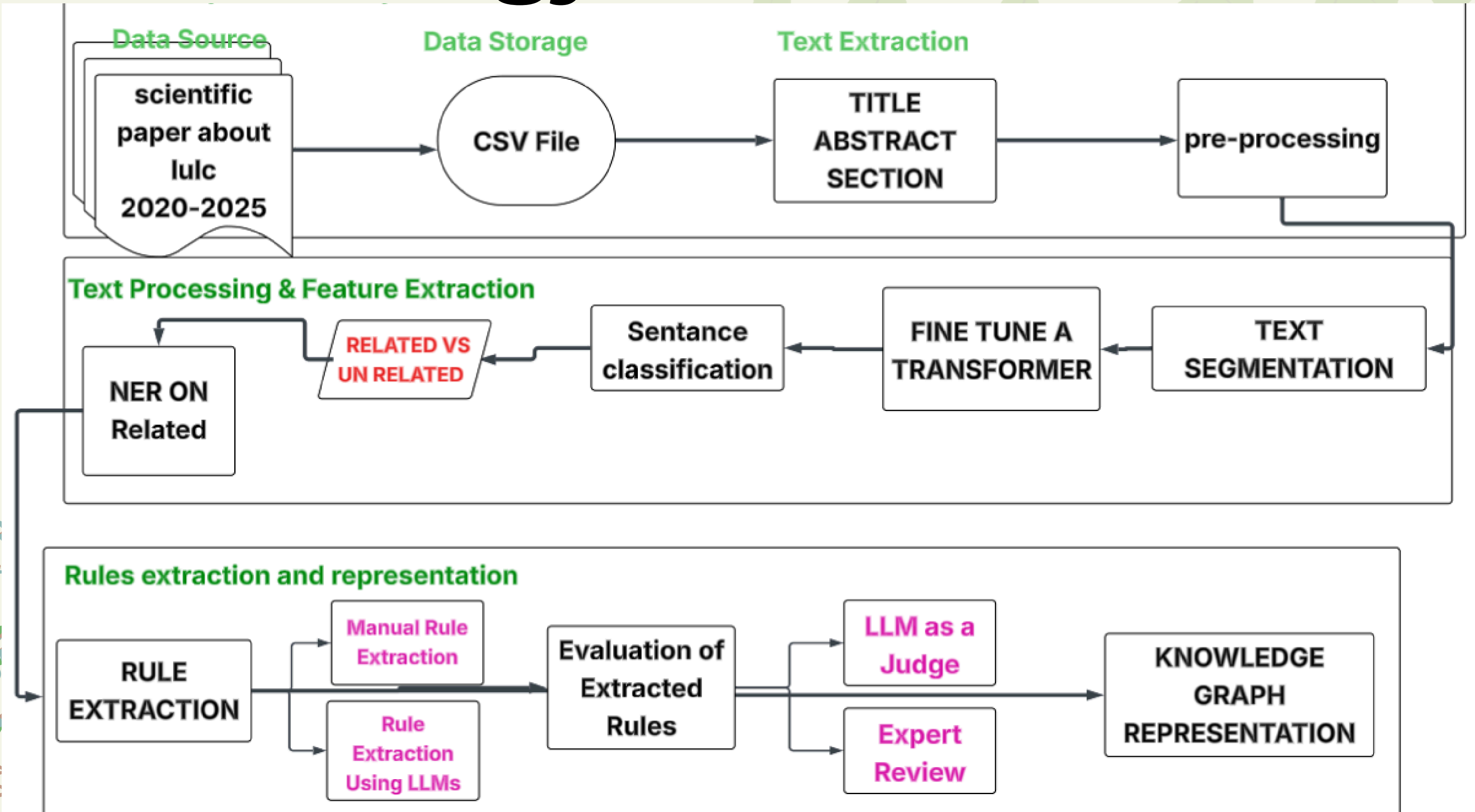
"original\_sentence": "On the contrary, forest cover declined drastically (15.25%) followed by agriculture (1.01%).",

Entity 0	Entity 1	Entity 2	Entity 3	Entity 4
Text: forest Label: LULC	Text: declined Label: CHANGE	<ul style="list-style-type: none"><li>• Text: 15.25%</li><li>• Label: PERCENT</li></ul>	<ul style="list-style-type: none"><li>• Text: agriculture</li><li>• Label: LULC</li></ul>	<ul style="list-style-type: none"><li>• Text: 1.01%</li><li>• Label: PERCENT</li></ul>

## Key Challenges

1. Non-standardised LULC vocabulary
2. Limited labeled data
3. Under-represented rules

# Methodology



# Result

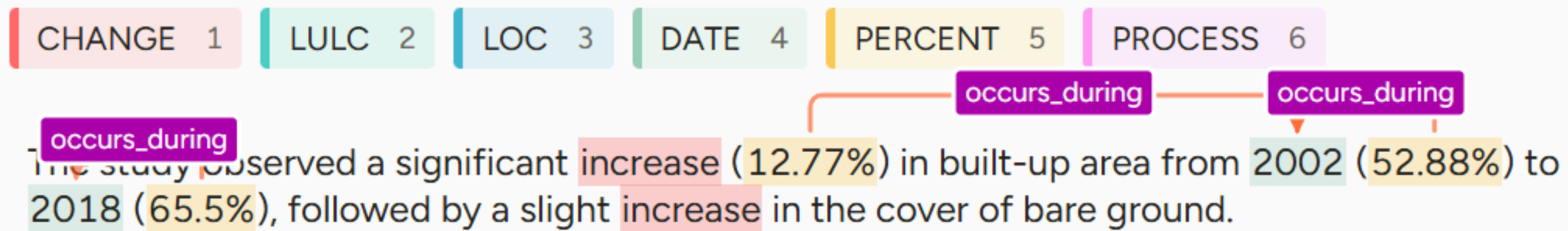
## Evaluation Metrics for Sentence Classification

Metric	Value
eval_accuracy	0.7531
eval_f1	0.6552
eval_recall	0.791

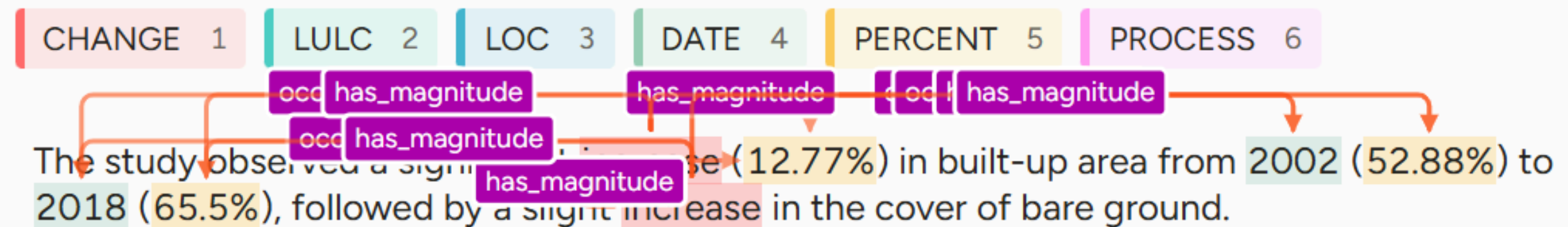


## Rule Extraction via Llama 3 (Zero-Shot) 3

### RELATION



## Rule Extraction via Llama 3 Few-Shot 10 RELATION



thank you

tusind tak  
謝謝 dakujem vám  
ありがとう

ngiyabongga

dziękuję  
merci  
baie dankie  
धन्यवाद molte grazie

suksema  
danke

gracias  
obrigada  
obrigado

takk

teşekkür ederim  
شكرا

tack så mycket

gràcies  
tänan

dank u  
teşekkür edire  
mahalo