In Natural Language Processing the sequence-to-sequence, encoder-decoder model is very successful in generating sentences, as are the tasks of dialogue, translation and question answering. On top of this model an attention mechanism is often used. The attention mechanism has the ability to look back at all encoder outputs for every decoding step. The performance increase of attention shows that the final encoded state of an input sequence alone is too poor to successfully generate a target. In this paper more elaborate forms of attention, namely external memory, are investigated on varying properties within the range of dialogue.

In dialogue, the target sequence is much more complex to predict than in other tasks, since the sequence can be of arbitrary length and can contain any information related to any of the previous utterances. External memory is hypothesized to improve performance exactly because of these properties of dialogue. Varying memory models are tested on a range of context sizes. Some memory modules show more stable results with an increasing context size.