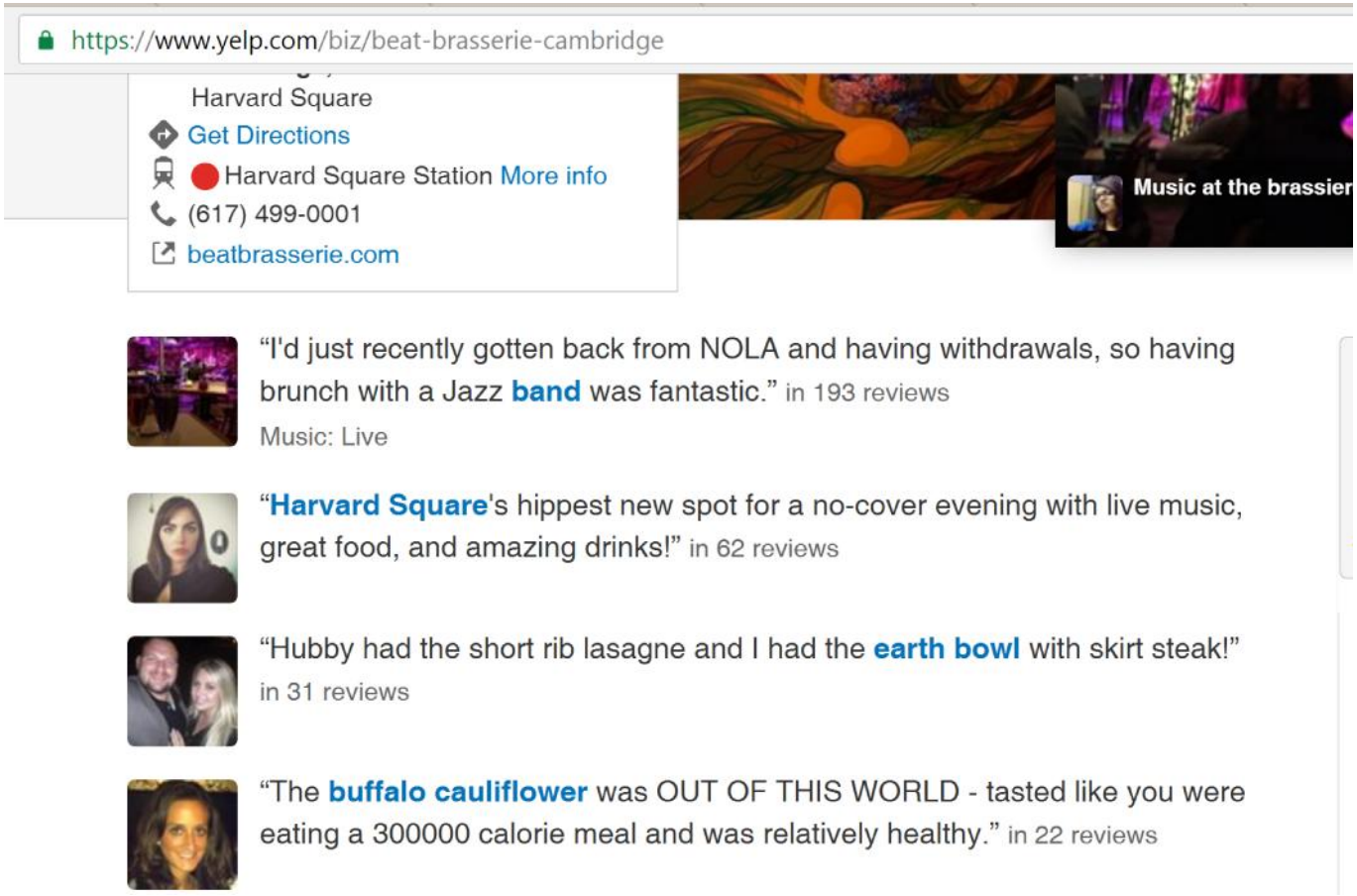
Competitive Analysis

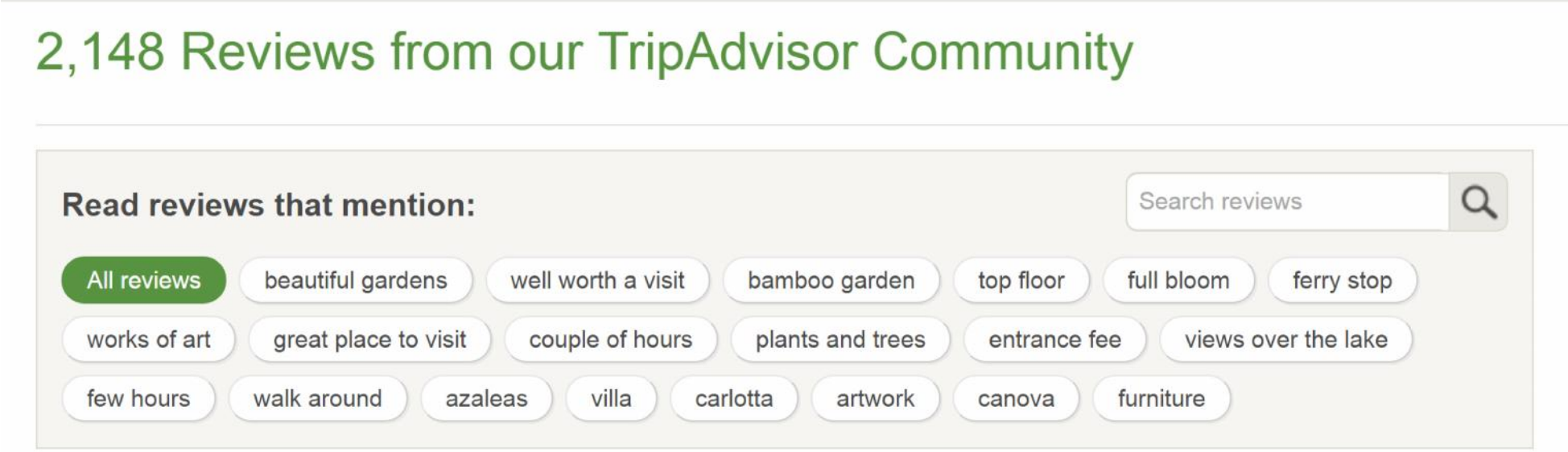
Unlike Amazon, Yelp highlights key phrases



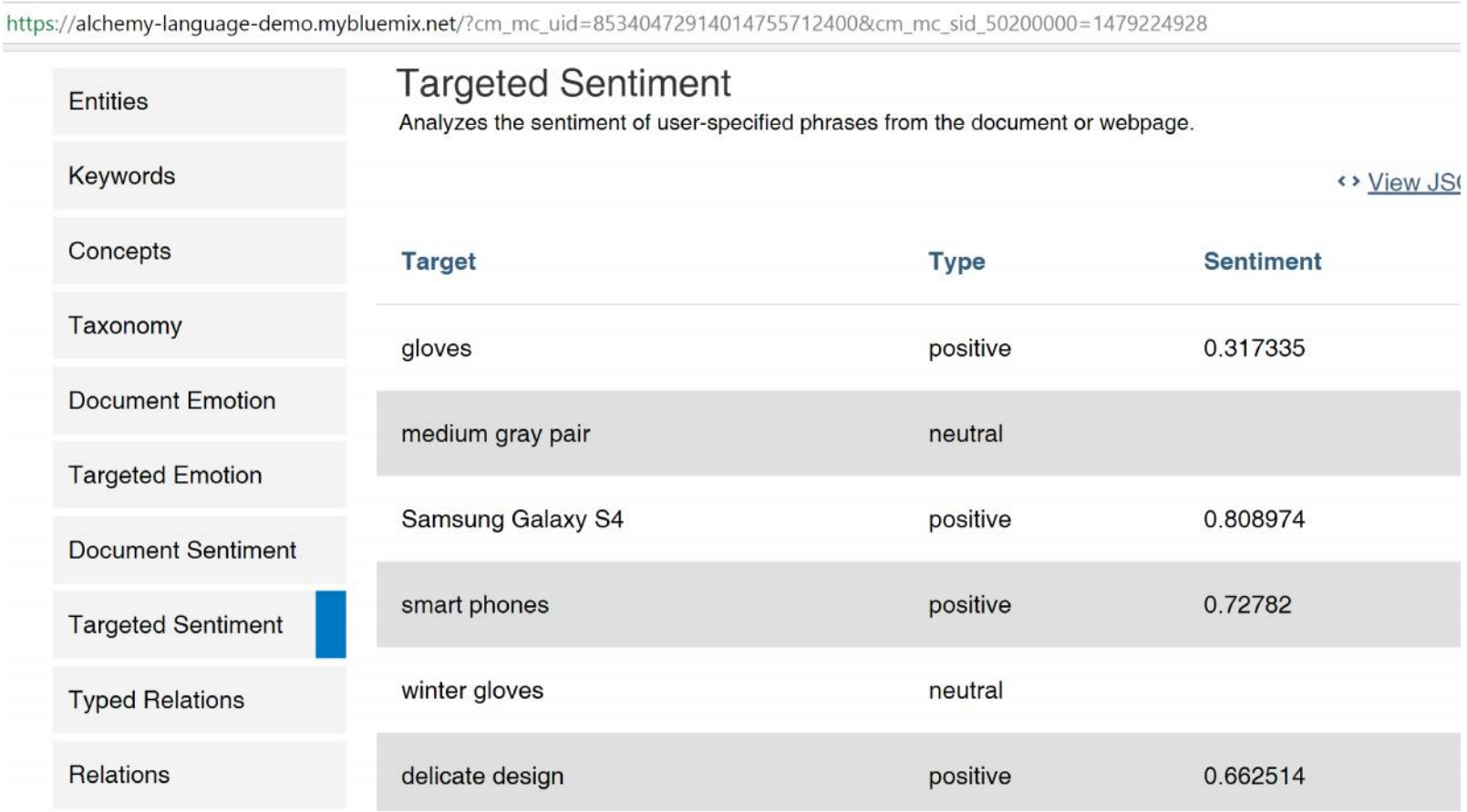
Customers can also filter reviews by key phrases

This would be a nice to have feature in my review analyser

TripAdvisor also lets users filter reviews by key phrases



Having not just phrases but sentiments against phrases might be helpful too
e.g Watson Alchemy API shows sentiments:



The following slides taken from research work also give interesting insight into the problem of classifying sentiments

I have annotated with red boxes

Feature-Based Sentiment Analysis

- Sentiment classification at both document and sentence (or clause) levels are not enough,
  - they do not tell what people like and/or dislike
  - A positive opinion on an object does not mean that the opinion holder likes everything.
  - An negative opinion on an object does not mean …..
- Objective (recall): Discovering all quintuples

  $(o_j, f_{jk}, so_{ijkl}, h_i, t_l)$
- With all quintuples, all kinds of analyses become possible.

Feature-Based Opinion Summary

(Hu & Liu, KDD-2004)

"I bought an iPhone a few days ago. It was such a nice phone. The touch screen was really cool. The voice quality was clear too. Although the battery life was not long, that is ok for me. However, my mother was mad with me as I did not tell her before I bought the phone. She also thought the phone was too expensive, and wanted me to return it to the shop. …"

Feature Based Summary:

Feature1: **Touch screen**

Positive: 212

- *The touch screen was really cool.*
- *The touch screen was so easy to use and can do amazing things.*

…

Negative: 6

- The screen is easily scratched.
- I have a lot of difficulty in removing finger marks from the touch screen.

…

Feature2: **battery life**

…

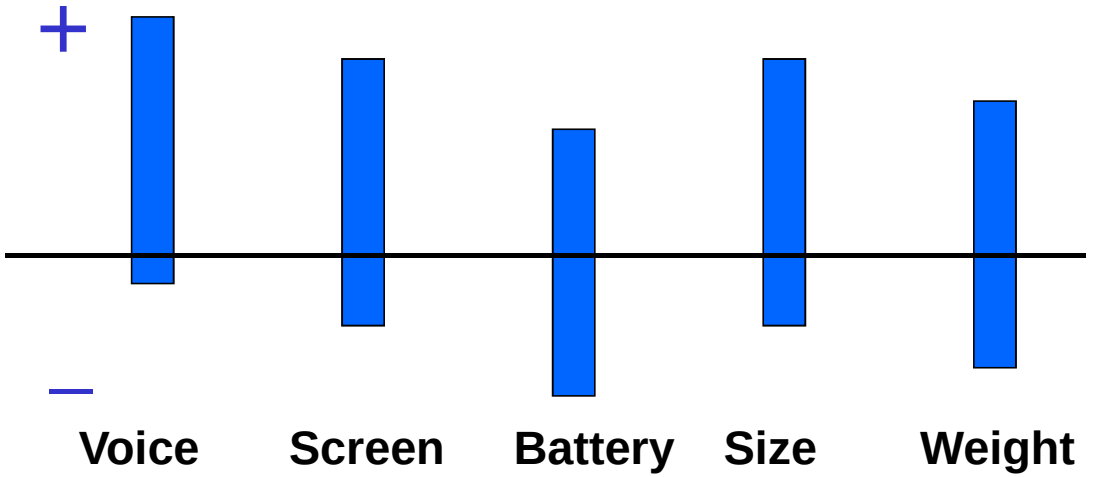
Note: We omit opinion holders

….

Visual Comparison (Liu et al. WWW-2005)

- Summary of reviews of

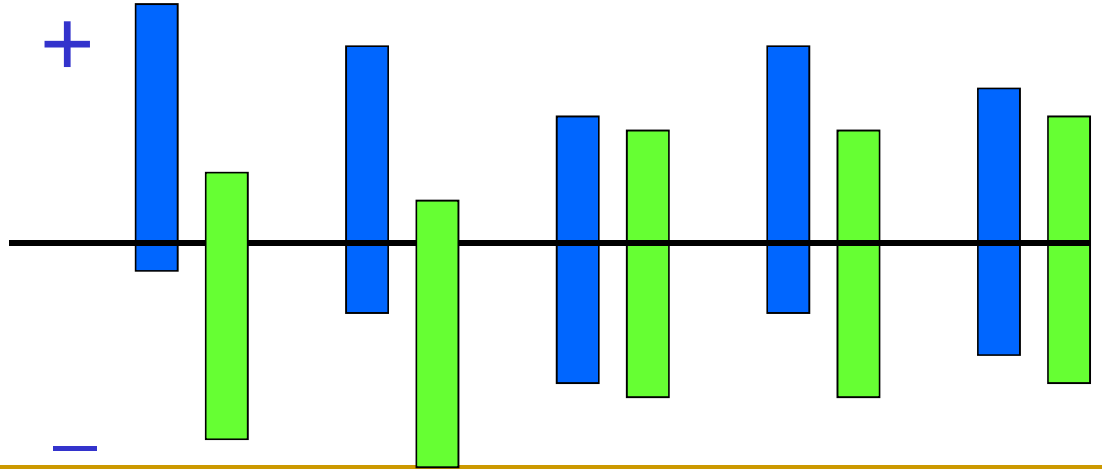
Cell Phone 1



- Comparison of reviews of

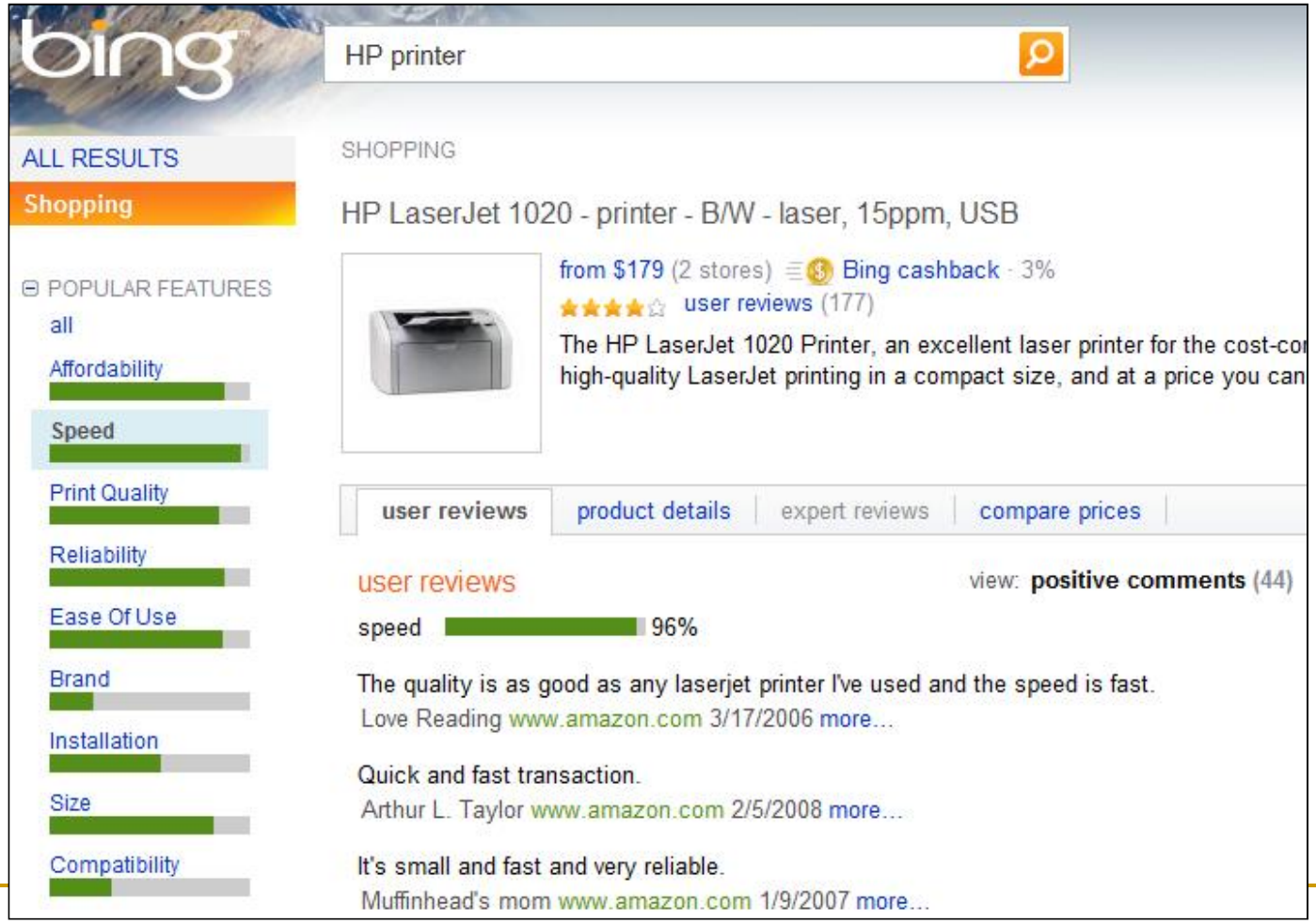
Cell Phone 1

Cell Phone 2



Feat.-based opinion summary in Bing

Feature based opinion summary would be a nice to have feature (maybe in later releases of my analyser)



Sentiment Analysis is Hard!

- "*This past Saturday, I bought a Nokia phone and my girlfriend bought a Motorola phone with Bluetooth. We called each other when we got home. The voice on my phone was not so clear, worse than my previous phone. The battery life was long. My girlfriend was quite happy with her phone. I wanted a phone with good sound quality. So my purchase was a real disappointment. I returned the phone yesterday.*"

Senti. Analy. is not Just ONE Problem

- $(o_j, f_{jk}, so_{ijkl}, h_i, t_l)$,
  - o_j - a target object: Named Entity Extraction (more)
  - f_{jk} - a feature of o_j: Information Extraction
  - so_{ijkl} is sentiment: Sentiment determination
  - h_i is an opinion holder: Information/Data Extraction
  - t_l is the time: Data Extraction
- Co-reference resolution
- Relation extraction
- Synonym match (voice = sound quality) …
- None of them is a solved problem!