

The dominant sequence transduction models are based on complex recurrent neural networks that incorporate long-term dependencies directly into the sequence processing. Attention mechanisms have become an integral part of compelling sequence modeling and transduction. The Transformer (big) model trained for English-to-French used a lower drop rate than the previous state-of-the-art. In this work we employ  $h = 8$  parallel attention layers, or heads. For each of these we use  $h = d_v = d_{\text{model}}$ . In this section we compare various aspects of self-attention layers to the recurrent and convolutional baselines. We trained a 4-layer transformer with  $d_{\text{model}} = 1024$  on the Wall Street Journal (WSJ) portion of the Penn Treebank. MT 2014 English-German dataset consisting of about 4.5 million sentences. Sentences were encoded with pretrained embeddings (Glorot & Bengio, 2015). The Transformer (big) model trained for English-to-French used a lower drop rate than the previous state-of-the-art. We trained a 4-layer transformer with  $d_{\text{model}} = 1024$  on the Wall Street Journal (WSJ) portion of the Penn Treebank. Arxiv preprint arXiv:1601.06733, 2016. [1] Kyunghyun Cho, Bart van Merriënboer, Caglar Gulcehre, et al. A structured self-attentive sentence embedding. Factorization tricks for LSTM networks. Multi-task sequence learning. Rethinking the inception architecture for computer vision. Grammar as a foreign language. Google's neural machine translation system: Bridging the gap between machine and human. The attention heads exhibit behaviour that seems related to the structure of the sentence. We give two