The UTexas system for TAC 2019 SM-KBP Task 3: Hypothesis detection with graph convolutional networks

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Overview

• SM-KBP Task 3: generation of hypotheses on emerging topics from a multi-document knowledge graph (the output of Task 2, which usually contains conflicting claims).
• The UTexas system: a hybrid neural-symbolic system.

Hypothesis Seed Creation

• Entry point matching is hard on TA2 KBs (some entry points cannot be matched in any of 15 TA2 KBs).
• We re-rank all hypothesis seeds to encourage diversity of entry point fillers.

Post-hoc Filtering

• General: a relation node must have two arguments.
• Domain-specific: an attacker cannot attack himself.

Performance on TA2 KBs (among 5 TA3 teams)

Correct | Edge Coh | KE Coh | Rel (Strict) | Rel (Lenient)
--- | --- | --- | --- | ---
0 | 0.25 | 0.75 | 0.25 | 0.75
0.25 | 0.5 | 0.5 | 0.25 | 0.75
0.5 | 0.75 | 0.75 | 0.5 | 0.75
0.75 | 1 | 1 | 0.75 | 1
1 | 1 | 1 | 1 | 1

Performance on LDC KB (among 5 TA3 teams)

Correct | Edge Coh | KE Coh | Rel (Strict) | Rel (Lenient)
--- | --- | --- | --- | ---
0 | 0.25 | 0.75 | 0.25 | 0.75
0.25 | 0.5 | 0.5 | 0.25 | 0.75
0.5 | 0.75 | 0.75 | 0.5 | 0.75
0.75 | 1 | 1 | 0.75 | 1
1 | 1 | 1 | 1 | 1

Example

An example hypothesis on E102 generated from LDC KB. (Purple nodes/edges from seed, orange from expansion.)