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It's the Same Old Story! Enriching Event-Centric Knowledge Graphs by Narrative Aspects

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Motivation

- Events of varying importance rule our lives
 - Event: ‚interactions between participants that happen at a given place to a known time‘
 - Increasing interest in events in the last years:
 - Prediction Tasks
 - Event-Chain completion
 - Event Representation





On Narrative Aspects

- Humans assume an *intrinsic narrative structure* when dealing with (complex) events
 - i.e., they connect the dots between the event and their prior experience with similar event types
- Structural components of events
- Narrative elements of events
 - Discourse regarding particular events
 - Narrative attributions





Narrative Attributions

- News, social media, and other textual descriptions oftentimes make certain *attributions* to an event or its' participants
 - Objective attribution
 - e.g., `is_underdog(event, participant)`
 - Subjective attributions
 - e.g., `is_aggressor(event, participant, viewpoint)`





Narrative Prototypes

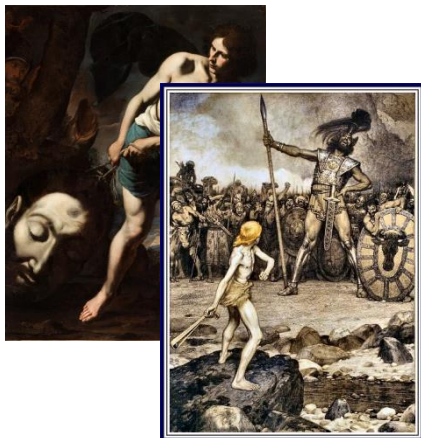
NP: David vs. Goliath

(i) Event pattern: $\text{conflict}^{\text{[super type]}}$

(ii) Refinements:

$\text{is_underdog}(X, \text{conflict}) \wedge \text{role}(X, \text{conflict}) = \text{'winner'}$

Query Processor



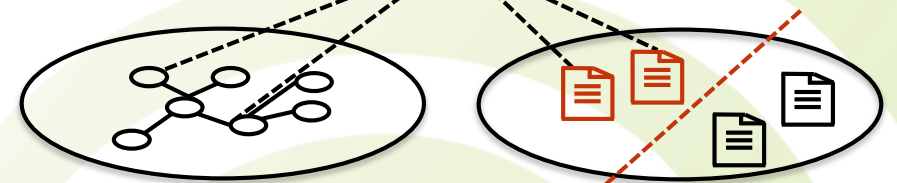
NP: Gulf War

(i) Event pattern: 'Gulf War '91'[event]

(ii) Refinements:

$\text{is_aggressor}(X, \text{'Gulf War '91'}, \text{'western_vp'})$
 $\wedge X[\text{name}] = \text{'Iraq'}$

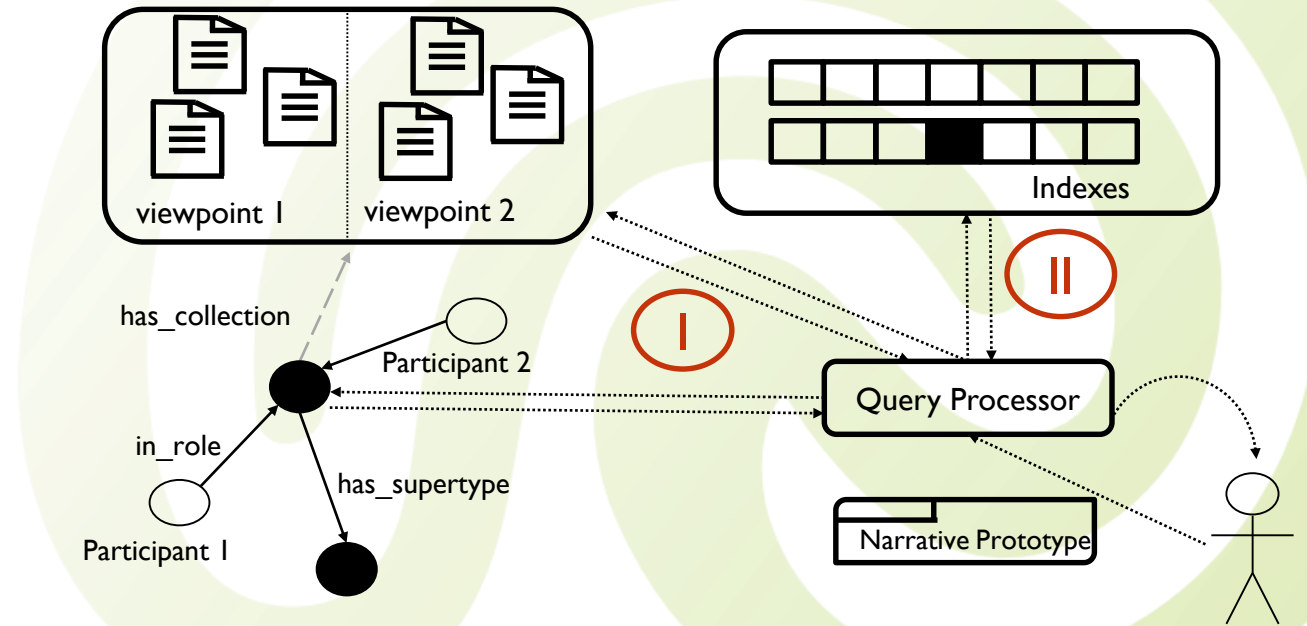
Query Processor





Example System and PoC

- Retrieval of events based on narrative prototypes
- Critical points:
 - subjective attribution evaluation (RQ1)
 - query performance (RQ2)





RQ I: Evaluation of subj. attributions

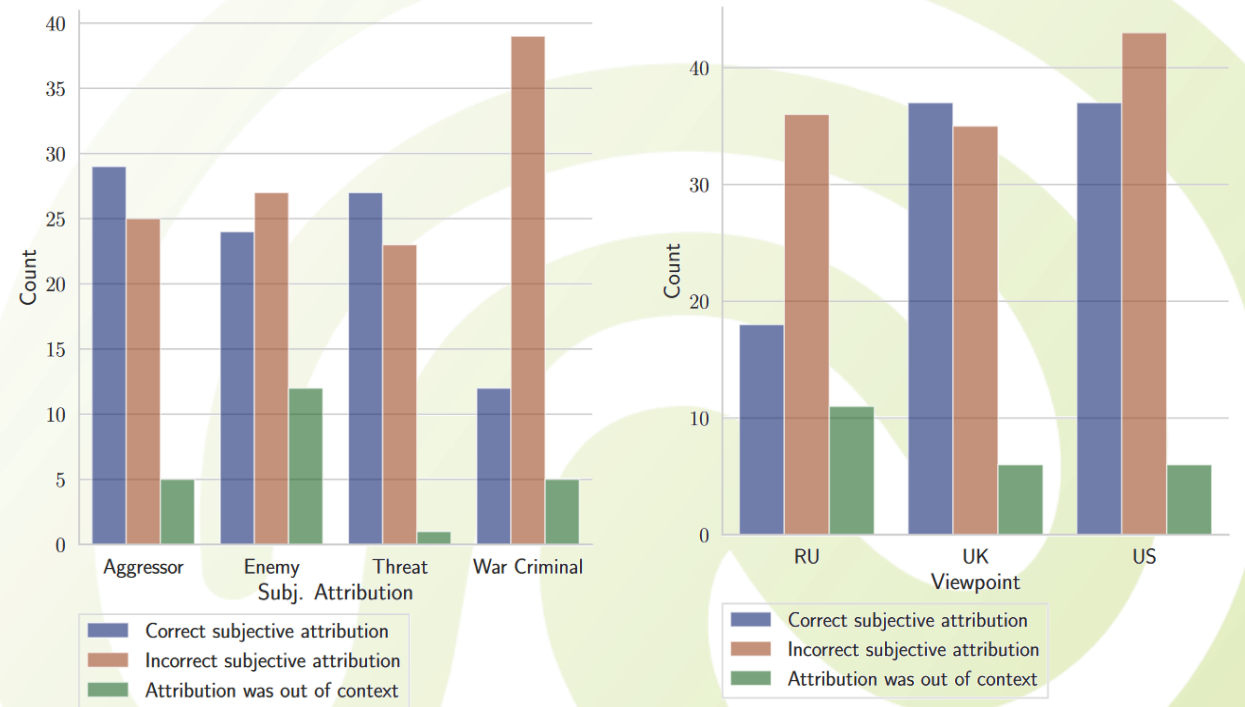
- How to evaluate subjective attributions?
 - Sample data for:
 - 3 viewpoints
 - 5 conflicts
 - Extractive Question Answering task based on RoBERTa
 - (doc, “Who is <ATTRIBUTION> in <EVENT>?”)

	Crimea Crisis	Gulf War	Iraq War	Ukraine Conflict	Vietnam War	Σ	
New York Times	79	129	129	79	42	458	US
Washington Post	79	83	106	79	54	401	
Daily Mail	91	28	70	66	12	267	UK
The Guardian	78	51	127	79	1	336	
RT.com	78	10	73	78	5	244	RU
Sputniknews	79	8	10	79	1	177	



RQ I: Evaluation of subj. attributions

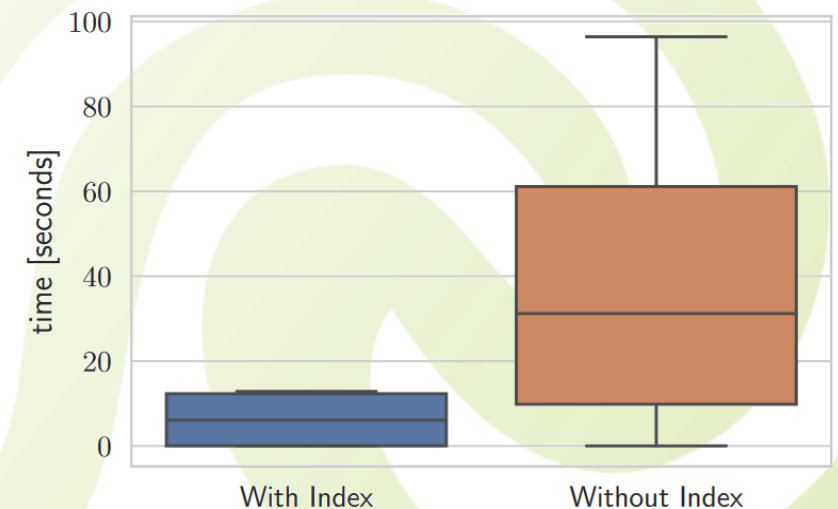
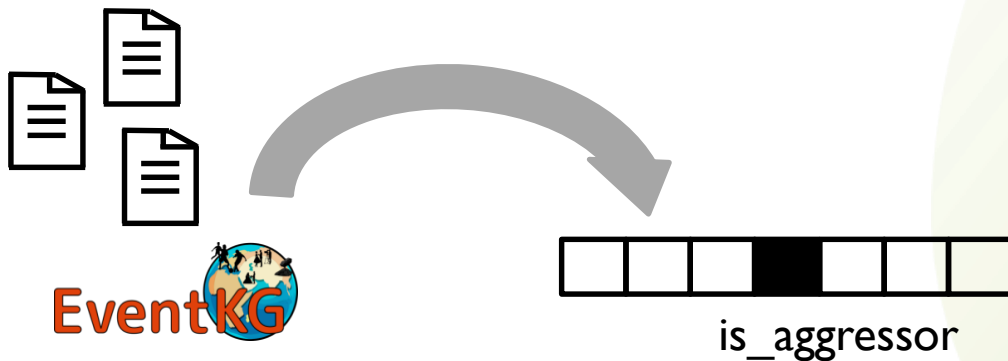
- Small scale study regarding the detection of subjective attributions
 - Validated by 3 human raters
 - 4 S. Attributions
 - Fleiss $\kappa = 0.33$
 - Problems:
 - Weak semantic
 - Context and Citation problems





RQ2: Query Performance

- Query improvement by utilizing indexing
 - Objective: reduce the query load for subjective attributions:
 - Index each participant for the subj. attributions
 - Bloom Filter is enough for this purpose





Summary and Outlook

- Narrative Prototypes offer a unified way of describing events in context of:
 - Structural elements (e.g., from knowledge bases)
 - Narrative aspects mostly from textual resources
- Still, a lot of work remains
 - Semantics of subjective attributions
 - Large scale experiments
 - Fine grained viewpoints (perceptual components of viewpoints)



Thank You!



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If you have any questions,
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