



TECHNOLOGY

Automatic Grammar Generation Using Distributed/Collected Knowledge

OVERVIEW

In this work, University of Maryland inventors implemented a FSGT generation from distributed knowledge. The same phrases used to generate the FSGT were used to train the SLM model. Their approach is scalable and can handle large number of phrases in generation of the FSGT. Their first contribution is in using a web collected knowledge base to build a FSGT model. The OpenMind distributed knowledge capture approach provides good data for constructing compact FSGT and SLM models for use by speech recognizers utilizing user-sampled acoustic models.

The second contribution is the use of this FSGT in a two-pass grammar and statistical system to improve the recognition of in-grammar and out-of-grammar user requests. With the two-pass approach they get a 96% correct task recognition accuracy for in-grammar user requests. For out-of-grammar user requests they get a 43% correct match of both noun and verbs in the task, and correct noun or verb in 28% cases.

In future work, the inventors want to test with more OpenMind data as it becomes available. Another issue is semi-automated synonym identification. Currently if synonyms don't exist in WordNet/Thesaurus, the paraphrase is not used in the grammar generation. But they can have the system output commonly used synonyms that were not found in WordNet/Thesaurus and have a person filter the ones that are appropriate to put in a personal version of the thesaurus. E.g. turn and switch are not synonyms but are commonly used for each other in the phrase turn television on.

Finally, the inventors would like to tune weights and probabilities in the Statistical Language Model to improve performance of SLM recognition. The recognition engine can use these weights and probabilities while searching for matches in the space of allowable utterances. This tuning can be performed by making certain that the grammar structure of the FSGT and SLM are more in line with each other. They expect that with structural analysis provided by POS tagging, the statistical significance of word order can be represented in an EM framework.

For additional information concerning the device and for information regarding licensing please contact the Office of Technology Commercialization. 301 405 3947 or by e-mail otc@umd.edu

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Additional Information

INSTITUTION

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PATENT STATUS

Patent(s) pending

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Information Technology

EXTERNAL RESOURCES

- [US Patent 7,957,968](#)

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