Opinion Seer: Interactive Visualization of Hotel Customer Feedback

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Outline

- Overview of Opinion Seer
- Opinion mining
  - Feature-based opinion mining
  - Uncertainty Modeling
- Subjective Logic
- Opinion visualization
  - Opinion Triangle
  - Opinion Rings
- Experiments
- Conclusion
- References
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Overview of Opinion Seer

Opinion Seer: An interactive visualization system that could visually analyze a large collection of online hotel customer reviews
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Feature-based opinion mining

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Step 1: Opinion mining

- Feature-based opinion mining (i.e. room, location, cleanliness, service and hotel)
  - Split document into a collection of sentences
  - Use an opinion keyword dictionary to decide the feature and opinion score
    - i.e. “The service is perfect.”
  - For each sentence, counting the number of positive and negative keywords
  - Get the overall opinion about the hotel by grouping the opinion of features

- Uncertainty Modeling
  - i.e. “The room sure is tiny, yet very clean and comfy.”
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Step 2: Subjective Logic

- An opinion vector \( \langle p, n, u \rangle \) \( (p + n + u = 1) \)
- AND operator:
  combine the opinions of a customer on different features (at feature level)
- FUSION operator:
  combine of different customers on the same feature (at the hotel level)
- Use AND operator to get multiple overall opinions from different customers,
  then use FUSION operator to get the average opinion of the customers
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Step 3. Opinion visualization

Opinion Triangle

\[ p + n + u = 1 \]
\[ D_p + D_n + D_u = 1 \]

Opinion Rings

Color: the different dimension
Size: the number of customers in a particular dimension
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Demonstrate the usefulness of the uncertainty modeling
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- Based on user feedback, 80-90% of the user think Opinion Seer is very smart and useful.
- Not just hotel customer feedback, Opinion Seer is useful for other products and services.
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Thank you