

SERN-A SELF-ATTENTIVE EMOTION RECOGNITION NETWORK

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Abstract

- Emotion recognition in online social networks (OSNs) is essential for understanding user sentiment.
- Traditional models often miss long-term conversational context, limiting accuracy.
- This work introduces a Self-Attentive Emotion Recognition Network (SERN), leveraging hierarchical encoding and self-attention to capture key utterances across dialogs.
- Experiments on the IEMOCAP dataset show improved accuracy, highlighting SERN's potential for real-time OSN applications.

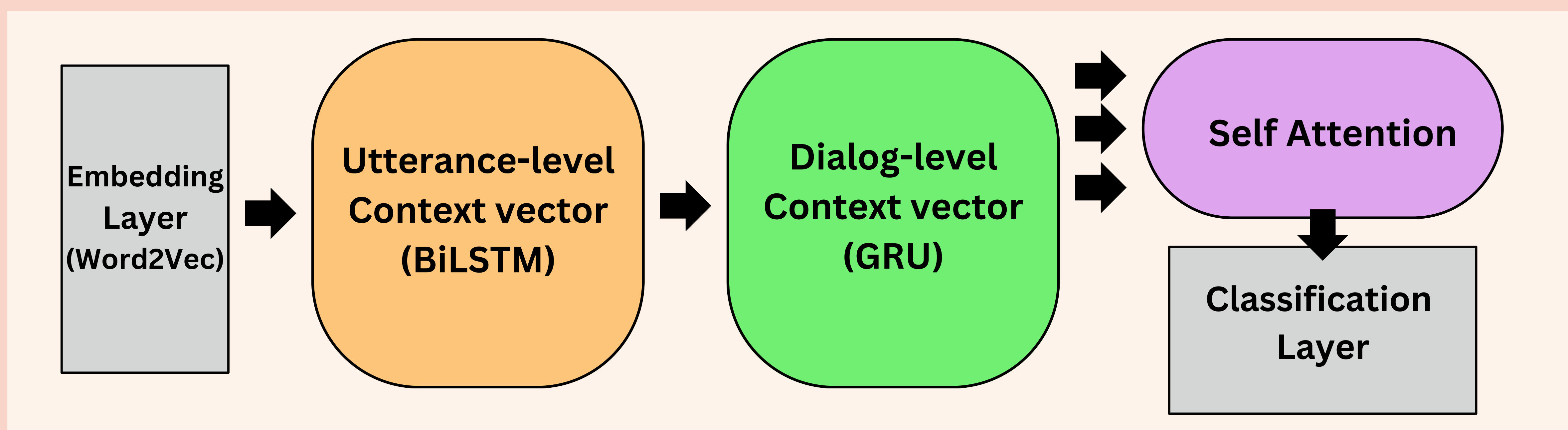


excited

Proposed Approach

- Our model, SERN, integrates hierarchical encoding and self-attention to capture both word- and dialog-level context.
- First, word embeddings are generated and processed through a BiLSTM layer to capture utterance-level features.
- These are then fed into a GRU layer, which encodes the dialog-level context.
- Finally, a self-attention mechanism assigns weights to past utterances, emphasizing those most relevant to the current emotion.
- This approach enables SERN to dynamically adapt to long-term dependencies in conversations, improving emotion recognition accuracy.

SERN Model Configuration



Dataset

- We used the IEMOCAP dataset, which contains labeled conversational data across four primary emotions: angry, happy, sad, neutral.
- This dataset provides rich contextual information essential for evaluating emotion recognition models in dialog settings.



sad

Results

Through two phases of model enhancement, our Self-Attentive Emotion Recognition Network (SERN) achieved notable improvements:

- Phase 1: Initial LSTM model other features established baseline accuracy across Angry, Happy, Neutral, and Sad emotions.
- Phase 2: Replaced LSTM with BiLSTM, achieving 63% accuracy for sentence classification and 72% for dialog classification. Multi-Head Attention and Attention-Based Pooling further enhanced the model's ability to capture context, improving accuracy and F1 scores across all classes.
- These advancements make SERN effective for real-time emotion detection in OSNs.



happy

Conclusion

- The enhanced SERN model effectively leverages self-attention and hierarchical encoding to improve emotion recognition accuracy, proving valuable for real-time sentiment analysis in online social networks.



Angry



sleepy