

Supplementary Information

ESLA: Empirical and Semantic Label Alignment for Multi-Source NER Transfer in Unlabeled Target Domains

Xiaobo Zhang^{1,2}, Congqing He³, Ying He^{1,2}, Jian Peng², Dajie Fu², and Tien-Ping Tan^{1,*}

¹School of Computer Sciences, Universiti Sains Malaysia, 11700 Penang, Malaysia.

²School of Information Engineering, Jiangxi Vocational College of Finance & Economics, Jiujiang 332000, China.

³School of Information Engineering, Huzhou Normal University, Huzhou 313000, China.

*Corresponding author: Tien-Ping Tan (tienping@usm.my)

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Supplementary Note: Prompt design for the LLM baseline

The complete prompt used for the instruction-based LLM label-alignment baseline is reproduced below.

Prompt for label alignment

You are given a JSON array. Each item contains a label pair (L_s, L_t) and two label profiles (top-30 entity mentions with contexts).

Task: For each item in the input array, make a label-level alignment decision for whether L_s and L_t should be merged when unifying NER label schemas.

Rules:

- Process all items; do not skip any.
- Base your decisions on the provided label profiles and entity contexts.
- Output must be a JSON array with the SAME length and SAME order as the input.
- Each output object must include the original "Ls" and "Lt" fields so the result is traceable.

Decide:

- Decision: "merge" or "not_merge"
- Relation: "equivalence" - "subset" - "superset" - "overlap" - "disjoint"
- Confidence: number in [0, 1]
- Justification: 1-2 sentences grounded in the profiles

Return STRICT JSON ONLY. No markdown. No extra text. If you cannot process all items, output an error JSON: {"error": "cannot process all items"}.

Input:

```
[{"Ls": "book", "Lt": "CARDINAL", "Ls_support": 1131,
  "Lt_support": 6969,
  "Ls_profile": [
    {"entity": "Example Entity A", "count": 33,
     "context": "Context snippet for Entity A..."},
    {"entity": "Example Entity B", "count": 12,
     "context": "Context snippet for Entity B..."}, ...],
  "Lt_profile": [
    {"entity": "Example Entity C", "count": 1550,
     "context": "Context snippet for Entity C..."}, ...]
}, ...]
```

Supplementary Table S1: Target-label mapping for cross-domain evaluation

Supplementary Table S1 lists the fixed target-label mapping described in Section 4.1.5 of the main text. The rule-based, expert-based, LLM-based, and ESLA-Merge corpora adopt the final OntoNotes label space and therefore use the OntoNotes mappings below. For Direct-Merge, the corresponding CLUENER, BosonNER, and OntoNotes mappings are applied according to the origin of each predicted label.

Training corpus	Source label(s)	FinReportNER label	Decision
CLUENER	organization, company, government	ORG	Mapped
CLUENER	book, movie, game	PRODUCT	Mapped
CLUENER	All remaining labels	-	Excluded
BosonNER	org_name, company_name	ORG	Mapped
BosonNER	product_name	PRODUCT	Mapped
BosonNER	time	TIME	Mapped
BosonNER	All remaining labels	-	Excluded
OntoNotes / ESLA-Merge	ORG	ORG	Mapped
OntoNotes / ESLA-Merge	PRODUCT	PRODUCT	Mapped
OntoNotes / ESLA-Merge	DATE	TIME	Mapped
OntoNotes / ESLA-Merge	EVENT	EVENT	Mapped
OntoNotes / ESLA-Merge	MONEY	NUM	Mapped
OntoNotes / ESLA-Merge	PERCENT	RATIO	Mapped
OntoNotes / ESLA-Merge	All remaining labels	-	Excluded
All source schemas	No corresponding source label	FTERM, INDUSTRY, TREND	Excluded