Augmenting variation of system utterances using corpora in spoken dialogue systems

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Overview
- Current spoken dialogue systems speak very rigidly. (e.g., template-based, rule-based generation)
- We propose augmenting the variation of system utterances by incorporating useful sentences from corpora.
- Created a generator with more variation in the restaurant domain.

Approach
- Automatically obtain proposition to basic syntactic structure mappings from corpora.
- Focus on restaurant recommendation utterances.

Step 1: Create a corpus by collecting restaurant reviews on the web.

Step 2: Create a proposition expression for each sentence in the corpus.

Step 3: Convert sentences into basic syntactic structures. (using a rule-based converter)

Step 4: Create mapping

Proposition to Basic Syntactic Structure mappings

Example utterances of SPaRKy

Babbo has the best overall quality among the selected restaurants since it has excellent service with excellent decor and it has superb food quality.

Babbo has excellent decor and it has superb food quality with excellent service. It has the best overall quality among the selected restaurants.

Results

Number of highly-rated utterances

Great atmosphere, excellent food and friendly waiters. Babbo has the best overall quality among the selected restaurants.

Babbo has the best overall quality among the selected restaurants since the food, service and atmosphere are all excellent.

Babbo has the best overall quality among the selected restaurants. The food is excellent, the wait staff is professional and the decor is beautiful and very comfortable.

Comparable utterance quality using corpora

By selecting to use/not to use corpora, system can speak with more variation.