

Discourse-Sentiment Alignment Tool (DSAT)



Second Peer-Review

Patrick Huber
Nov 19, 2019

Intro

Discourse Parsing

Discourse Parsing:

- Crucial task within the area of NLP
- Enhances many downstream applications
 - Sentiment analysis
 - Summarization
 - Question answering

Goal:

- Reveal the underlying structure of coherent text (a discourse)
 - Complete documents
 - Multiple sentences
-

Intro

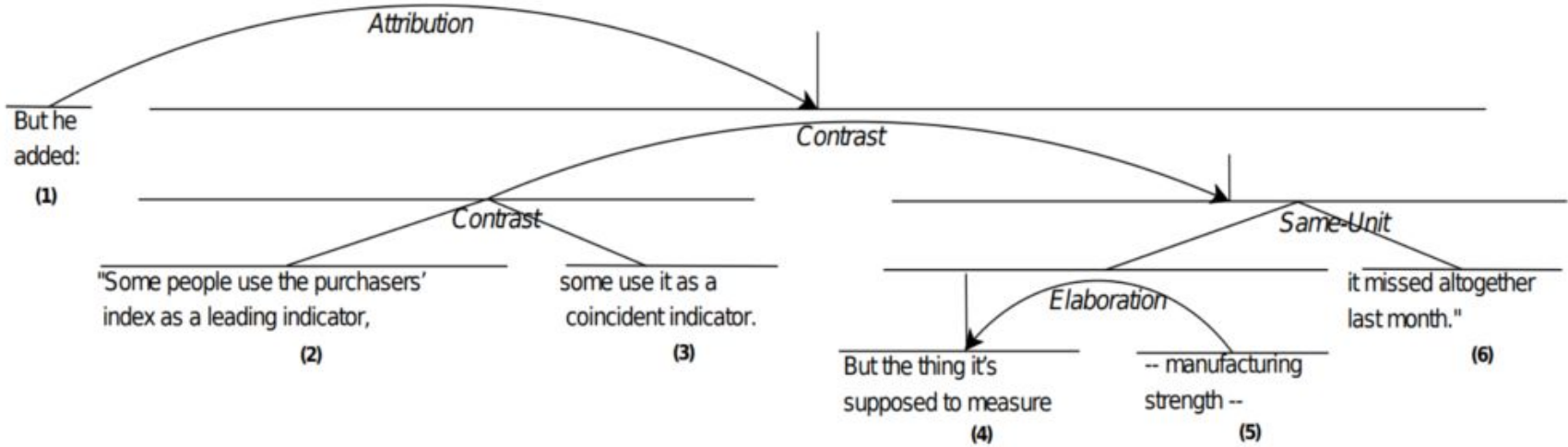
Discourse Parsing

Normally:

- Human-annotated gold-standard discourse trees

In my research:

- Use large datasets without gold-standard trees
 - Automatically infer discourse trees
 - Using distant supervision from sentiment data
-



Problem / Objective

Problem:

- Fully automated generation
- No human-in-the-loop
- Existing tools limited to comparisons against gold-standard

Objective:

- Create InfoVis system, which generates insights into the alignment of discourse trees and sentiment
-

Data

Yelp '13 review corpus

- ~336,000 reviews
- 1-5 star rating per review

Star Rating



Customer Review

#1223

Data

[What happened to Dunkin' Donuts?] (1)

[Holy crap does this place suck.] (2)

[The donuts are stale and taste weirdly like chemicals.] (3)

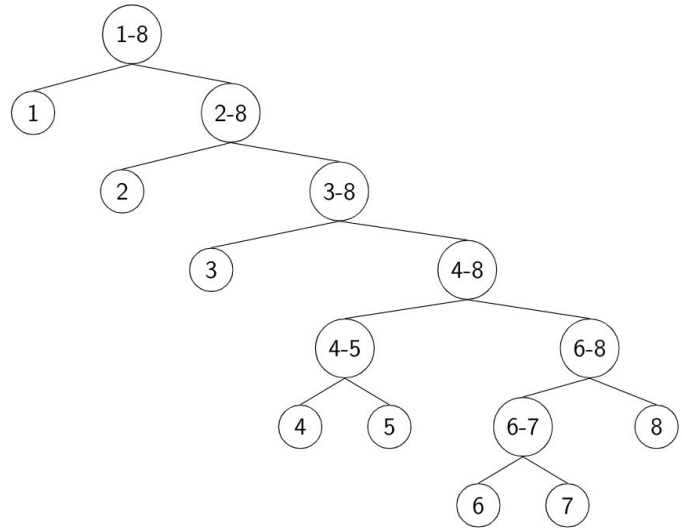
[I can not recommend anything] (4)

[except that you drive five minutes to Bosa Donuts on
McDowell.] (5)

[Great donuts] (6)

[and locally owned.] (7)

[Support local.] (8)



The Visualization - Stage 1

Discourse-Sentiment Alignment Tool (DSAT)

Documents

Document 54

Document 55

Document 56

Document 57

Document 58

Document 59

Document 60

Document 61

Document 62



Document 63


Document 64

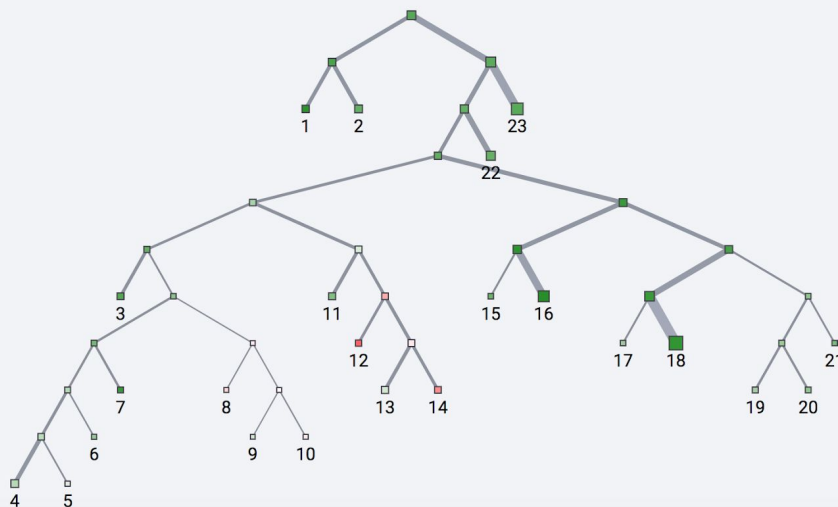
Document 65

Document 66

Tree Structure (Doc 62)

Sentiment: negative  positive
Attention: low  high

Sentiment Scale: relative  absolute
[Full Tree](#)



Discourse (Doc 62)

- (9) [cushioned chairs]
- (7) [that are always]
- (8) [being taken up by the old]
- (9) [guys with their newspapers]
- (10) [-- no offense , i]
- (11) [know they go their first and fair is fair) and a bunch of hardwood chairs . what]
- (12) [can you blame me ?]
- (13) [no .]
- (14) [no is the answer to blaming me .]
- (15) [anyway , their drinks are all right .]
- (16) [the baristas are friendly]
- (17) [(some a strange ,]
- (18) [but overall a friendly bunch) i]
- (19) [used to work at starbucks eons ago so]
- (20) [i 'm really picky]
- (21) [and i like this one .]

Peer Review Round 1

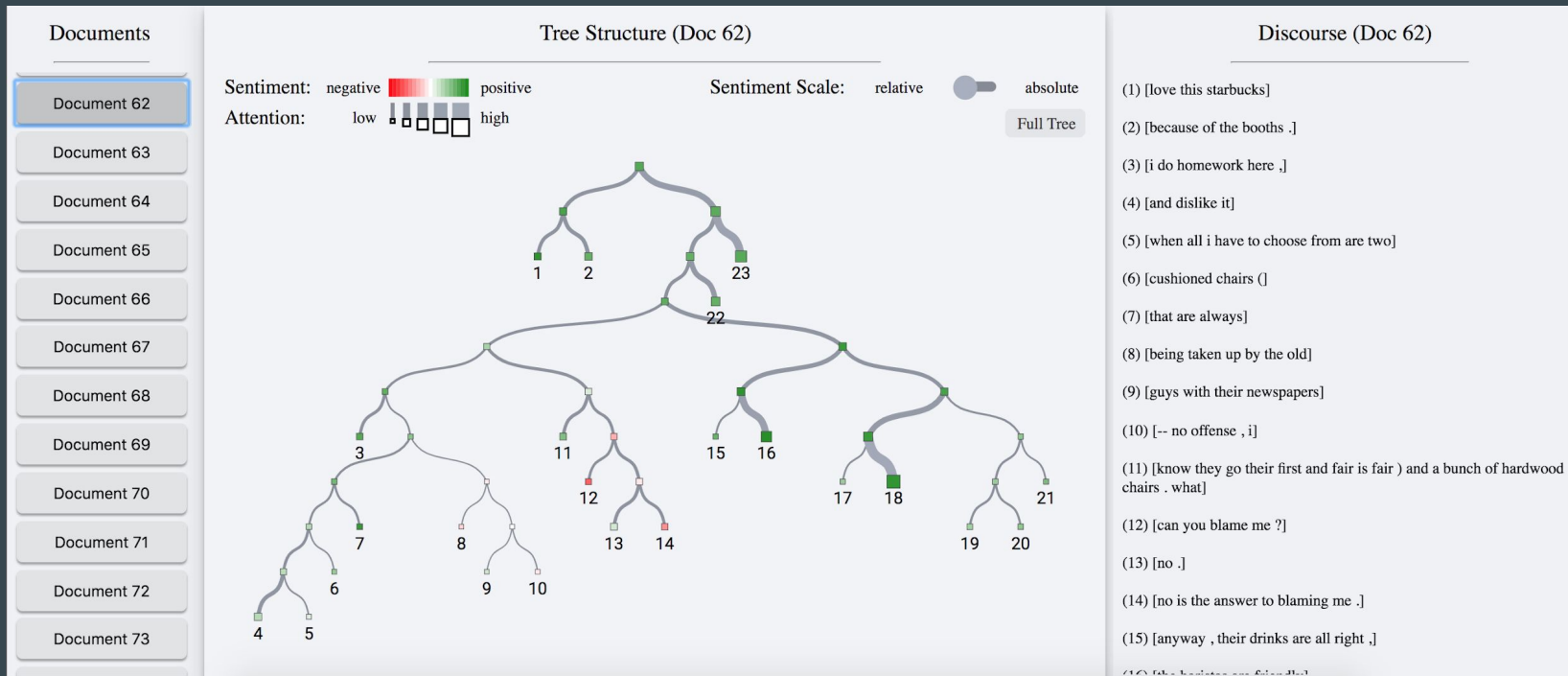
Good:

- Clear visualization
- Uncluttered display
- Intuitive
- No occlusion
- Bidirectional highlighting

To enhance:

- Round edges
- Collapse sub-trees
- Add option to go one level up
- Sometimes hard to click on nodes
- Pan & Zoom
- Zoom by clicking text

The Visualization - Stage 2



The Visualization - Stage 2

Demo