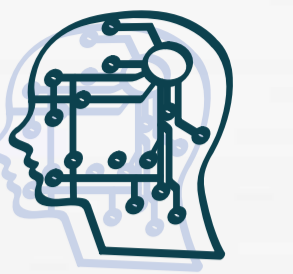


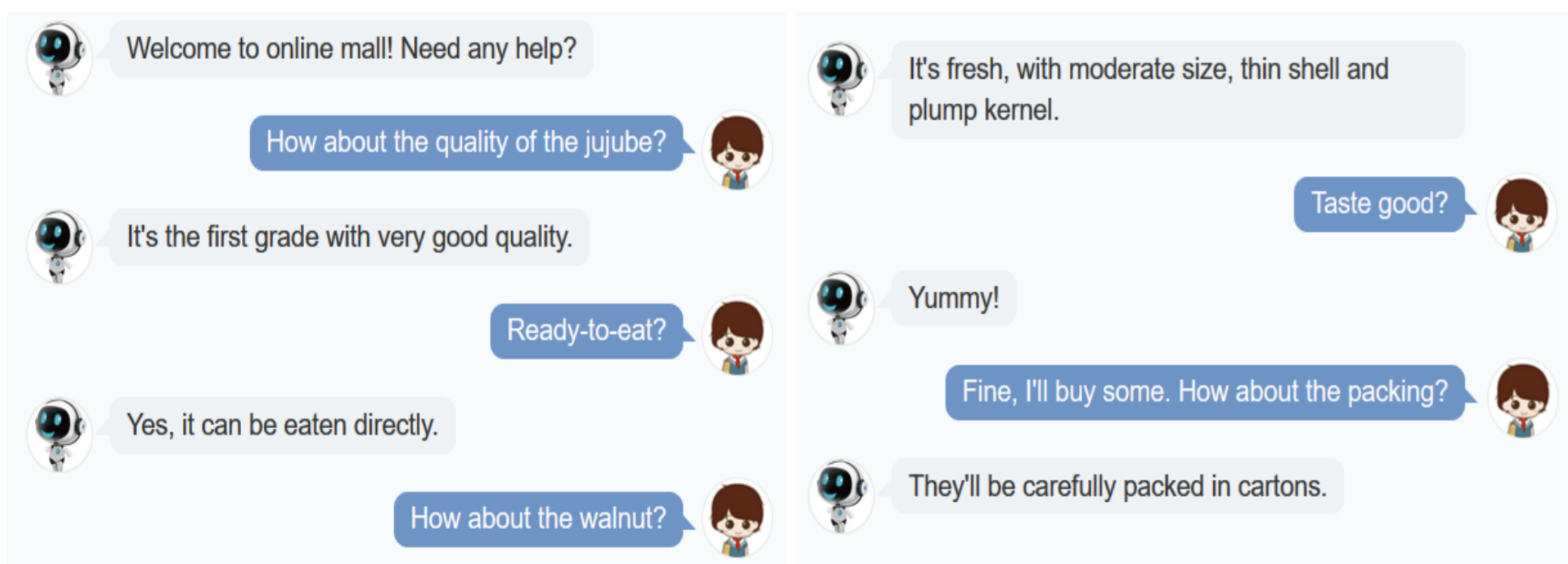
Modeling Multi-turn Conversation with Deep Utterance Aggregation

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- Multi-turn conversation understanding is a major challenge for building intelligent dialogue systems.
- Based on Information Retrieval(IR), our work is going to score the response candidates and select the most appropriate response for a specific multi-turn conversation.
- Unlike most of related works which ignore the hierarchical structure within the conversation, we formulate previous utterances into context using a proposed deep utterance aggregation model to form a fine-grained context representation.
- We also release a new e-commerce dialogue dataset to facilitate the future research.



An example of E-commerce Dialogue Corpus.

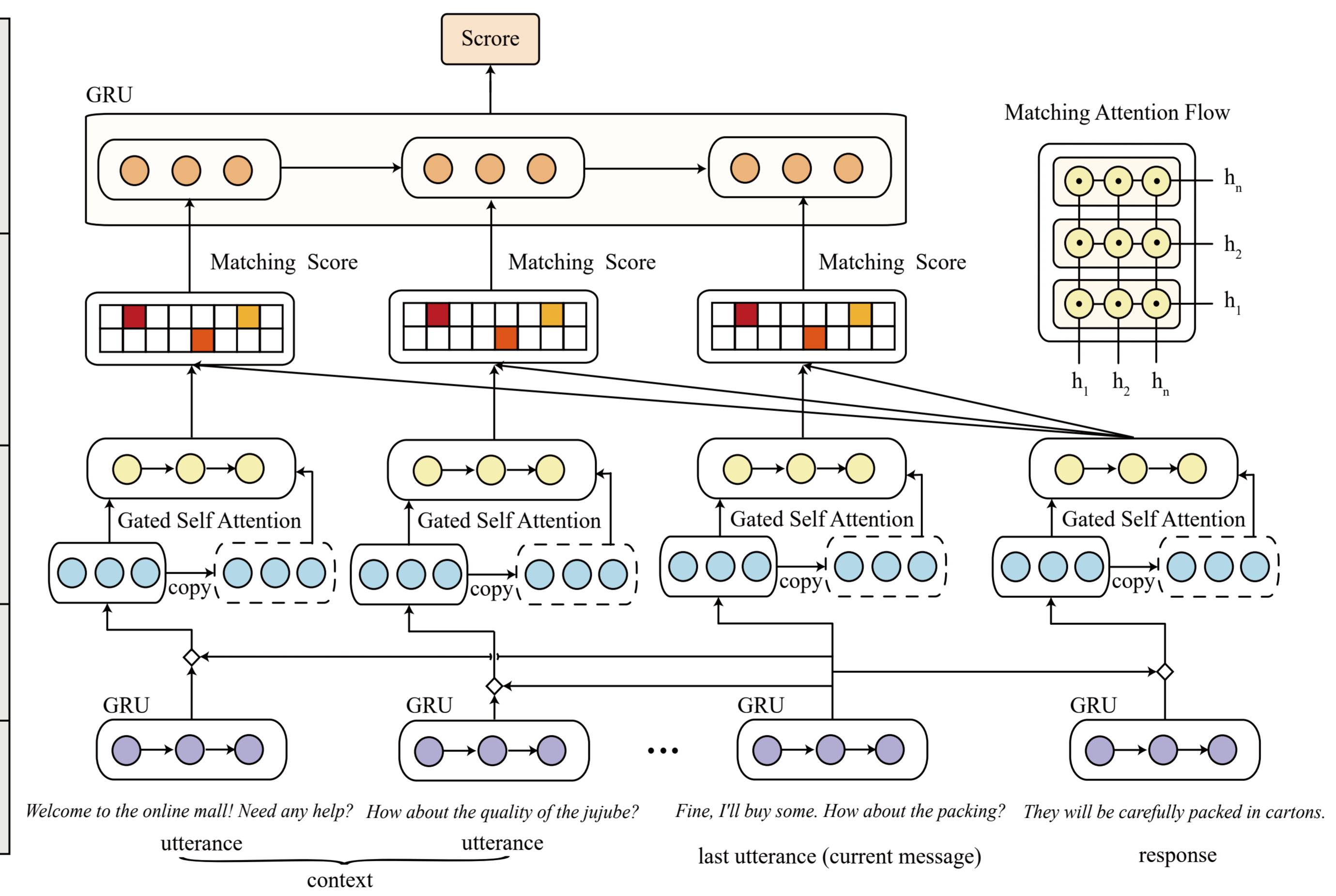
Encode the converance from the utterance level and get the appropriate score for response

Dig the relation within each utterance using CNN-based attention-over-attention (AOA) mechanism

Dig the relation between the last utterance with the rest and encode each utterance futher

Mix the last utterance with all the utterances and response together

Translate tokens into vectors and encode each utterance preliminary



General structure and detailed explanation for Deep Utterance Aggregations

We compared the performance of thirteen different method and our model outperforms all the other model greatly in terms of all metrics.

Model	R ₁₀ @1	R ₁₀ @2	R ₁₀ @5
TF-IDF	0.159	0.256	0.477
RNN	0.325	0.463	0.775
CNN	0.328	0.515	0.792
LSTM	0.365	0.536	0.828
BiLSTM	0.355	0.525	0.825
Multi-View	0.421	0.601	0.861
DL2R	0.399	0.571	0.842
MV-LSTM	0.412	0.591	0.857
Match-LSTM	0.410	0.590	0.858
Attentive-LSTM	0.401	0.581	0.849
Multi-Channel	0.422	0.609	0.871
Multi-Channel _{exp}	0.352	0.556	0.827
SMN	0.453	0.654	0.886
DUA	0.501	0.700	0.921

Results on E-commerce Dialogue Corpus.