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## Using long short-term memory deep neural networks for aspect-based sentiment analysis of Arabic reviews

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**Abstract:** This paper proposes a state-of-the-art research for aspect-based sentiment analysis of Arabic Hotels' reviews using two implementations of long short-term memory (LSTM) neural networks. The first one is (a) a character-level bidirectional LSTM along with conditional random field classifier (Bi-LSTM-CRF) for aspect opinion target expressions (OTEs) extraction, and the second one is (b) an aspect-based LSTM for aspect sentiment polarity classification in which the aspect-OTEs are considered as attention expressions to support the sentiment polarity identification. Proposed approaches are evaluated using a reference dataset of Arabic Hotels' reviews. Results show that our approaches outperform baseline research on both tasks with an enhancement of 39% for the task of aspect-OTEs extraction and 6% for the aspect sentiment polarity classification task.