

Graduate School of Science and Technology Master’s Thesis Abstract

Laboratory name (Supervisor)	Natural Language Processing (WATANABE TARO (Professor))		
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Thesis title	Adapting to Non-Centered Languages for Zero-shot Multilingual Translation		
Abstract			
The model constructed by neural networks can be employed for machine translation which is one of the most important tasks related to natural language processing because translating from one language to another via computers automatically can vastly reduce the cost of communications between different people. A multilingual neural machine translation (MNMT) model, which supports translating from many languages to many languages, can effectively reduce the cost of deployment. Meanwhile, MNMT model can translate unseen language pairs during training, i.e. zero-shot translation, which has shown the potential to alleviate the huge required resources and parameters of MNMT. However, the zero-shot translation is always unstable. In this thesis, we explain the instability of zero-shot translation with the strict dependence of non-centered languages, although prior works attributed the instability to the domination of central language, e.g. English. We propose a simple, lightweight yet effective language-specific modeling method by adapting to non-centered languages and combining the shared information and the language-specific information to counteract the instability of zero-shot translation. Various experiments show that our method not only performs better than strong baselines in centered data conditions but also can easily fit non-centered data conditions. By further investigating the layer attribution, we show that our proposed method can disentangle the coupled representation in the correct direction.			