A NLG-based Application for Walking Directions

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Introduction This work describes a web application that makes use of third party resources for computing routes and landmarks, as a knowledge base for the generation of walking directions. The generation model is statistically trained on a corpus of walking directions annotated with POS and syntactic and frame semantic information.

Route Directions
- Goal: Informing a person of how to get to his goal
- Navigation systems:
  - Usage of street names, distance measures and directions
- Cognitive science:
  - Landmarks allow for more efficient navigation

Data Sources
- Routes: Google Maps API
- Landmarks:
  - Wikipedia WikiProject Geographical Coordinates
  - Google AJAX Search API
  - Wikimapia
  - OpenStreetMaps

Corpus-based Generation
- Corpus of route directions (Marciniak & Strube, 2005)
- Annotation:
  - PoS
  - Syntactic (verb and phrase types, arguments, connectives)
  - Frame semantics (frames and semantic roles)
  - Temporal relations (between discourse units)

Current Work
Collecting additional data for pre-selected routes in order to:
- Map route segments to linguistic realizations
- Extension to multilingual setting
  (cf. Schuldes et al., UCNLG’09; Talk: August 6, 5:00pm)

Integration of Generation Model
- Current model is only able to generate step-by-step directions
- Hardcoded set of rules that map route segments to frames:
  1) SELF_MOTION + path
     walk (17%),
     follow (13%), ...
  2) walk + [street name]
     walk + down + np
     walk down Raffles Blvd

Conclusions & Outlook
- Research prototype for web-based data acquisition and evaluation
- Future work:
  - Induction of a mapping from route segments to frames
  - Data-driven integrated generation system
  - Generation in authentic 3D navigation settings

References

www.cl.uni-heidelberg.de/projects/sightsee