Integrating Element Correlation with Prompt-based Spatial Relation Extraction

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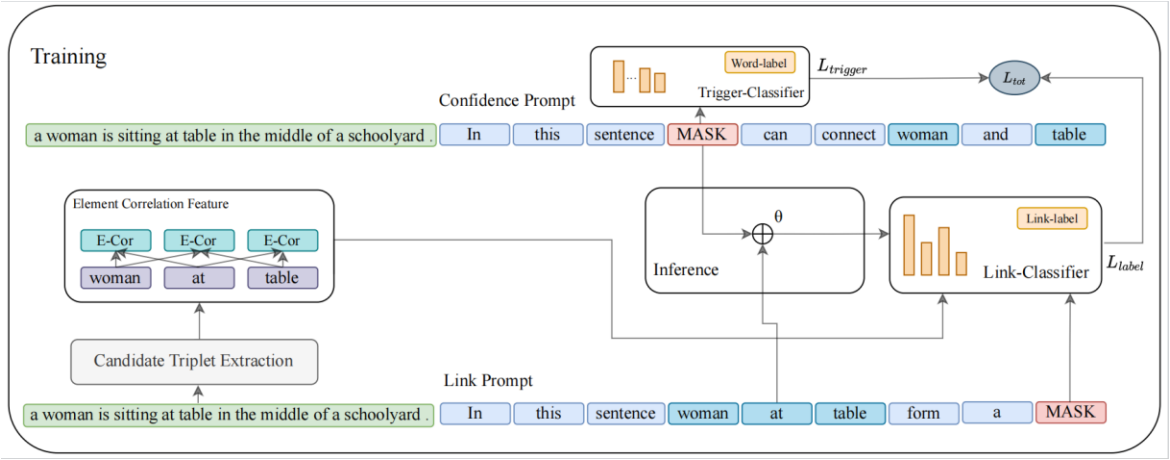
Problems & Ideas

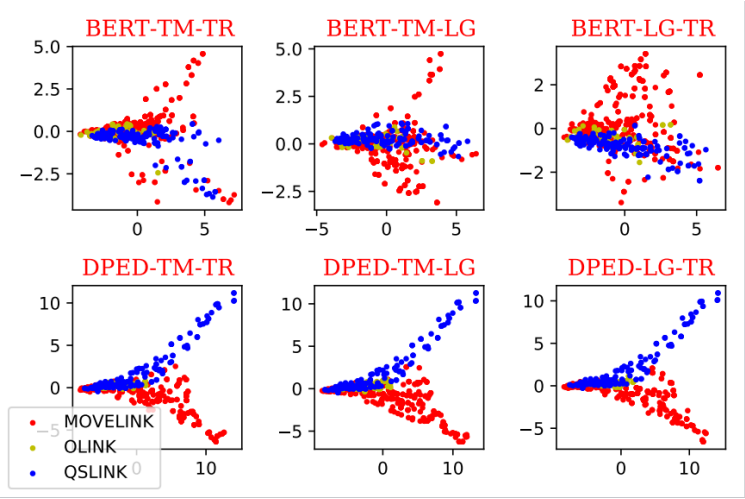
- Problems of Spatial Relation Extraction:
  - Existing methods lack the semantic correlation between different spatial elements.
  - Existing methods ignore the large offset between the relation extraction task and the pre-trained models.
- Ideas: We propose a spatial relation extraction model DPEC on dual-view prompt and element correlation to obtain the correlation of spatial relations and the confidence of trigger.

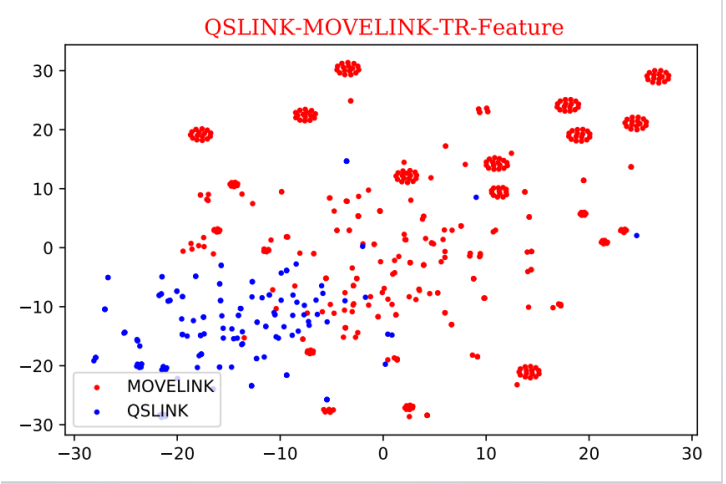


Our DPEC consists of two components, i.e., candidate triplet extraction and spatial relation classification. As shown in the Figure.

Main Contributions

- Contributions:
  - We propose the Link Prompt and the element correlation mechanism to address the challenge of capturing the relations between spatial elements;
  - We propose the Confidence Prompt to address the challenge of capturing trigger semantics, which can work as a supplement to identify those easily confused examples in Link Prompt;
  - Experimental results on SpaceEval show that our DPEC outperforms the SOTA baselines significantly.





Three sub-relation distances of spatial elements for BERT (upper line) and DPEC (bottom line), where the red, yellow and blue color refer to MOVELINK, OLINK and QSLINK, respectively.