**Comparing the Performance of Neural Machine Translation and Skip-Thought Vectors in Neural Paraphrase Generation**

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Neural paraphrasing is a challenging task in machine learning that requires semantically accurate vector representations of a text in order to reconstruct the target sentence in a diverse fashion. Using a Sequence-to-Sequence architecture, sentences are first encoded as a thought vector, then reconstructed to back to the source using a decoder. We compare the performance of two popular sentence embedding techniques, Neural Machine Translation and Skip-Thought vectors, in both sentence representation and diverse paraphrase generation tasks. We use cosine similarity and BLEU scores to show an optimal network architecture for constructing semantically similar and diverse paraphrases of a target sentence, as well as a framework for efficiently training such networks.