

Project Proposal: Statistical MRS Transfer

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July 2, 2012

Two part project proposal:

- **Statistical transfer** without transfer rules
- **MRS completion** with semantic language models

Motivation: Consider objects of statistical machine translation:

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- words

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- phrases

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- words
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- trees
- semantics (dependencies?)

Translating with deeper information

- target-side dependencies (Shen et al., 2008)
- source-side dependencies (Quirk et al., 2005)
- feature-structure transfer (Graham et al., 2009)
- MRS transfer rules (Copestake et al., 1995)

MRS transfer rules

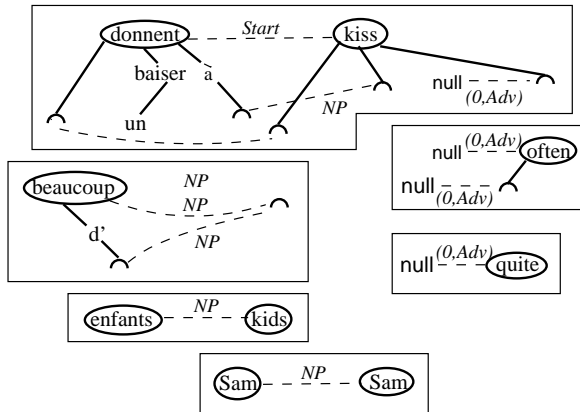
- expressively powerful
- costly to build

Transfer rule extraction (Haugereid and Bond, 2011)

- extracted rules complement hand-written rules
- Rules come from:
 - Partial/object MRS mismatches
 - Extracted from aligned parallel data/bilingual dictionary

Statistical transfer

Consider tree-to-tree translation (STSG or STAG)



(Eisner, 2003)

Statistical transfer

- in the same way, find mappings of MRS sub-structures
- ...or collocations of EPs, etc.
- perhaps using existing SMT software
- let grammars and their models deal with source-side robustness and target-side fluency

Questions:

- how is it different from transfer with a transfer model and extracted rules?
- will the transferred MRSs be valid for generation?
- and what about BLEU, or other metrics?

Semantic language models

- Motivation: statistically transferred MRSs may not be valid, complete, or natural
- So build a semantic language model from monolingual data
 - to rate naturalness of MRSs (i.e. “semantic fluency”)
 - to infer likely relations, properties, etc, given an incomplete MRS
- Intended as supplement to statistical transfer, but may be useful for other applications

Thank you
Questions and comments appreciated!