

Natural Language Generation with Personality and Alignment

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Abstract: We propose a natural language generation (NLG) system parameterizable for the linguistic personality of dialogue partners and for interactive alignment between them.

Motivation

- Computer users attribute personality to human-computer interfaces (Reeves and Nass 1996).
- Users tend to prefer an interface that matches their own personality.
- Current NLG systems are mostly personalized through pre-produced, “canned” text.
- Parameterizing an NLG system for personality is more flexible.
- Integrating results of psycholinguistic research further improves NLG quality.

Scenario

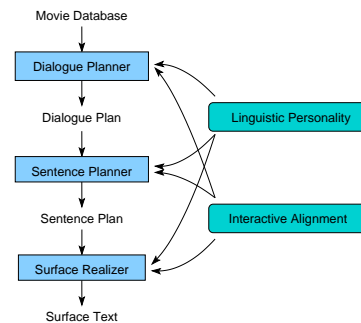
- Domain: Movie reviews – two agents discussing a film.
- Speakers’ personalities and opinions are very prominent.
- A controversial dialogue is interesting for the audience.

Foundations

- Corpus of naturally occurring dialogue between movie reviewers.
- Empirical results (Gill and Oberlander 2002): Word sequences characteristic for extraversion, neuroticism, and psychoticism.
- Psycholinguistic theory of dialogue: Interactive Alignment Model (IAM) (Pickering and Garrod 2003) – “Speakers align at every level of linguistic representation.”
- Grammar theory: Combinatory Categorical Grammar (CCG)
 - Supports incremental sentence construction. \leadsto The other speaker’s utterances can be finished.
 - Offers the possibility to keep set phrases in the lexicon. \leadsto Dialogue routines can be modeled.
 - Parser and realizer are implemented in the OpenCCG framework (White and Baldrige 2003).

Architecture

- The basic architecture of the NLG system follows the standard pipeline model (Reiter and Dale 2000).
- The components are influenced by parameter settings for linguistic personality and interactive alignment.
- Facts about movies must be realizable in a variety of ways.
- The dialogue history is taken into account.



Architecture of the natural language generation system

Pilot Corpus

- Preliminary study on a pilot corpus of transcriptions of dialogues between the two hosts of an American movie review TV show.
- Goal: To discover relevant linguistic phenomena in dialogues in the movie review domain.

B: So I can't tell if you liked the movie or not.
A: I liked it enough to recommend it. (okay yeah) I liked the . . . the battle sequences I mean there are things in there that you kind of go oh that could never happen but
B: Oh I agree . . . I agree it's very handsomely mounted (mmhmm) this is the same director who made Elizabeth which (right) is one of the best looking movies of recent years. (yeah) What I can't understand is why an Indian director would make a movie that basically applauds the glory of British Imperialism. I thought maybe it would be a more revisionist movie.
A: I don't think this movie does that
. . .
B: It's always the noble black who's you know who (yeah) always sees this this white guy and he's got to follow him around and do his bidding and I didn't believe it for a second.
A: I would disagree with you I think there are several moments when the film questions what the Brits are doing there and I'm watching this movie and saying yeah we're seeing the you know the British soldiers are being slaughtered
B: well let me ask let me just here is the acid test
A: but I'm saying they're defending their own turf, these people have had their land and their and their way of life taken away from them and they're fighting back
B: Here is the acid test about the movie's ideology: (okay) do you want the Brits to win or the Sudanese
A: I had mixed feelings about it, I think it's more complex than you're giving it credit for
B: I think the movie absolutely identifies with the British and wants them to win

Key: (yeah) – back-channel feedback; I had mixed feelings – overlapping utterances

- Results:
 - Dialogue partners often talk in parallel.
 - They differ in the amount of back-channel feedback.
 - Dialogues with conflicting opinions are more interesting than those in which the reviewers agree.
- \leadsto The system should be able to handle these aspects.

Conclusion and Future Work

- Proposal: An architecture for an NLG system that
 - is parameterizable for personality-related differences in language production;
 - offers a computational account of the Interactive Alignment Model.
- Future Work:
 - Conduct a large-scale empirical study to elicit movie review dialogues from human subjects.
 - * Guide their dialogue by offering a list of topics to talk about.
 - * Determine their personalities.
 - Implementation of the components.

Acknowledgements

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References

- Gill, A. J. and J. Oberlander (2002). Taking care of the linguistic features of extraversion. In *Proceedings of the 24th Annual Conference of the Cognitive Science Society (CogSci2002)*, Fairfax, VA, USA, pp. 363–368.
- Pickering, M. J. and S. Garrod (2003). Toward a mechanistic psychology of dialogue. *Behavioral and Brain Sciences*. To appear. <http://www.bbsonline.org/Preprints/Garrod/Referees/>.
- Reeves, B. and C. Nass (1996). *The Media Equation: How People Treat Computers, Television, and New Media Like Real People and Places*. Stanford, CA, USA: CSLI Publications.
- Reiter, E. and R. Dale (2000). *Building Natural Language Generation Systems*. Studies in Natural Language Processing. Cambridge, UK: Cambridge University Press.
- White, M. and J. Baldrige (2003). Adapting chart realization to CCG. In *Proceedings of the 9th European Workshop on Natural Language Generation (EWNLG-03) at the 10th EACL*, Budapest, Hungary, pp. 119–126.

