

Latent Aspect Rating Analysis

March 14th, 2017

Abstract

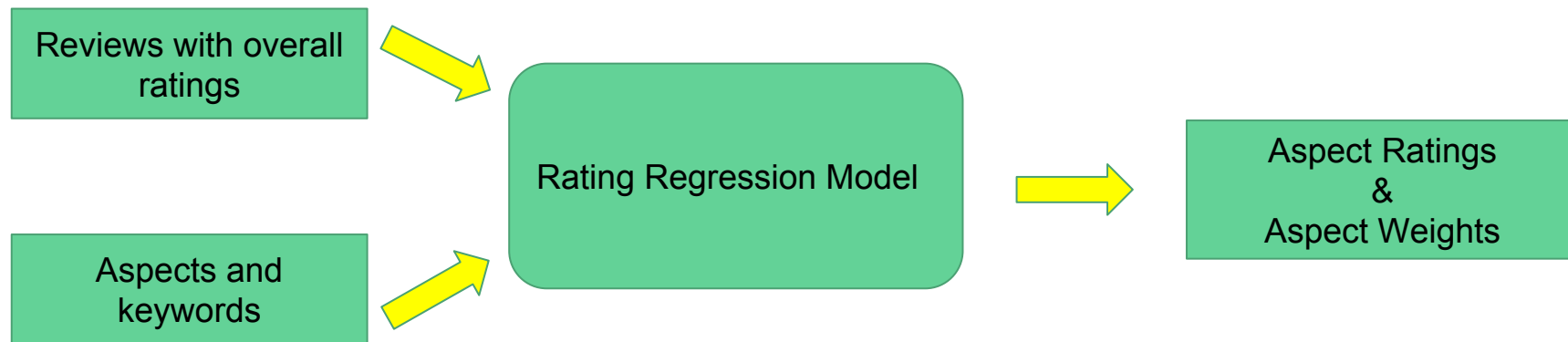
Latent Aspect Rating Analysis (LARA) aims at analyzing opinions expressed about an entity in an online review at the level of topical aspects to discover each individual reviewer's latent opinion on each aspect as well as the relative emphasis on different aspects when forming the overall judgment of the entity.

Definitions

- ❖ Aspects
- ❖ Aspect Ratings
- ❖ Aspect Weights
- ❖ Latent Aspect Rating Analysis (LARA)

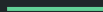
Problem Definition

To reveal the relative importance weight that a reviewer placed on each aspect when assigning the overall rating.



Stages

- Aspect Segmentation
- Latent Rating Regression Model
- Data Set and Preprocessing
- Qualitative Evaluation



Procedure

Aspect Segmentation

To map the sentences in a review into subsets corresponding to each aspect.

Input : A collection of reviews $\{d_1, d_2, \dots, d_n\}$, set of aspect keywords $\{T_1, T_2, \dots, T_k\}$, vocabulary V , selection threshold p and iteration step limit l .

Output : Reviews split into sentences with aspect assignments.

The LRR Model

The Assumption: To generate an opinionated review, the reviewer first decides the aspects she wants to comment on; and then for each aspect, the reviewer carefully chooses the words to express her opinions. The reviewer then forms a rating on each aspect based on the sentiments of words she used to discuss that aspect. Finally the reviewer assigns an overall rating depending on a weighted sum of all the aspect ratings, where the weights reflect the relative emphasis she has placed on each aspect.

EXPERIMENTATION AND RESULTS

Dataset: TripAdvisor

- We chose this data set for evaluation because in addition to the overall rating, reviewers also provided 7 aspect ratings in each review: value, room, location, cleanliness, check in/front desk, service, business service ranging from 1 star to 5 stars, which can serve as ground-truth for quantitative evaluation of latent aspect rating prediction.

CONCLUSIONS

LARA takes a set of review texts with overall ratings and a specification of aspects as input, and discovers each individual reviewer's latent ratings on the given aspects and the relative emphasis a reviewer has placed on different aspects. To solve this problem, we use the Latent Rating Regression (LRR) model.