

# Textual Entailment for Event Argument Extraction: Zero and Few-shot with Multi-Source learning

Oscar Sainz, Itziar Gonzalez-Dios, Oier Lopez de Lacalle, Bonan Min and Eneko Agirre

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# Textual Entailment for EAE

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Start-Position

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**Event:** Personell.Start-Position

**Trigger:** hired

**Person:** John D. Idol

**Entity:** ...

**Position:** ...

**Time:** ...

**Place:** ...

# Textual Entailment for EAE

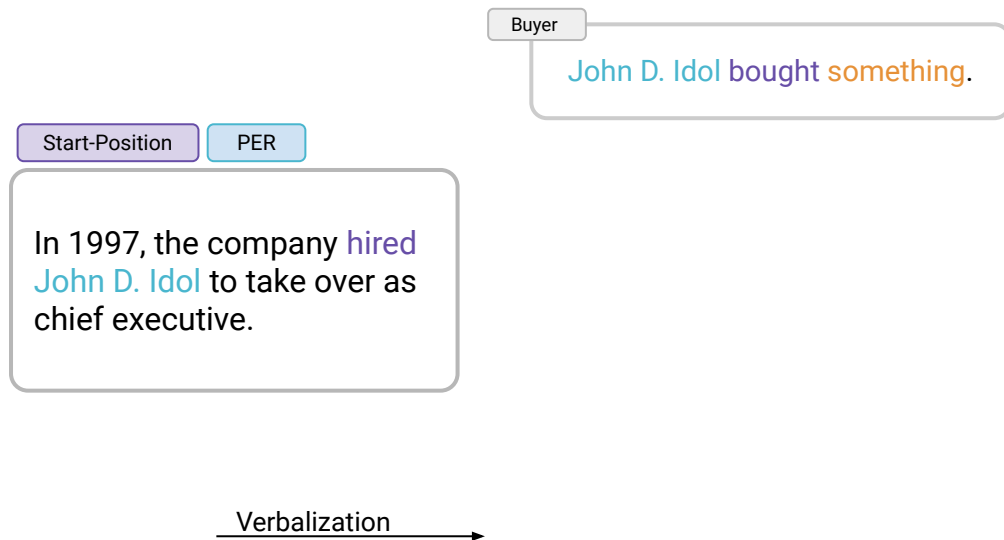
Start-Position

PER

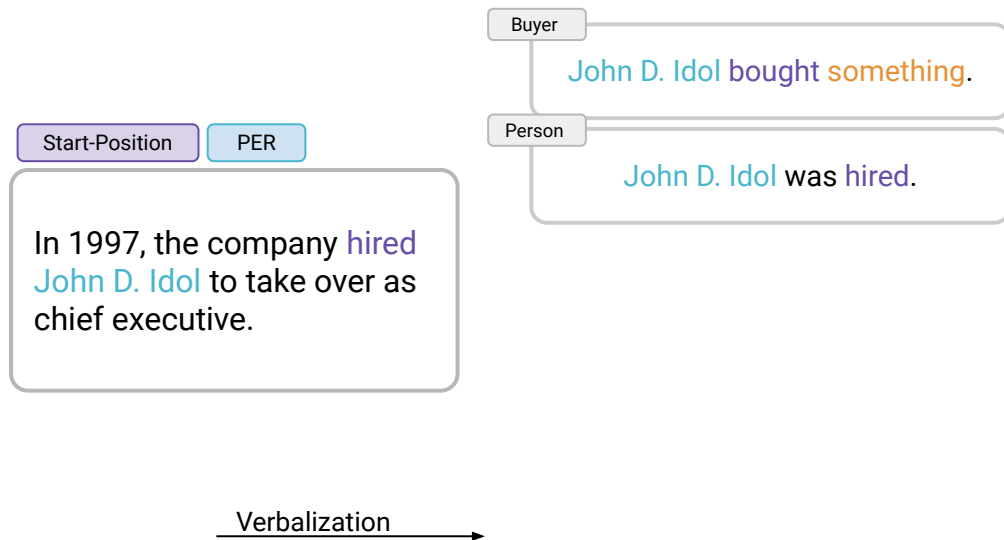
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Verbalization →

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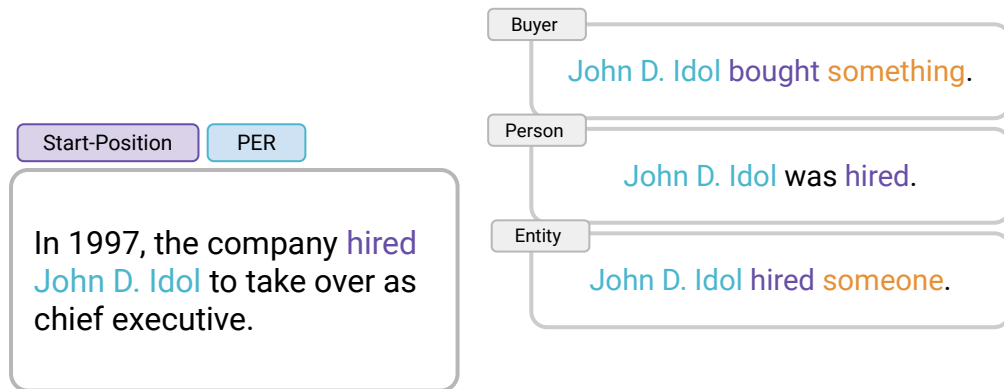


# Textual Entailment for EAE



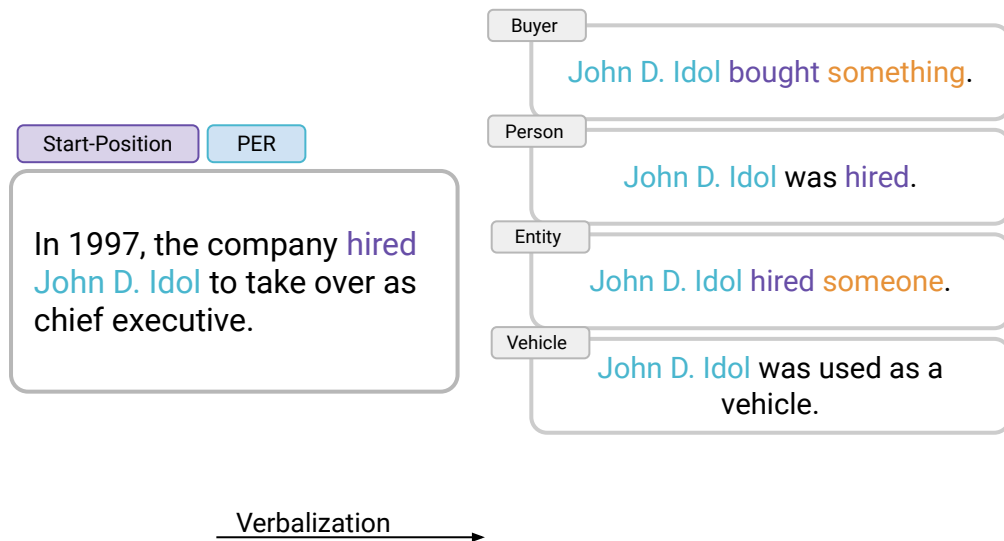


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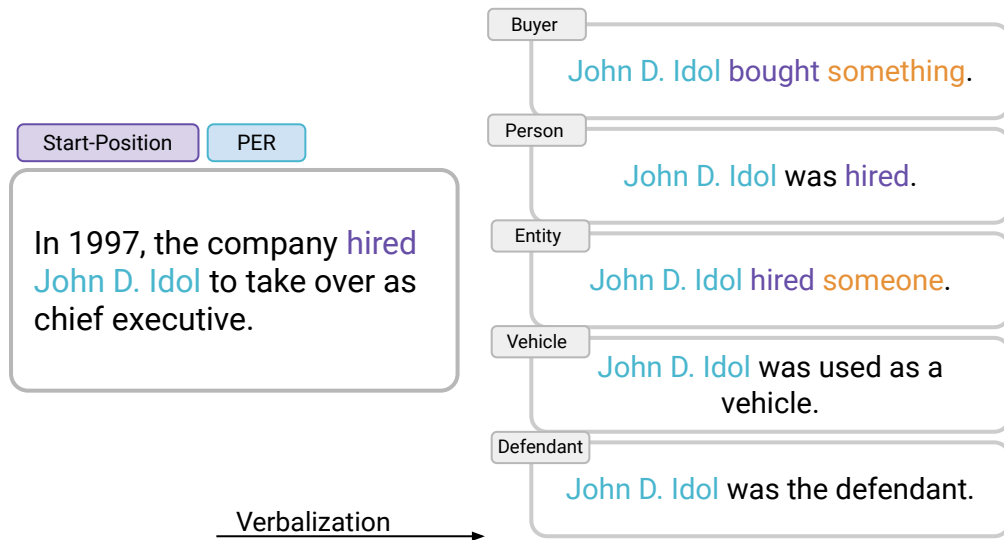


Verbalization →

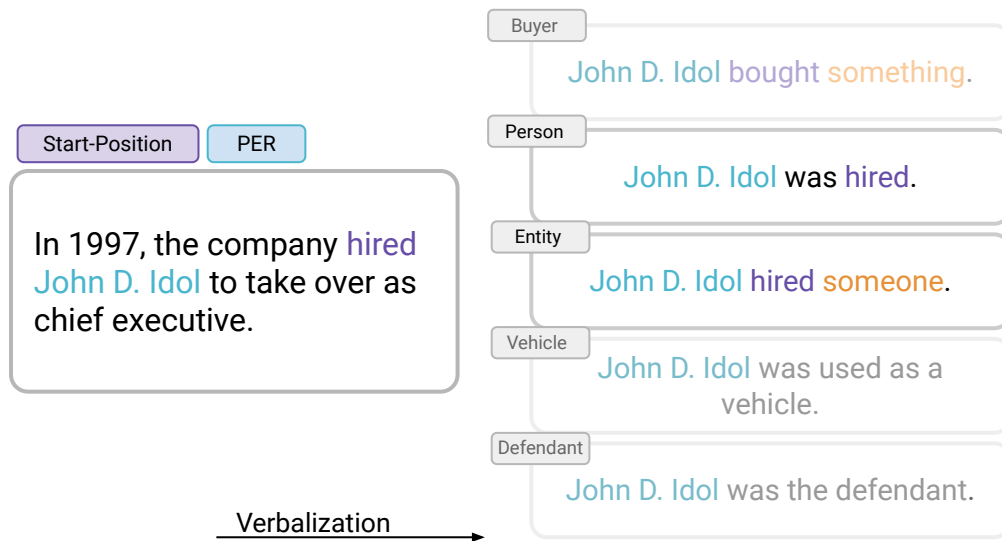
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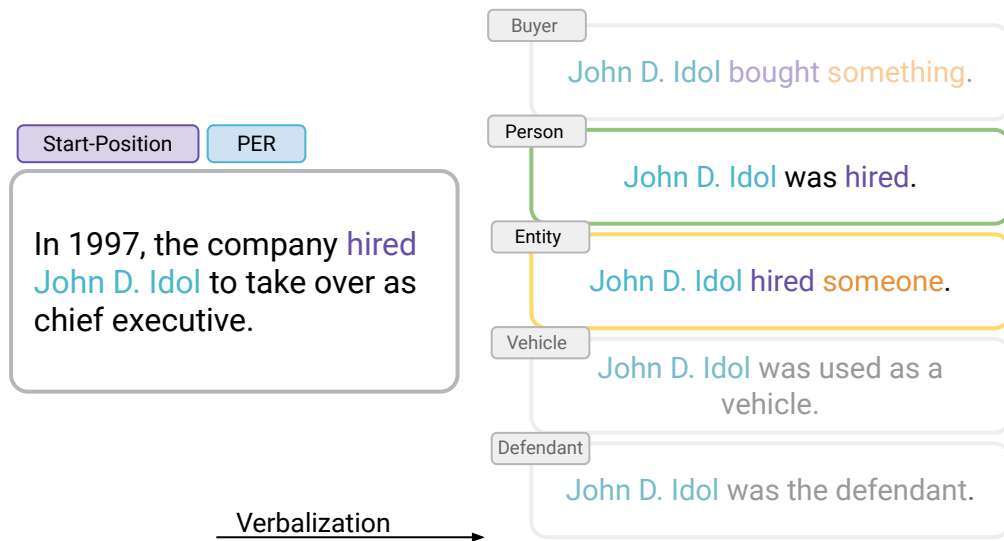
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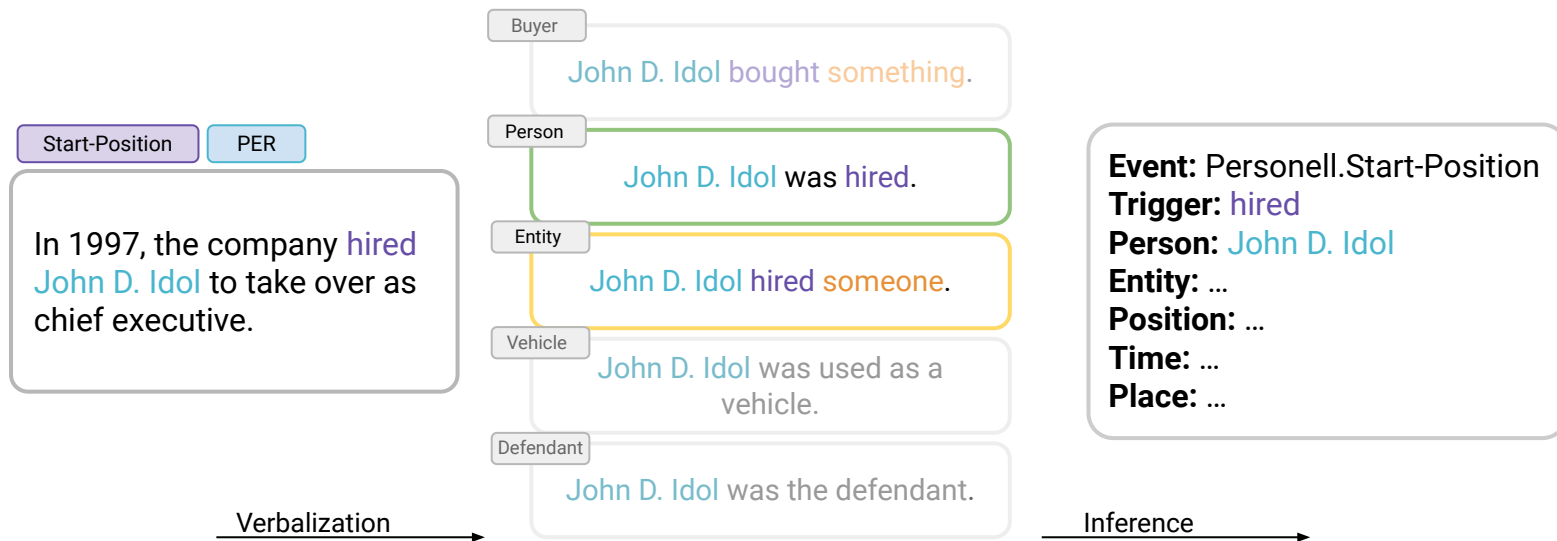
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# Multi-Source learning

- Traditional IE systems are limited by schema dependency.

ACE

WikiEvents

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- Textual entailment removes this dependency allowing **learning from multiple schemas**.

## Event Arg. Extraction

ACE

WikiEvents



# Multi-Source learning

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- Textual entailment removes this dependency allowing **learning from multiple schemas**.
- Textual entailment also **allows for multi-task learning**

## Textual Entailment

MNLI

## Relation Extraction

TACRED

## Event Arg. Extraction

ACE

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# Multi-Source learning

- Traditional IE systems are limited by **schema dependency**.
- Textual entailment removes this dependency allowing **learning from multiple schemas**.
- Textual entailment also **allows for multi-task learning**, including multiple datasets from each task.

## Textual Entailment

MNLI

SNLI

FEVER-b

ANLI

## Relation Extraction

TACRED

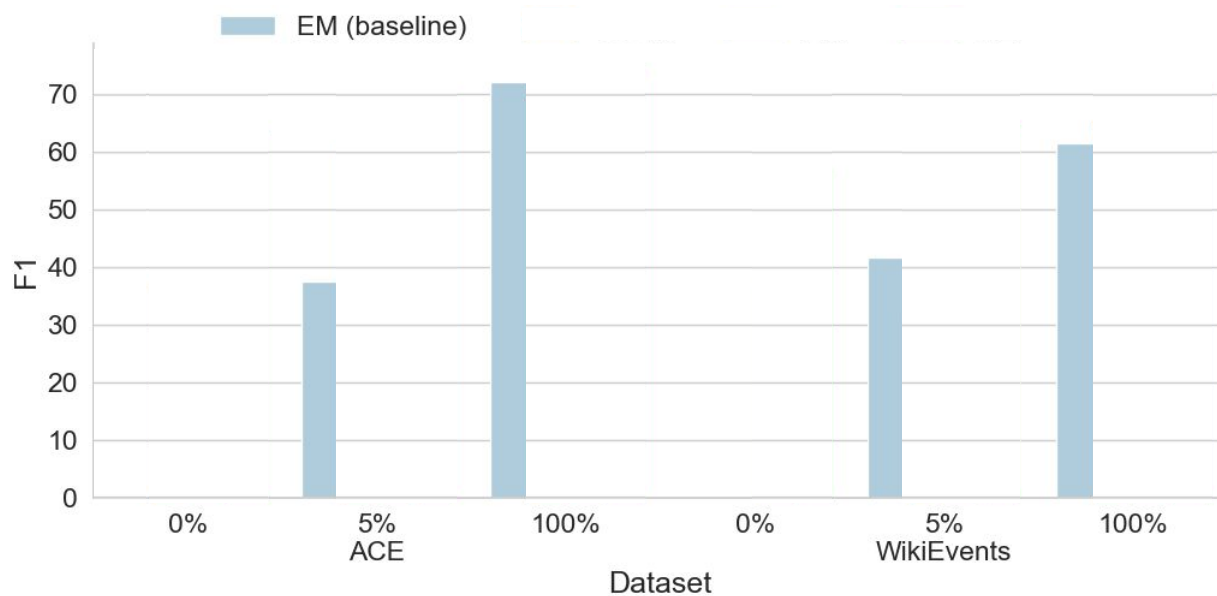
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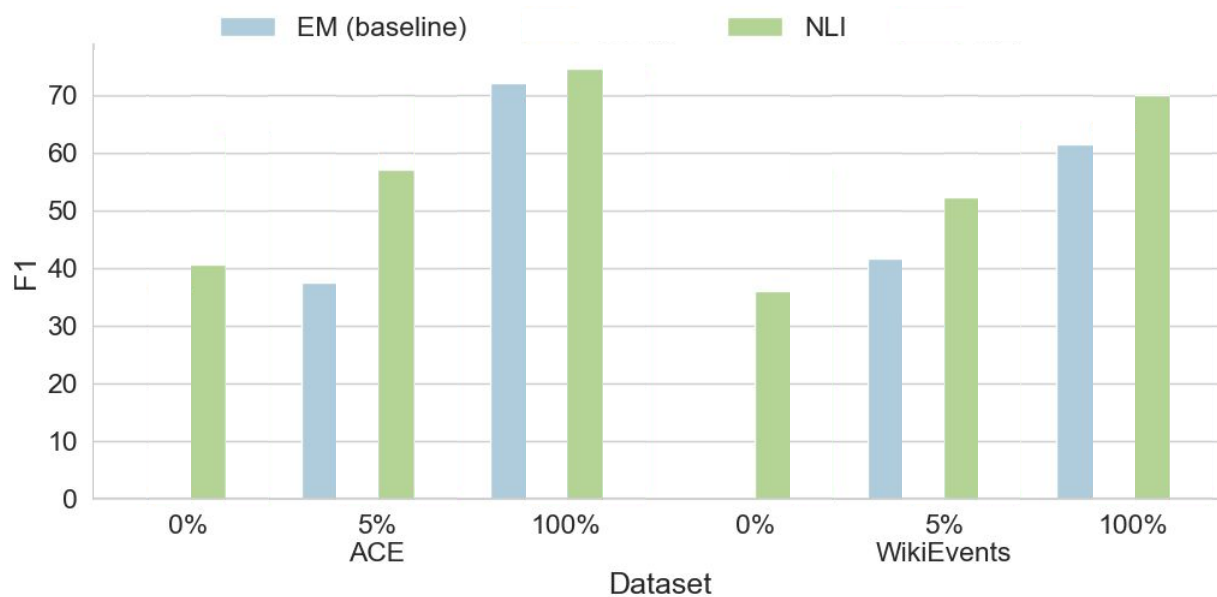
# Results

- Baseline evaluation on different regimes



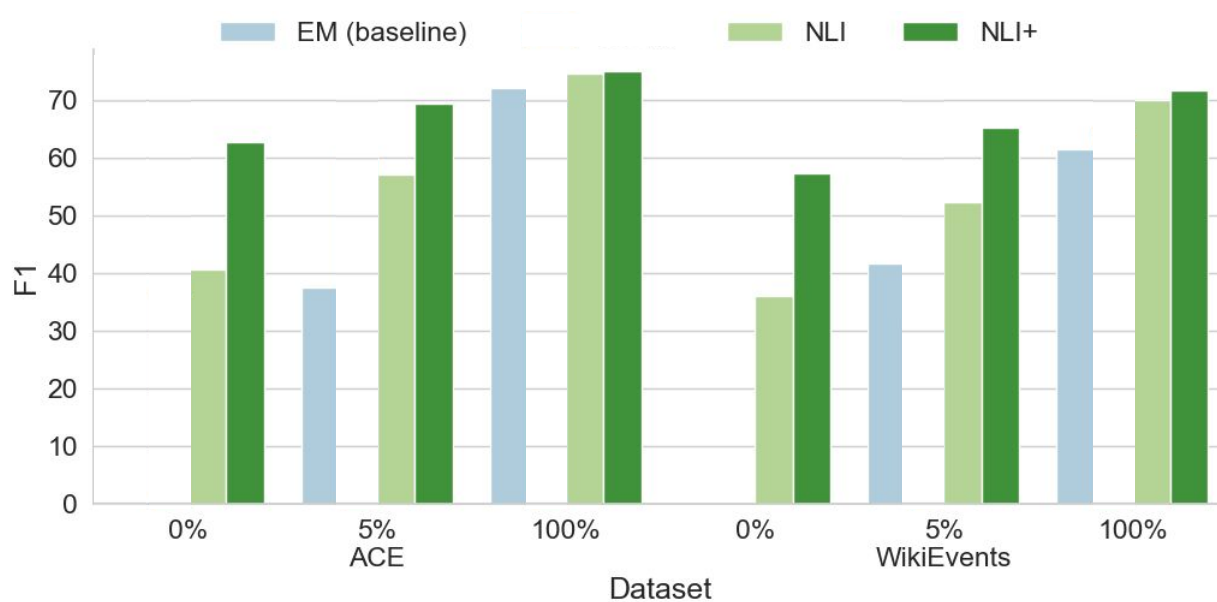
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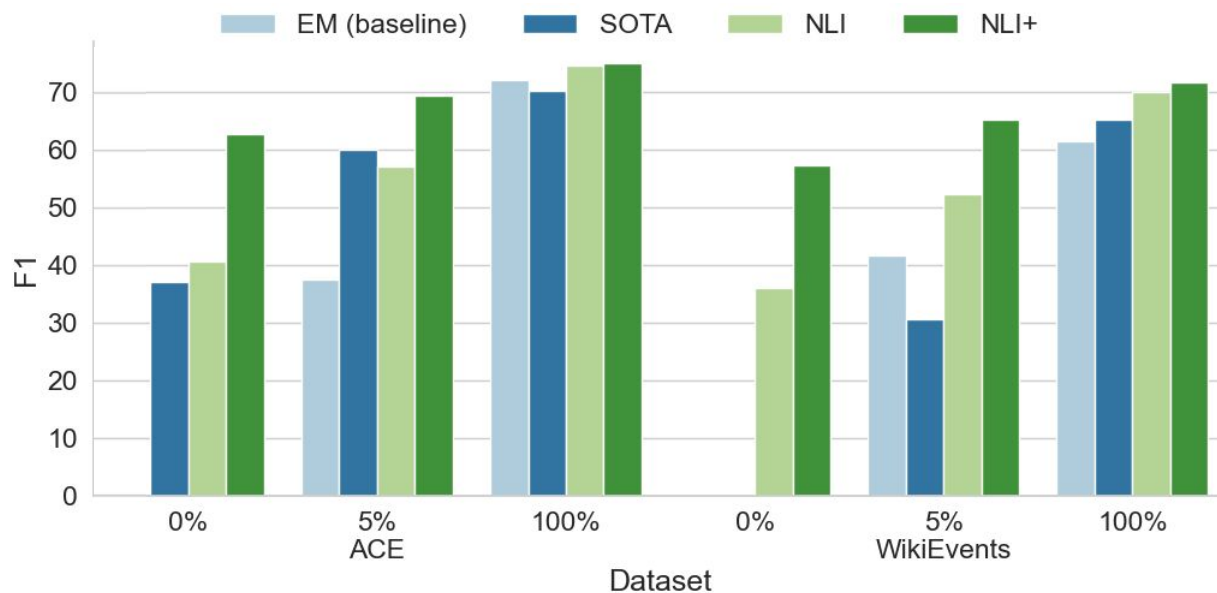
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- Baseline evaluation on different regimes
- Significant improvements over the baseline!!
- Comparison to a few-shot SOTA system on ACE and a (full-train) SOTA on WikiEvents.



# Using several entailment data

- Related work that relies on textual entailment for zero and few-shot learning **only leverages MultiNLI** ([Williams et al., 2018](#)) data.

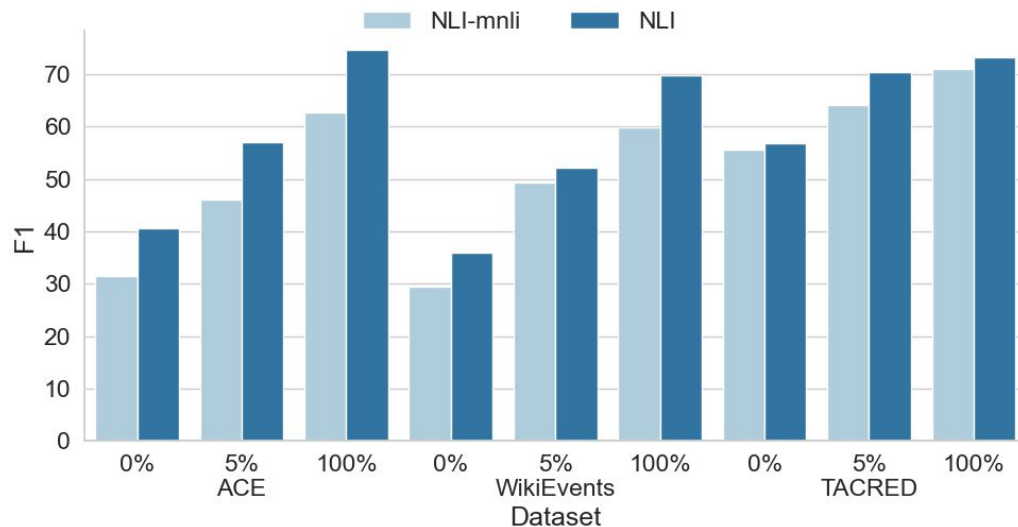
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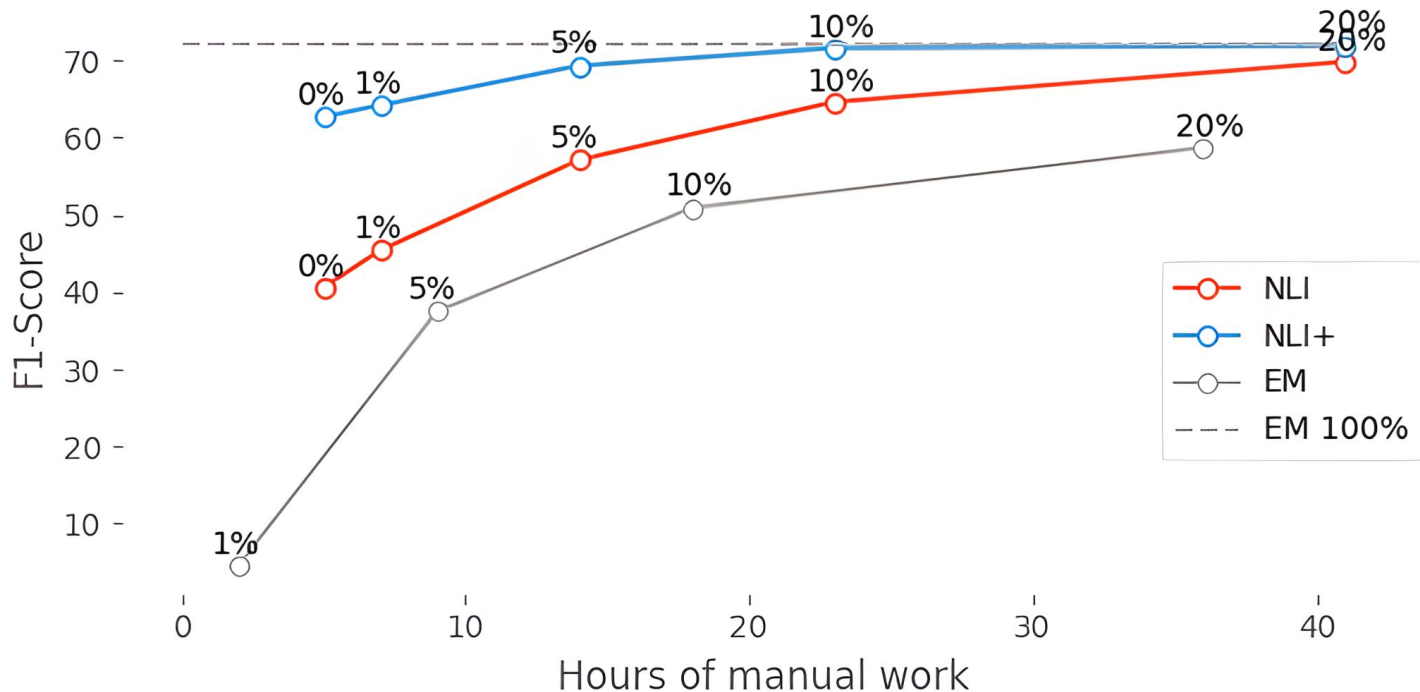
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- Is **more available textual entailment data** beneficial on low data regimes?
- Analysis shows that for all scenarios **using several datasets is crucial** to obtain better performance.



# Time investment

Time estimation of ACE arguments annotation vs verbalization development.



# Conclusions

First work addressing **Event Argument Extraction (EAE)** as textual entailment.

State-of-the-art results on ACE and WikiEvents on all zero-shot, few-shot and full-train.

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- Our method **reduces schema dependency**: Wikievents improves ACE and vice versa **with no extra manual work**.
- Training with **several NLI datasets is significantly better** than just using MultiNLI.
- **Template writing does not require domain expertise**.

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