

Compiling Unification Grammars into Recognizers: a Bibliography

Manny RAYNER, Beth Ann HOCKEY

UCSC/NASA Ames Research Center

Moffet Field, CA 94035

{mrayner, bahockey}@riacs.edu

Pierrette BOUILLON

University of Geneva

TIM/ISSCO

40, bvd du Pont-d'Arve

CH-1211 Geneva 4, Switzerland

pierrette.bouillon@issco.unige.ch

Abstract

This document provides a bibliography for the ACL 2004 tutorial, “Building Linguistically Motivated Speech Recognizers Using Regulus”. We provide references to papers describing methods for compiling unification grammars into context free grammars, spoken language systems built using these methods, and comparisons with other methods.

1 Compiling unification grammars into CFGs

An interesting early paper is (Chappelier et al., 1999). (Moore, 1998) describes the algorithm developed by Moore and Gawron, which was implemented within the SRI Gemini system; (Rayner et al., 2000b) describes work applying the Moore-Gawron algorithm to linguistically motivated unification grammars. (Kiefer and Krieger, 2000) describes the *HPSG2CFG* algorithm and system, which was used to compile a substantial domain-independent HPSG grammar into CFG form. The Moore-Gawron and Kiefer-Krieger approaches are compared in (Dowding et al., 2001), which also describes use of the Kiefer-Krieger method in the context of building concrete speech recognizers. The REGULUS system is described in (Rayner et al., 2001a; Rayner et al., 2003b). Issues concerning compilation of specialized grammars into recognizers are discussed in (Rayner et al., 2002); the methods have been implemented in both the Gemini and REGULUS systems. UNIANCE, which has several points of contact with REGULUS, is described in (Bos, 2002).

2 Systems using grammar-based recognition

Systems built using the SRI Gemini system are described in (Stent et al., 1999; Rayner et al., 2000a; Lemon et al., 2001; Dowding and Hieronymus, 2003). Systems built using REGULUS are described in (Rayner et al., 2001c; Rayner and Bouillon, 2002; Rayner et al., 2003a; Rayner et al., 2003c). (Bos et al., 2003) describes a system built using UNIANCE.

3 Evaluation

(Rayner et al., 2001b) describes experiments investigating the extent to which inclusion of linguistic features in a unification grammar improves performance of a derived recognizer. (Knight et al., 2001) compares performance of grammar-based and statistical recognizers.

References

- J. Bos, E. Klein, and T. Oka. 2003. Meaningful conversation with a mobile robot. In *Proceedings of the Research Note Sessions of the 10th Conference of the European Chapter of the Association for Computational Linguistics*, Budapest, Hungary.
- J. Bos. 2002. Compilation of unification grammars with compositional semantics to speech recognition packages. In *Proceedings of the 19th International Conference on Computational Linguistics*, Taipei, Taiwan.
- J.-C. Chappelier, M. Rajman, R. Aragues, and A. Rozenknop. 1999. Lattice parsing for speech recognition. In *Proceedings of the 6th TALN*, Cargès, Corsica.

- J. Dowding and J. Hieronymus. 2003. A spoken dialogue interface to a geologist's field assistant. In *HLT-NAACL 2003: Demo Session*, pages 9–10, Edmonton, Alberta, Canada, May 27 - June 1. Association for Computational Linguistics.
- J. Dowding, B.A. Hockey, J.M. Gawron, and C. Culy. 2001. Practical issues in compiling typed unification grammars for speech recognition. In *Proceedings of the 39th Annual Meeting of the Association for Computational Linguistics*, Toulouse, France.
- B. Kiefer and H. Krieger. 2000. A context-free approximation of head-driven phrase structure grammar. In *Proceedings of the 6th International Workshop on Parsing Technologies*, pages 135–146.
- S. Knight, G. Gorrell, M. Rayner, D. Milward, R. Koeling, and I. Lewin. 2001. Comparing grammar-based and robust approaches to speech understanding: a case study. In *Proceedings of Eurospeech 2001*, pages 1779–1782, Aalborg, Denmark.
- O. Lemon, A. Bracy, A. Gruenstein, and S. Peters. 2001. Multimodal dialogues with intelligent agents in dynamic environments: the WITAS conversational interface. In *Proceedings of 2nd Meeting of the North American Association for Computational Linguistics*, Pittsburgh, PA.
- R. Moore. 1998. Using natural language knowledge sources in speech recognition. In *Proceedings of the NATO Advanced Studies Institute*.
- M. Rayner and P. Bouillon. 2002. A flexible speech to speech phrasebook translator. In *Proceedings of the Workshop on Speech-to-Speech Translation: Algorithms and Systems*, pages 69–76, Philadelphia, July. Association for Computational Linguistics.
- M. Rayner, B.A. Hockey, and F. James. 2000a. A compact architecture for dialogue management based on scripts and meta-outputs. In *Proceedings of the 6th Applied Natural Language Processing Conference*, Seattle, WA.
- M. Rayner, B.A. Hockey, and F. James. 2000b. Compiling language models from a linguistically motivated unification grammar. In *Proceedings of the Eighteenth International Conference on Computational Linguistics*, Saarbrücken, Germany.
- M. Rayner, J. Dowding, and B.A. Hockey. 2001a. A baseline method for compiling typed unification grammars into context free language models. In *Proceedings of Eurospeech 2001*, pages 729–732, Aalborg, Denmark.
- M. Rayner, G. Gorrell, B.A. Hockey, J. Dowding, and J. Boye. 2001b. Do language models need agreement constraints? In *Proceedings of the Second Annual Meeting of the North American Chapter of the Association for Computational Linguistics*, Pittsburgh, PA.
- M. Rayner, I. Lewin, G. Gorrell, and J. Boye. 2001c. Plug and play spoken language understanding. In *Proceedings of the 2nd ACL SIGDIAL Workshop on Discourse and Dialogue*, Aalborg, Denmark.
- M. Rayner, B.A. Hockey, and J. Dowding. 2002. Grammar specialisation meets language modelling. In *Proceedings of the 7th International Conference on Spoken Language Processing (ICSLP)*, Denver, CO.
- M. Rayner, P. Bouillon, V. Van Dalsem III, B.A. Hockey, H. Isahara, and K. Kanzaki. 2003a. A limited-domain English to Japanese medical speech translator built using REGULUS 2. In *Proceedings of the 41st Annual Meeting of the Association for Computational Linguistics (demo track)*, Sapporo, Japan.
- M. Rayner, B.A. Hockey, and J. Dowding. 2003b. An open source environment for compiling typed unification grammars into speech recognisers. In *Proceedings of the 10th EACL (demo track)*, Budapest, Hungary.
- M. Rayner, B.A. Hockey, J. Hieronymus, J. Dowding, G. Aist, and S. Early. 2003c. An intelligent procedure assistant built using REGULUS 2 and ALTERF. In *Proceedings of the 41st Annual Meeting of the Association for Computational Linguistics (demo track)*, Sapporo, Japan.
- A. Stent, J. Dowding, J. Gawron, E. Bratt, and R. Moore. 1999. The CommandTalk spoken dialogue system. In *Proceedings of the Thirty-Seventh Annual Meeting of the Association for Computational Linguistics*, pages 183–190.