**Natural Language Inference with Hierarchical**

**BiLSTM Max Pooling Architecture**

**Aarne Talman, Anssi Yli-Jyra ̈ and Jo ̈rg Tiedemann**

University of Helsinki

{aarne.talman, anssi.yli-jyra, jorg.tiedemann}@helsinki.fi

**Abstract**

Recurrent neural networks have proven to be very effective for natural language inference tasks. We build on top of one such model, namely BiLSTM with max pooling, and show that adding a hierarchy of BiLSTM and max pooling layers yields state of the art results for the SNLI sentence encoding-based models and the SciTail dataset, as well as provides strong results for the MultiNLI dataset. We also show that our sentence embeddings can be utilized in a wide variety of transfer learning tasks, outperforming InferSent on 7 out of 10 and SkipThought on 8 out of 9 SentEval sentence embedding evaluation tasks. Furthermore, our model beats the InferSent model in 8 out of 10 recently published SentEval probing tasks designed to evaluate sentence embeddings’ ability to capture some of the important linguistic properties of sentences.

**摘要**

事实证明，递归神经网络对于自然语言推理任务是非常有效的。本文建立在一个具有最大池的BiLSTM模型之上，并且表明添加BiLSTM和最大池层的层次结构在基于SNLI语句编码的模型和SciTail数据集上得到了最先进的结果，并且在MultiNLI数据集上也得到了非常好的结果。本文提出的句子嵌入方法被还可以用于各种迁移学习任务，在10个任务中有7个优于InferSent，以及在9个SentEval句子嵌入评估任务中的8个优于SkipThought。此外，我们的模型在最近发布的旨在评估句子嵌入捕获句子的一些重要语言属性的能力的SentEval探测任务中有8个任务击败了InferSent模型。