Reproducing a Paper: Latent Aspect Rating Analysis without keyword supervision

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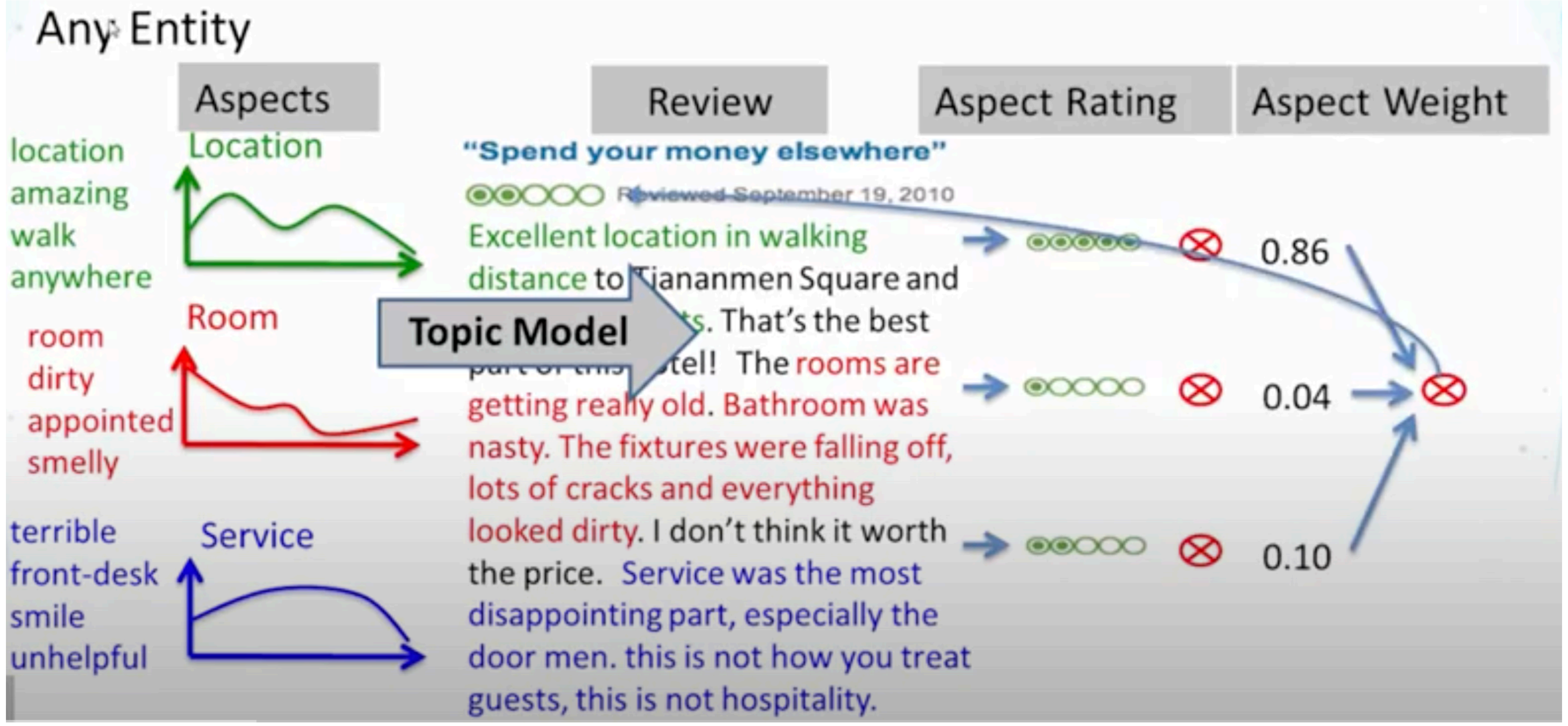
Visual depiction of the task



"Spend your money elsewhere"

~~Reviewed September 19, 2010~~

Excellent location in walking distance to Tiananmen Square and ts. That's the best part of this hotel! The rooms are getting really old. Bathroom was nasty. The fixtures were falling off, lots of cracks and everything looked dirty. I don't think it worth the price. Service was the most disappointing part, especially the door men. this is not how you treat guests, this is not hospitality.

- Input
  - Review texts
  - Overall rating
  - Assumed aspects in the review (Location, Room, Service etc)
- Output
  - Latent aspects (Topic model used to extract text from review corresponding to a topic)
  - Rating associated to each latent aspect
  - Weight associated to each latent aspect
- Validation
  - Mean squared error from ground truth overall rating.

Stages in the process

- Pre-processing (preprocessing_Sec5_1.py)
  - Lowercase
  - Remove punctuation characters
  - Remove stop words
  - Lemmatize
- Processing and Analyzing (Main.py)
  - Model topics based on "Service", "Cleanliness", "Overall", "Value", "Location", "Rooms", "Sleep Quality"
  - Identify words that correlate to model topics
  - Use regression to identify topic rating to maximize probability to ground truth latent ratings
  - Use regression to identify topic weights to maximize probability to ground truth overall rating
  - Calculate mean squared error to ground truth ratings
  - Output results to results/results.txt and MSE to stdout.

How to run the code

- git clone https://github.com/rakesh-patnaik/CourseProject.git
- cd CourseProject
- python3 -m venv env
- source env/bin/activate
- pip install --upgrade pip
- python -m pip install wordcloud pandas scipy nltk lxml bs4 requests python-slugify
- python -m nltk.downloader stopwords
- python -m nltk.downloader punkt
- python -m nltk.downloader wordnet
- python preprocessing_Sec5_1.py
- python Main.py

Results

- Results will be output to results/results.txt
- Mean Squared Error will be output to stdout
    -
      ```
      (env) rakesh@Rakeshs-MacBook-Pro-4.local:~/work/uiuc-mcsds/cs410-fall2020/CourseProject$ python preprocessing_Sec5_1.py
      (env) rakesh@Rakeshs-MacBook-Pro-4.local:~/work/uiuc-mcsds/cs410-fall2020/CourseProject$ python Main.py
      Total reviews: 183
      MSE: 2.99805326964421
      ```