AMR Parsing as Graph Prediction with Latent Alignment

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Abstract Meaning Representations

Main Contributions

• Lack of gold alignment -> AMR parsing with a joint probabilistic model for alignment, concept and relation identification.

• Seq2seq model could work well for semantic parsing ? -> our non-autoregressive model achieves the best reported results (+1.4% over previous state of the art).

Sequence tagging does not suffer from exposure bias.

AMR Parsing as Graph Prediction

Joint Training Objective

\[ P_{\theta, \phi}(c, R|w) = \sum_{a \in \text{Perm}} P(a) \sum_{c \in \text{Card}} P(c|a, w) P_0(R|a, w, c) \]

Further conditional independence

\[ P(c|a, w) \prod_{i=1}^{m} P(c_i|a_i, c_i, c_{i+1}) \prod_{i,j=1}^{m} P(r_{ij}|h_{ai}, c_i, c_{i+1}, c_j) \]

• marginalization is intractable

Model Relaxation

For concept identification model, treat soft alignment as prior

\[ \log P_0(c_i|\tilde{a}_i, w) \approx \log \sum_{k=1}^{R} \tilde{a}_i k P_0(c_i|a_i = k, w) \]

For relation identification, weight representation with soft alignment

\[ h_{\text{ai}} := \sum_{k=1}^{R} \tilde{a}_i k h_k \]

Recategorization

The opinion of the boy

Archives

Fig. 5 An example of re-categorized AMR

References

Table 1. F1 scores on individual phenomena. X’17 is AMR data; F’16 is IANAR; C’17 is CharTing100K; AM is AM data.

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