

京都大学若手人材海外派遣事業 ジョン万プログラム
研究者派遣プログラム

英文報告書

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1. 渡航者 (日本語)			
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研究課題名	教師有り・なし手法を統合した多言語依存構造解析システムに関する研究		
海外渡航期間	平成 25 年 3 月 25 日～ 平成 26 年 3 月 23 日		
渡航先 (英語表記)	国名： United States of America 大学等研究機関名： University of Colorado at Boulder 研究室名等： ICS/CLEAR 受入研究者名： Prof. Martha Palmer		
2. 渡航の報告 (英文)			
<p>渡航先の研究環境、研究者との交流、研究発表の状況等、渡航中の滞在経験について英語(500～1000語)で記述して下さい。受入研究者と撮影した写真や研究発表で用いた図等について、可能な範囲で別添として提出して下さい。ページ数については増加してもかまいません。</p> <p>この報告は、ジョン万プログラムの成果として、京都大学ホームページ(英文)などに掲載されることがあります。</p>			
<p>I was visiting the University of Colorado at Boulder from March 2013 for a year. Boulder is located at an elevation of 1,600 meters and a famous place for training on high ground. I was working on the area of natural language processing (NLP) with Professor Martha Palmer, who is an authority on this field.</p> <p>In the period of overseas research, in particular, we studied automatic induction of verb resources for NLP, i.e., verb frames and classes. These resources are indispensable for understanding natural languages by computers since a verb plays a primary role in conveying the meaning of a sentence. We studied a method for automatically inducing verb frames and classes from a massive amount of verb uses in a corpus. We successfully induced 62,000 verb frames and 840 verb classes for 1,700 verbs from a web corpus comprising 20 billion words. These verb resources are much larger than those manually created previously. We evaluated these resources against hand-crafted resources and confirmed that they were precise enough to be applied to NLP applications, such as dependency parsing, semantic parsing, information retrieval and machine translation.</p> <p>I had interactions with several researchers who visited the University of Colorado</p>			

at Boulder, including Jan Hajič from Charles University in Prague, James Pustejovsky from Brandeis University in Waltham, Silvana Hartmann from Technische Universität Darmstadt and Octavian Popescu from Fondazione Bruno Kessler in Trento. In particular, I worked in collaboration with Octavian Popescu to evaluate the resulting verb frames. We came up with a novel method for the evaluation and successfully proved the effectiveness of our approach. I also had a collaboration with Daniel W. Peterson, who is a PhD student in the University of Colorado at Boulder. He had many ideas to implement the induction method in practice.

We submitted three papers to international conferences and all of these were accepted for publication. These include top-tier conferences on NLP, such as ACL (Association for Computational Linguistics) and EACL (European Chapter of the Association for Computational Linguistics). We have a plan to submit an article to an international journal on NLP.

I intend to collaborate with the above researchers to further study verb semantics in NLP and to deepen an international research network on this field. I also believe that the outcome of my overseas research would make a breakthrough in NLP and would elucidate human intelligence on language, which is one of essential human intelligence.

References:

Daisuke Kawahara, Daniel W. Peterson, Octavian Popescu and Martha Palmer.
Inducing Example-based Semantic Frames from a Massive Amount of Verb Uses,
In Proceedings of the 14th Conference of the European Chapter of the Association for Computational Linguistics (EACL2014), 2014 (to appear).

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In Proceedings of the 9th International Conference on Language Resources and Evaluation (LREC2014), 2014 (to appear).

Daisuke Kawahara, Daniel W. Peterson and Martha Palmer.
A Step-wise Usage-based Method for Inducing Polysemy-aware Verb Classes,
In Proceedings of the 52nd Annual Meeting of the Association for Computational Linguistics (ACL2014), 2014 (to appear).