

Abstractive Meeting Summarization Using Dependency Graph Fusion

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Extractive vs Human-Written Summaries

Extractive Summary

“Um well this is the kick-off meeting for our project.”
 “so we’re designing a new remote control and um.”
 “Um, as you can see it’s supposed to be original, trendy and user friendly.”



Abstractive Summary

The purpose of the kick-off meeting is to design a new remote which is supposed to be original, trendy and user friendly.

Research Problem

Extractive Summaries of Meetings

(Murray et al., 2010)

Disfluencies

Hard to Read

Generate Abstractive Summaries

- ✓ Synthesize useful information
- ✓ Readability

Utterance Fusion: A Graph of Dependency Trees

- **Sentence Fusion** technique

Anaphora Resolution

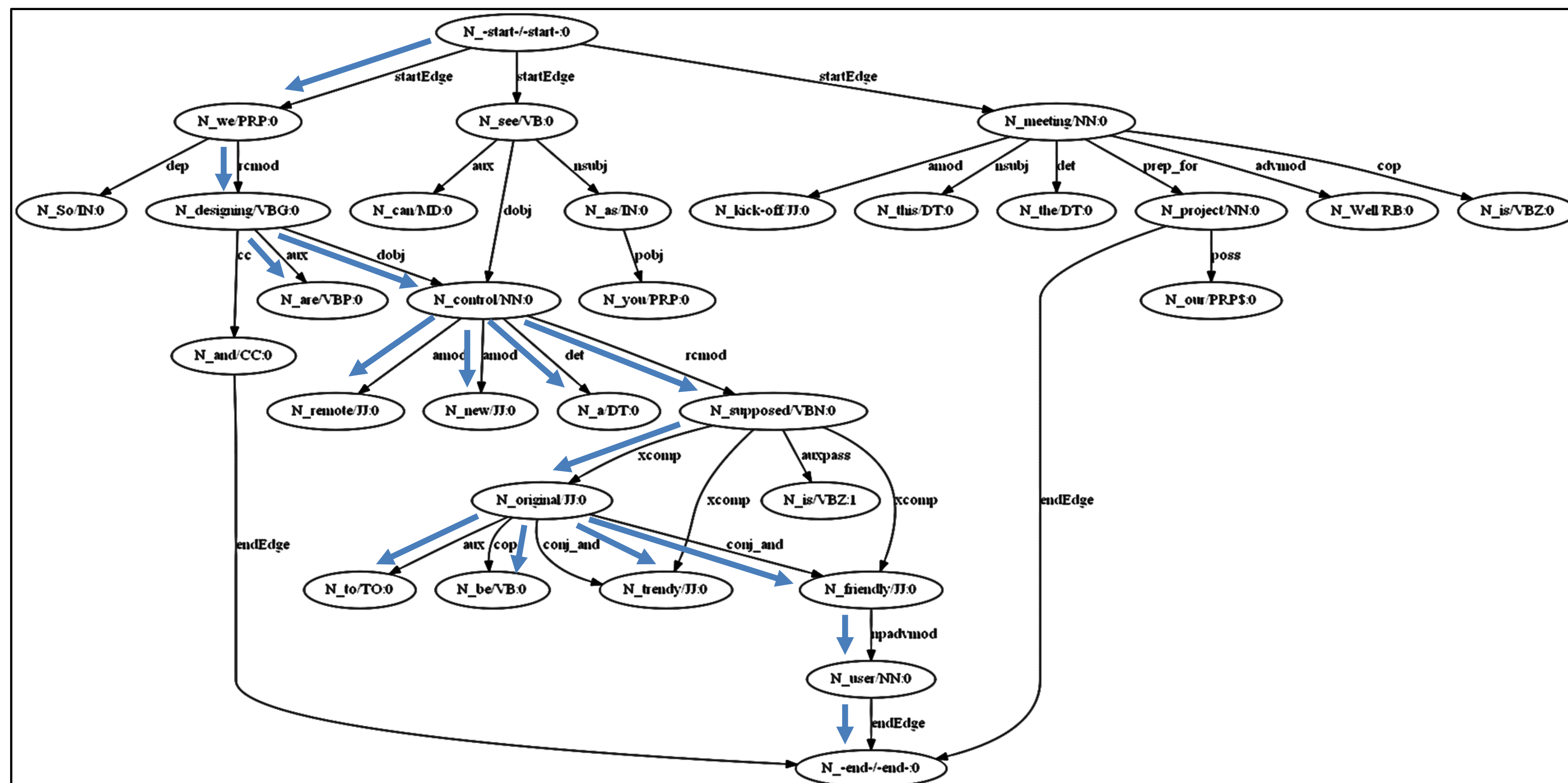
Ambiguity Resolution

Merged Dependency Graph

ILP Formulation

Constraints (Filippova and Strube, 2008)

Linearization – ordering of nodes



Experimental Results

Generated Summary: We are designing a new remote control supposed to be original trendy and user friendly.

ROUGE evaluation [R-2 and R-SU4] and Log-likelihood score (LL) from Stanford Dependency parser

Method	R-2	R-SU4	LL
Our abstractive model	0.048	0.087	-125.73
Our abstractive model (without anaphora resolution)	0.036	0.071	-130.32
Extractive Model (baseline)	0.026	0.044	-136.22

Maximize:

$$\sum_x x_{g,d,l} \cdot p(l | g) \cdot I(d) \cdot \frac{p_x}{N}$$

- $x \rightarrow$ the edges (variables in the ILP)
- $p(l|g) \rightarrow$ probability of the outgoing edges given governing node (*computed from Reuters corpora, 2002*)
- $I(d) \rightarrow$ Informativeness of the dependant
- $p_x / N \rightarrow$ Weights to utterances

References

- K. Filippova and M. Strube. Sentence Fusion via Dependency Graph Compression. In Proc. of EMNLP, pages 177–185, 2008.
- G. Murray, G. Carenini, and R. Ng. Generating and Validating Abstracts of Meeting Conversations: a User Study. In Proc. of INLG, pages 105–113, 2010.