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# Opinion Analysis

(using some material from Dan Jurafsky)

# Opinion Mining

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- The **third level of sentiment analysis** is sometimes called opinion mining because you are finding sentiment towards aspects or attributes
- Businesses spend a huge amount of money to find consumer sentiments and opinions.
  - Consultants, surveys and focus groups, etc
  - Text in the form of transcripts of interviews or survey responses
- Opinions also available on the web
  - product reviews
  - blogs, discussion groups

# Sentence Level Detection

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- Sentence level or sub-sentence level detection of subjectivity as a binary classifier
  - Wiebe, many projects
  - Pang and Lee – for movie reviews, first determine which sentences express opinions and then label for opinion polarity
- Clause level opinion strength
  - Wilson, “How mad are you?”
- Detection of sentences with subjectivity or sentiment is important to then find aspects or attributes
  - *The food was great but the service was awful.*

# Finding aspect/attribute/target of sentiment

M. Hu and B. Liu. 2004. Mining and summarizing customer reviews. In Proceedings of KDD.

S. Blair-Goldensohn, K. Hannan, R. McDonald, T. Neylon, G. Reis, and J. Reynar. 2008. Building a Sentiment Summarizer for Local Service Reviews. WWW Workshop.

- Frequent phrases + rules
  - Find all highly frequent phrases across reviews (“fish tacos”)
  - Filter by rules like “occurs right after sentiment word”
    - “...great fish tacos” means fish tacos a likely aspect

Casino	casino, buffet, pool, resort, beds
Children’s Barber	haircut, job, experience, kids
Greek Restaurant	food, wine, service, appetizer, lamb
Department Store	selection, department, sales, shop, clothing

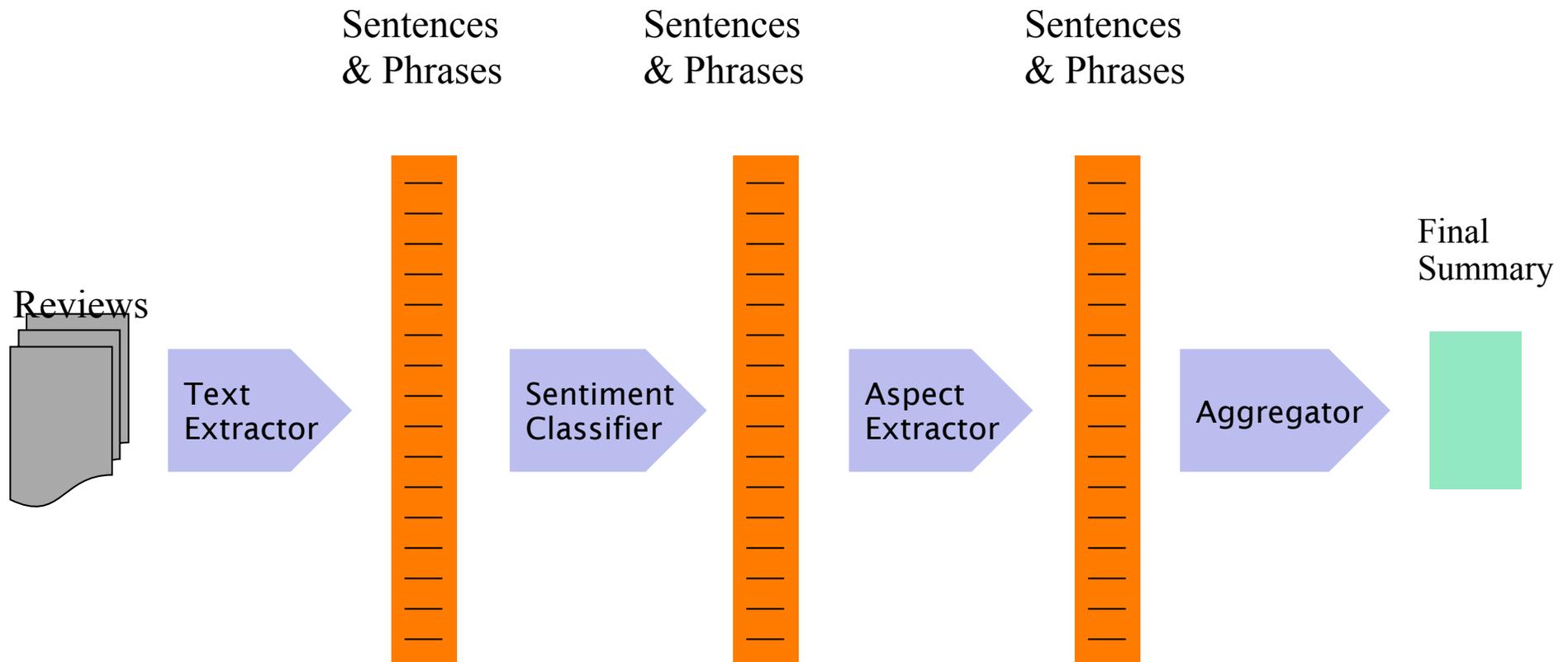
## Finding aspect/attribute/target of sentiment

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- But the aspect name may not be in the sentence
- Other methods to find aspects:
  - For restaurants/hotels, aspects are well-understood
  - Supervised classification
    - Hand-label a small corpus of restaurant review sentences with aspect
    - food, décor, service, value, NONE
  - Train a classifier to assign an aspect to a sentence
    - “Given this sentence, is the aspect *food*, *décor*, *service*, *value*, or *NONE*”

# Putting it all together: Finding sentiment/opinion for aspects

S. Blair-Goldensohn, K. Hannan, R. McDonald, T. Neylon, G. Reis, and J. Reynar. 2008. Building a Sentiment Summarizer for Local Service Reviews. WWW Workshop



# Joint Topic/Sentiment Analysis

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- An alternative approach to first finding the aspect or attribute and then the opinion or sentiment is to find them both in the same classification
  - Comparative studies of related products
  - Topics that have various features and attributes
    - Consumers
    - Political areas

# Example results for opinion of aspect

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## Rooms (3/5 stars, 41 comments)

- (+) The room was clean and everything worked fine – even the water pressure ...
- (+) We went because of the free room and was pleasantly pleased ...
- (-) ...the worst hotel I had ever stayed at ...

## Service (3/5 stars, 31 comments)

- (+) Upon checking out another couple was checking early due to a problem ...
- (+) Every single hotel staff member treated us great and answered every ...
- (-) The food is cold and the service gives new meaning to SLOW.

## Dining (3/5 stars, 18 comments)

- (+) our favorite place to stay in biloxi.the food is great also the service ...
- (+) Offer of free buffet for joining the Play

# Feature-based Summary (Hu and Liu, KDD-04)

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- From reviews, extract a summary:

**GREAT Camera.**, Jun 3, 2004

Reviewer: **jprice174** from Atlanta, Ga.

I did a lot of research last year before I bought this camera... It kinda hurt to leave behind my beloved nikon 35mm SLR, but I was going to Italy, and I needed something smaller, and digital.

The **pictures** coming out of this camera are amazing. The **'auto'** feature takes great pictures most of the time. And with digital, you're not wasting film if the picture doesn't come out. ...

....

## Feature Based Summary:

**Feature1: **picture****

**Positive: 12**

- The **pictures** coming out of this camera are amazing.
- Overall this is a good camera with a really good **picture** clarity.

...

**Negative: 2**

- The **pictures** come out hazy if your hands shake even for a moment during the entire process of taking a picture.
- Focusing on a display rack about 20 feet away in a brightly lit room during day time, **pictures** produced by this camera were blurry and in a shade of orange.

**Feature2: **battery life****

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