

# Interlingual Translation in the Grammatical Framework (GF)

Aarne RANTA, Krasimir ANGELOV, Thomas HALLGREN,  
Prasanth KOLACHINA, Inari LISTENMAA

Department of Computer Science and Engineering, Chalmers University of Technology and  
University of Gothenburg, 41296 Gothenburg, Sweden

{aarne, krasimir, hallgren, prasanth.kolachina, inari}@cse.gu.se

**Abstract.** Grammatical Framework (GF) is a grammar formalism for *multilingual grammars*, where many languages share a common *abstract syntax*. The abstract syntax can be used as a translation interlingua. GF was initially designed for domain-specific controlled language systems, but it has in recent years scaled up to wide-coverage translation as well. GF is an open-source project with a world-wide community that has created grammars for over 30 languages. Fifteen of these languages are currently included in a wide-coverage translator, which is available in the GF cloud and also as a mobile app, the GF Offline Translator, with a compact size that fits in a mobile phone. We plan to demo both kinds of systems in the conference.

## Description

Interlingual grammar-based translation is probably as far from the current mainstream as an MT approach can be. However, it is a natural choice in controlled language applications, where a translator can work much like a compiler with multiple source and target languages and a shared abstract syntax. The original purpose of GF<sup>1</sup> was to make it easy to build such systems, by providing powerful engineering techniques and a general-purpose resource grammar library (RGL), which takes care of morphology and surface syntax.

Scaling up GF to wide-coverage translation is made possible by *layered interlinguas*, where deeper analysis levels (with narrower coverage) are backed up by shallower levels (with wider coverage). The interlingual grammar is combined with a *multilingual linked lexicon* (bootstrapped from open sources such as Wiktionary and Wordnet) and equipped with *statistical ranking* (based on treebanks) to select the best translations.<sup>2,3</sup>

<sup>1</sup> GF homepage: <http://www.grammaticalframework.org/>

<sup>2</sup> Available as GF cloud translator: <http://cloud.grammaticalframework.org/wc.html>,  
an Android app: <https://play.google.com/store/apps/details?id=org.grammaticalframework.ui.android>  
and an IOS app: <https://itunes.apple.com/us/app/gf-offline-translator/id1023328422?mt=8>

<sup>3</sup> This project is currently funded by REMU (Vetenskapsrådet): <http://remu.grammaticalframework.org/>