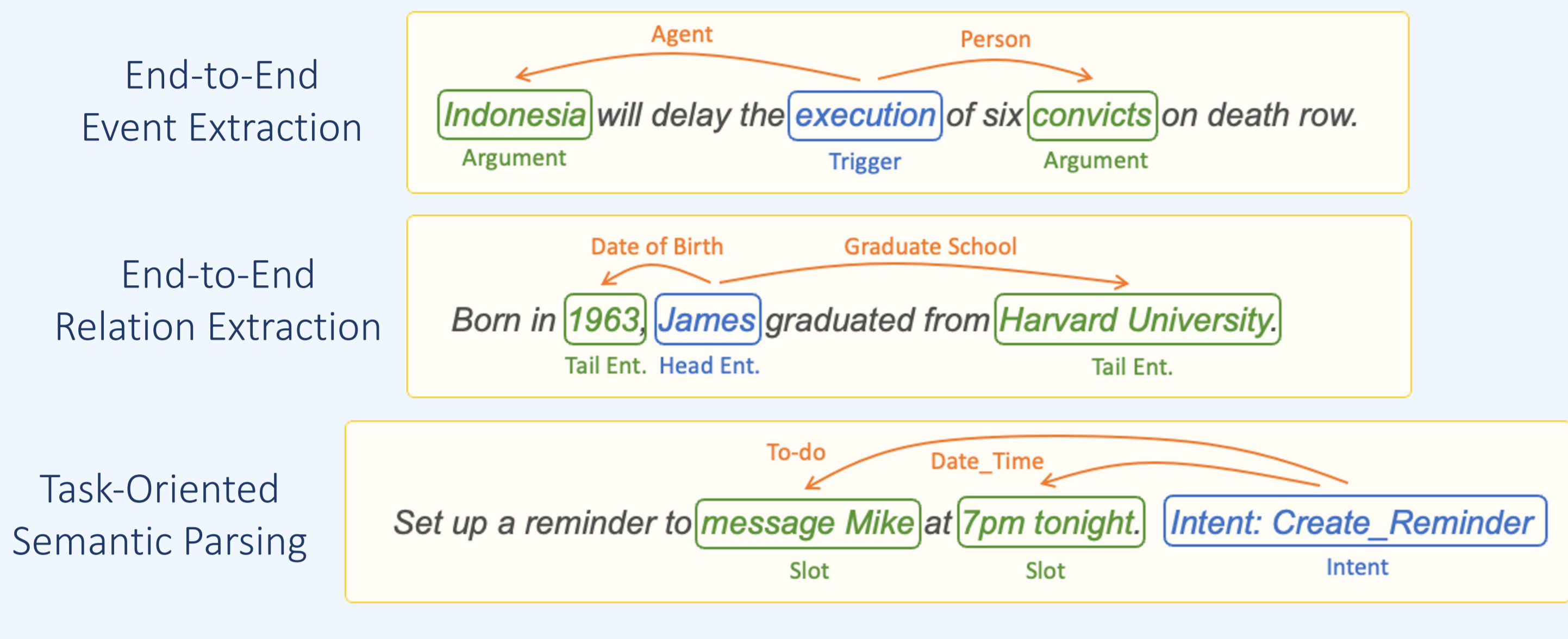


Relational Structure Extraction



Our Contributions

Prior work

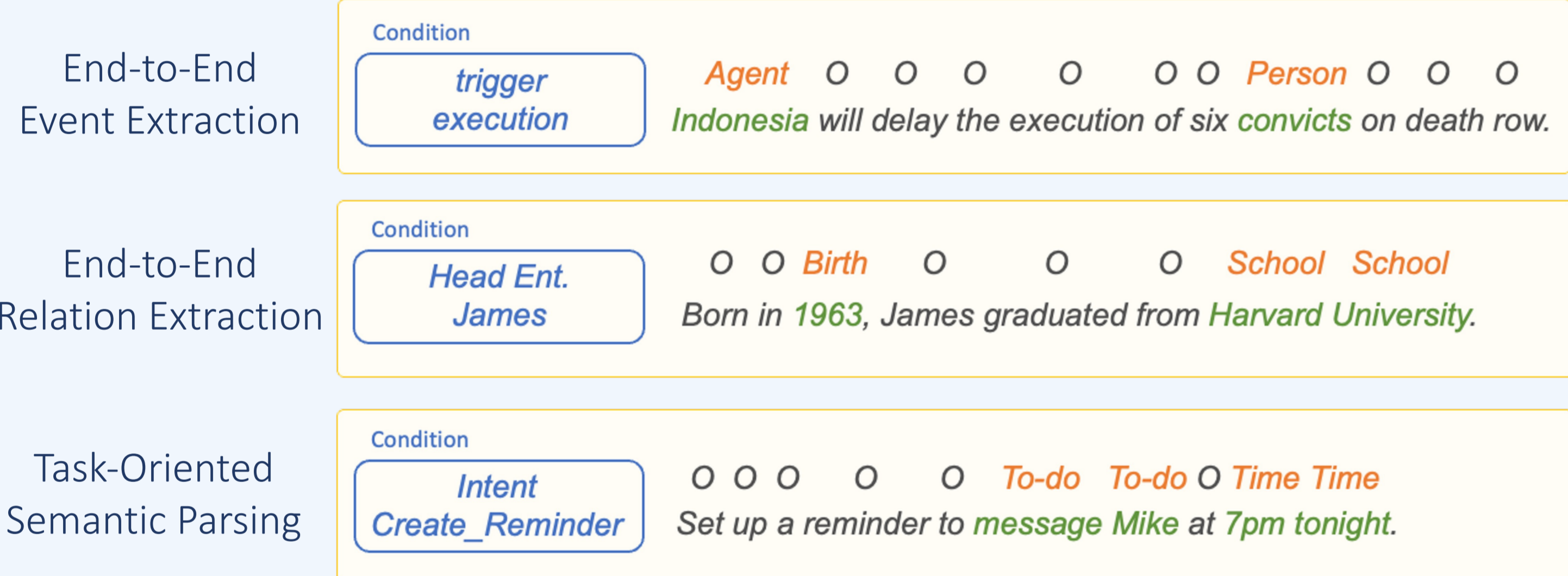
- Design a **specific** and complicated model for **each task**

Our work

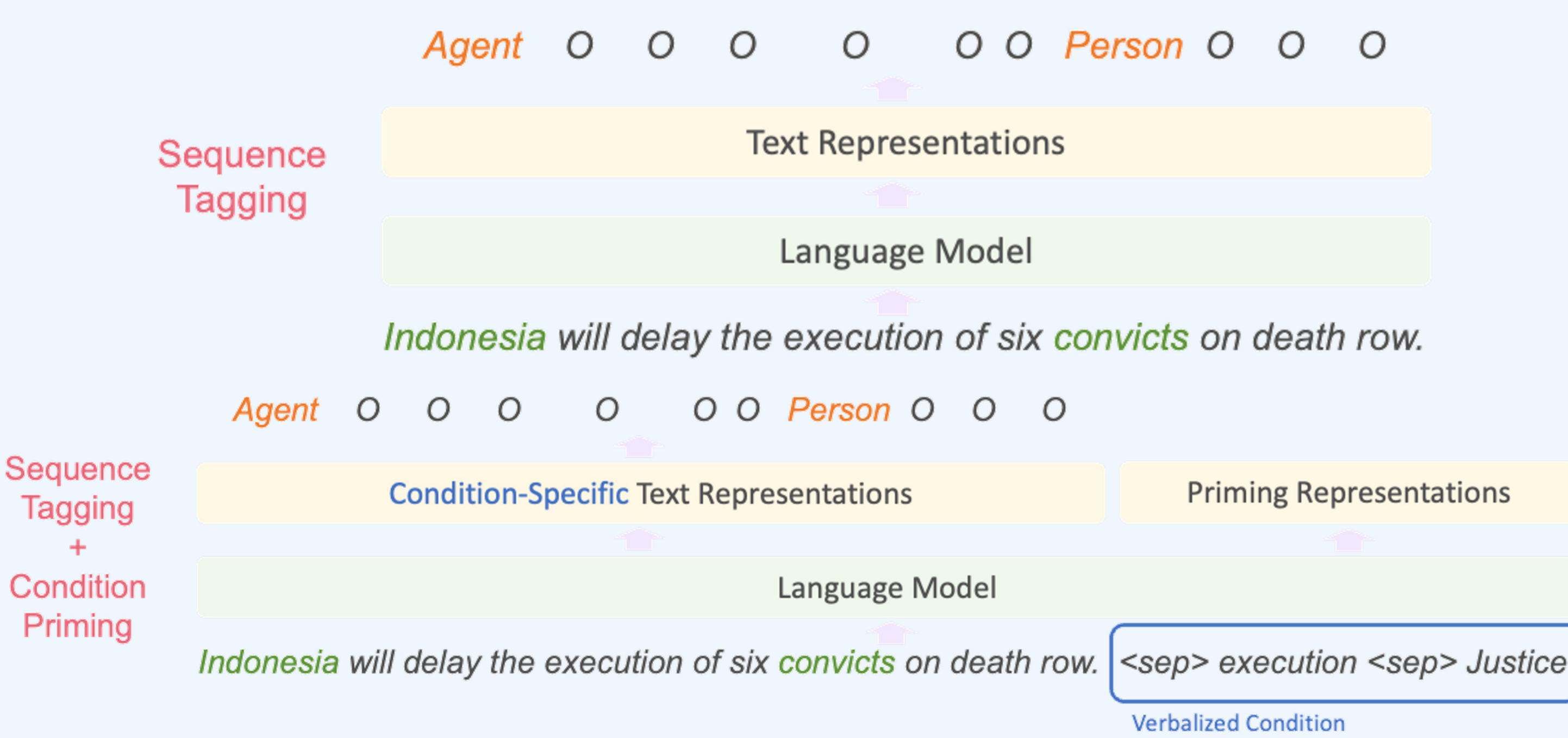
- Take a unified view of relational structure extraction
- Propose TAGPRIME, simple but effective for **all tasks**
- Adapt **priming techniques** to boost performance

A Unified View of Relational Structure Extraction

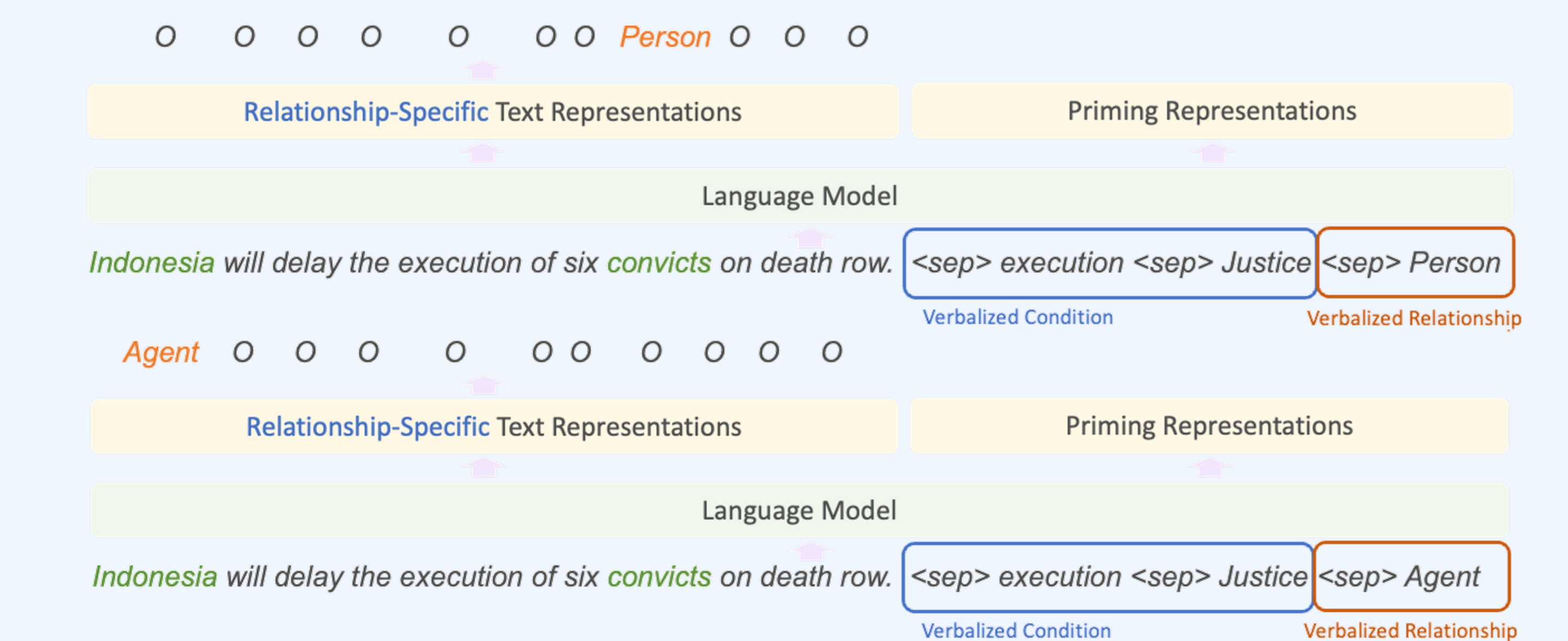
Extract **word spans** and corresponding **relationships** based on **conditions**



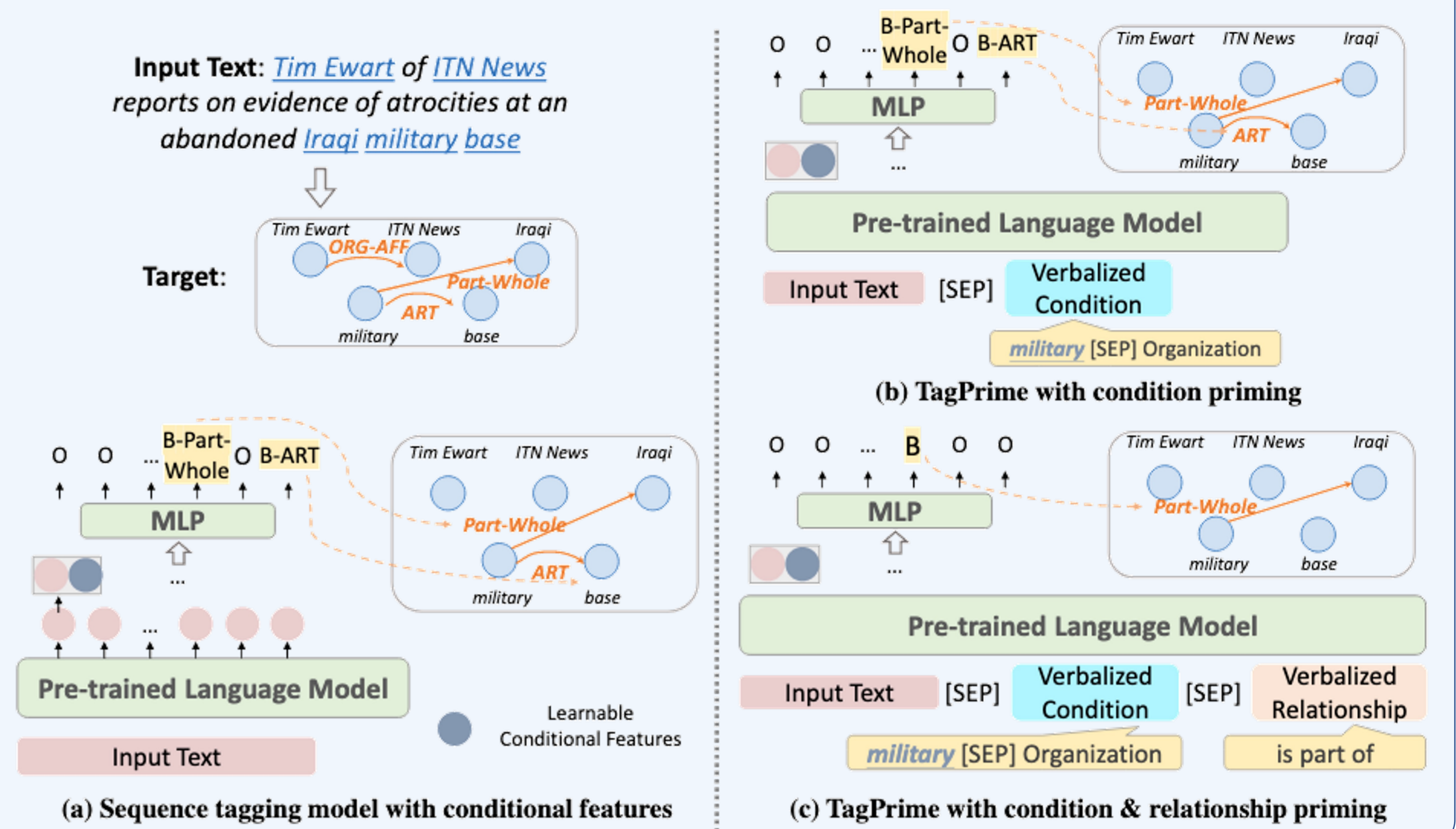
Condition Priming



Relationship Priming



Comparison Between Features and Priming



Task 1: End-to-End Event Extraction

Model	ACE05-E (en)			ACE05-E (zh)			ERE (en)			ERE (es)		
	Tri-C	Arg-I	Arg-C	Tri-C	Arg-I	Arg-C	Tri-C	Arg-I	Arg-C	Tri-C	Arg-I	Arg-C
DyGIE++ (Wadden et al., 2019)	69.7	53.0	48.8	72.3	63.0	59.3	58.0	51.4	48.0	65.8	49.2	46.6
TANL (Paolini et al., 2021)	68.4	50.1	47.6	-	-	-	54.7	46.6	43.2	-	-	-
Text2Event (Lu et al., 2021)	71.9	-	53.8	-	-	-	59.4	-	48.3	-	-	-
OneIE* (Lin et al., 2020)	74.7	59.2	56.8	73.3	63.4	60.5	57.0	50.1	46.5	66.5	54.5	52.2
DEGREE (Hsu et al., 2022b)	73.3	-	55.8	-	-	-	57.1	-	49.6	-	-	-
TAGPRIME w/ Cond. Priming	74.6	60.0	56.8	71.9	63.2	60.5	57.3	52.1	49.3	66.3	55.2	52.6
TAGPRIME w/ Cond. & Rela. Priming	74.6	59.8	58.3	71.9	64.7	62.4	57.3	52.4	49.9	66.3	55.1	53.6

Task 2: End-to-End Relation Extraction

Model	ACE05-R			ACE04-R		
	Ent	Rel	Rel+	Ent	Rel	Rel+
Table-Sequence (Wang and Lu, 2020)	89.5	67.6	64.3	88.6	63.3	59.6
PFN (Yan et al., 2021)	89.0	-	66.8	89.3	-	62.5
Cascade-SRN (late fusion) (Wang et al., 2022)	89.4	-	65.9	-	-	-
Cascade-SRN (early fusion) (Wang et al., 2022)	89.8	-	67.1	-	-	-
PURE (Zhong and Chen, 2021)	89.7	69.0	65.6	88.8	64.7	60.2
PURE ^o (Zhong and Chen, 2021)	90.9	69.4	67.0	90.3	66.1	62.2
UniRE ^o (Wang et al., 2021)	90.2	-	66.0	89.5	-	63.0
TAGPRIME w/ Cond. Priming	89.6	69.7	67.3	89.0	65.2	61.6
TAGPRIME w/ Cond. & Rela. Priming	89.6	70.4	68.1	89.0	66.2	62.3

Task 3: Task-Oriented Semantic Parsing

Model	MTOE (en)			MTOE (es)			MTOE (fr)			MTOE (de)		
	Intent	Slot-I	Slot-C	Intent	Slot-I	Slot-C	Intent	Slot-I	Slot-C	Intent	Slot-I	Slot-C
JointBERT (Li et al., 2021)	96.7	-	92.8	95.2	-	89.9	94.8	-	88.3	95.7	-	88.0
JointBERT (reproduced)	97.1	94.2	92.7	96.6	91.6	89.5	95.8	90.2	87.7	96.5	89.2	87.6
TAGPRIME + Cond. Priming	97.1	94.8	93.4	96.6	91.6	90.3	95.8	90.6	88.6	96.5	89.6	87.9
TAGPRIME + Cond. & Rela. Priming	97.1	94.7	93.5	96.6	91.8	90.7	95.8	90.6	89.1	96.5	89.5	88.1

Ablation Studies

Cond. Feat.	Rela. Feat.	Prim.	ACE05-E (en)		ACE05-E (zh)		MTOE (es)		MTOE (fr)		ACE05-R (en)		ACE04-R (en)		Average
			Arg-I	Arg-C	Arg-I	Arg-C	Slot-I	Slot-C	Slot-I	Slot-C	Rel	Rel+	Rel	Rel+	
✓	✓	✓	57.8	54.2	60.2	57.2	91.8	90.2	90.5	88.4	67.8	65.5	62.2	58.9	69.1
✓	✓	✗	58.1	55.3	60.4	58.1	92.0	90.4	90.6	88.6	67.5	65.2	61.8	58.4	69.4
✓	✓	✗	59.6	56.7	62.0	59.7	91.8	90.4	90.7	88.8	69.6	67.2	64.7	60.7	70.6
✓	✓	✓	60.0	56.8	63.2	60.5	91.6	90.3	90.6	88.7	69.7	67.3	65.2	61.6	70.9
✓	✗	✓	57.3	55.3	61.4	59.4	91.7	90.5	90.2	88.5	68.0	65.6	61.6	58.3	69.6
✓	✓	✗	59.3	57.6	63.0	61.2	91.7	90.5	90.5	88.9	70.6	68.2	66.0	62.2	71.4
✓	✓	✓	59.8	58.3	64.7	62.4	91.8	90.7	90.6	89.1	70.4	68.1	66.2	62.3	71.8
✓	✓	✓	59.7	58.0	64.3	62.4	91.5	90.4	90.6	89.1	70.5	68.1	65.8	62.2	71.7

Approximation and Speed Up

