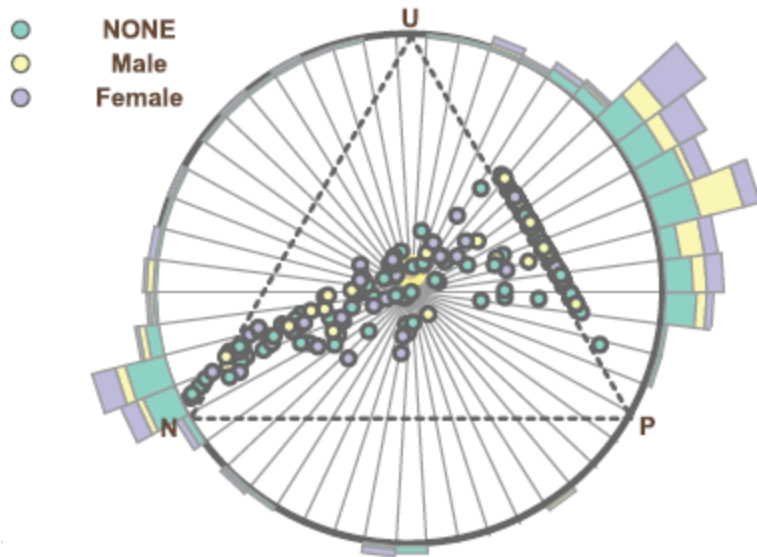


Opinion Seer: Interactive Visualization of Hotel Customer Feedback

Yingcai Wu, Furu Wei, Shixia Liu, Norman Au, Weiwei Cui, Hong Zhou, and Huamin Qu, Member, IEEE

Published by the IEEE Computer Society

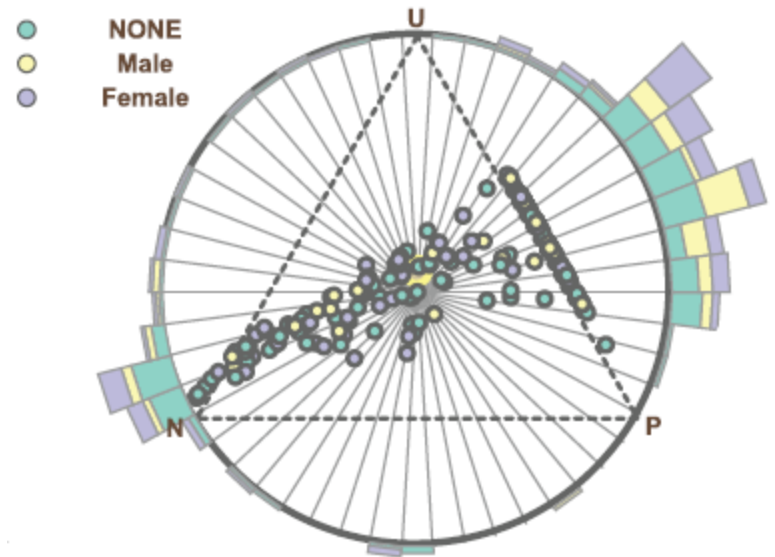


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Nov-9-2011

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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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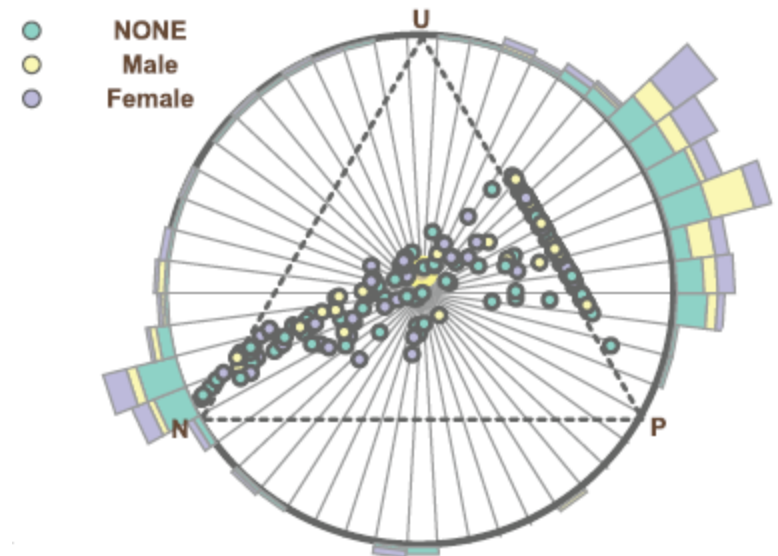
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 - Opinion Rings

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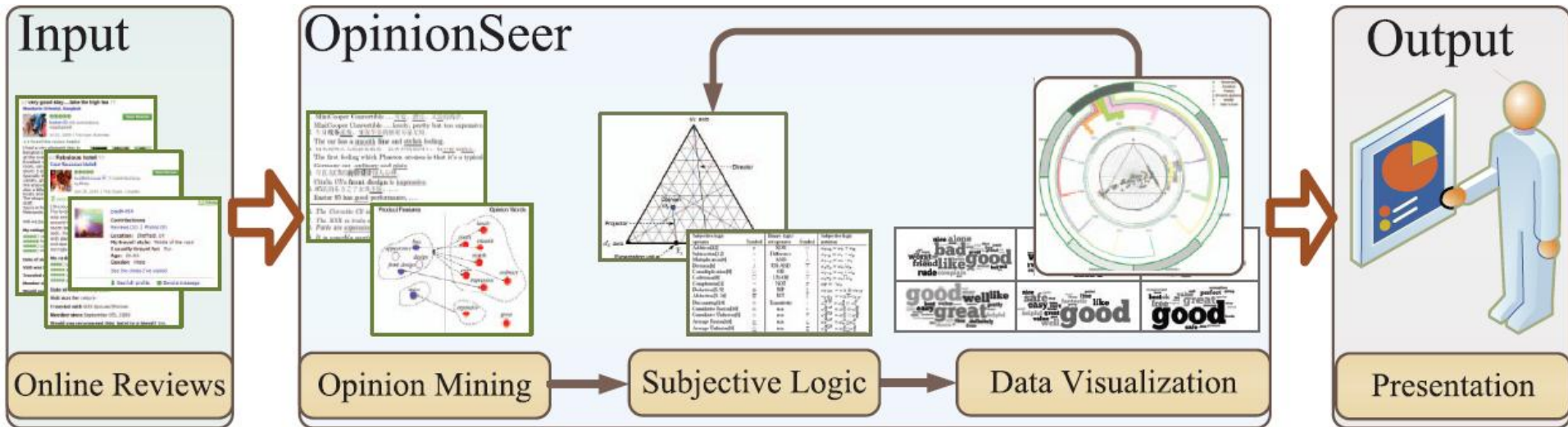
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Overview of Opinion Seer

Opinion Seer: An interactive visualization system that could visually analyze a large collection of online hotel customer reviews



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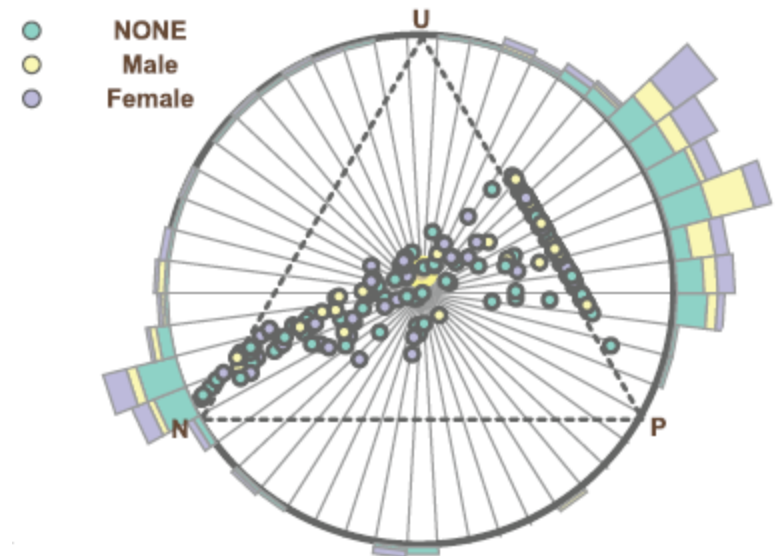
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Step 1 :Opinion mining

- Feature-based opinion mining(i.e. room, location, cleanliness, service and hotel)
 - Split document into a collection of sentences
 - Use a 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.”

Outline

Overview of Opinion Seer

Opinion mining

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● **Subjective Logic**

Opinion visualization

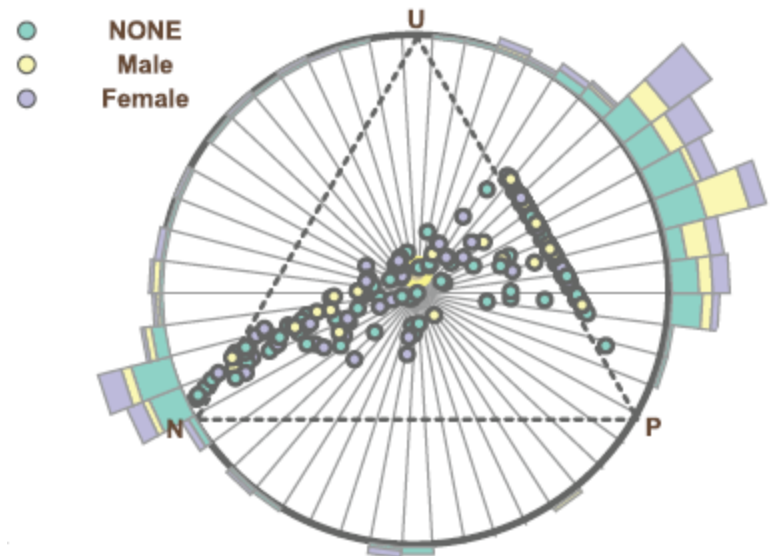
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Step 2: Subjective Logic

- 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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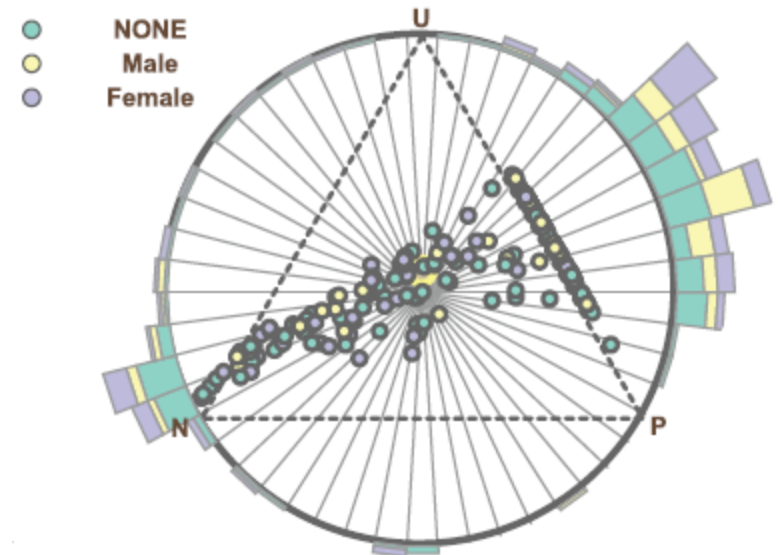
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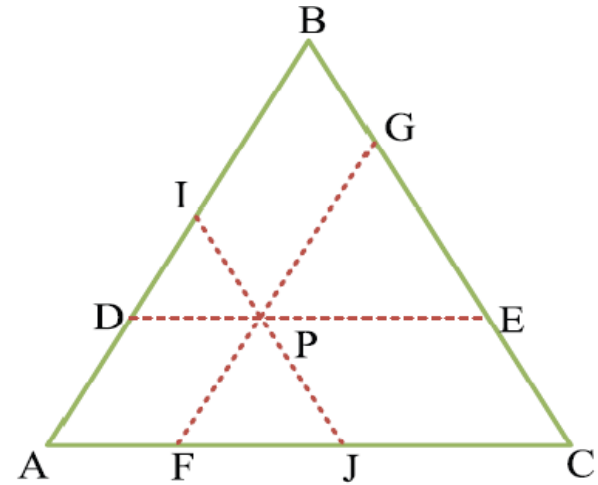


Step 3. Opinion visualization

Opinion Triangle

$$p + n + u = 1$$

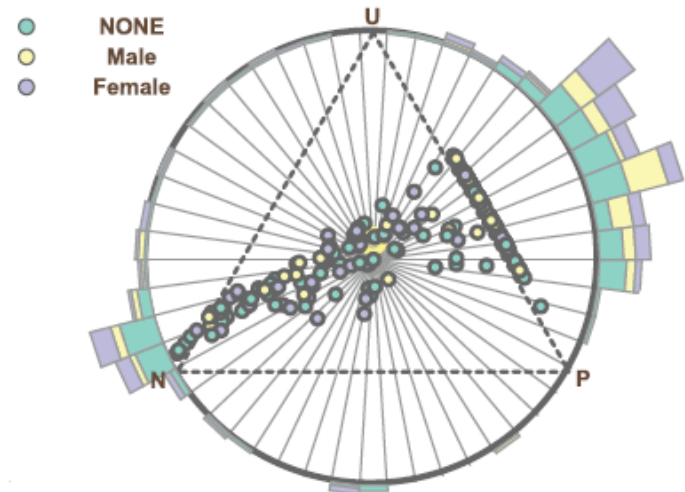
$$D_p + D_n + D_u = 1$$



Opinion Rings

Color: the different dimension

Size: the number of customers in a particular dimension



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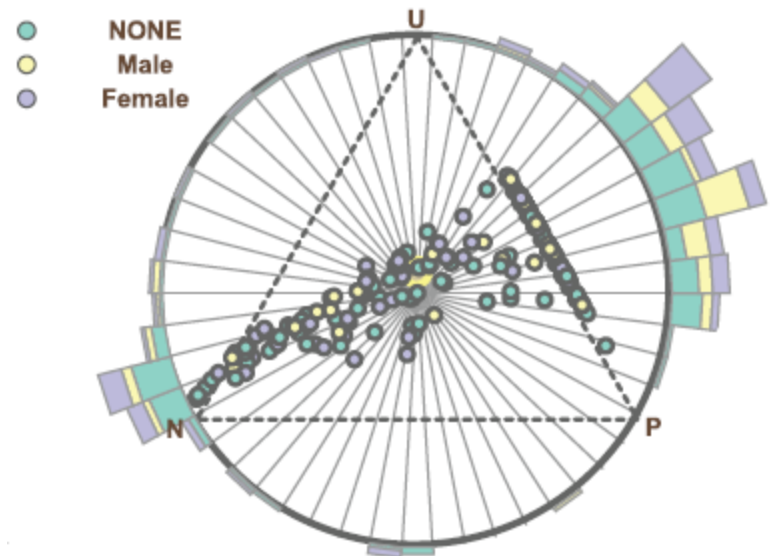
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● **Experiments**

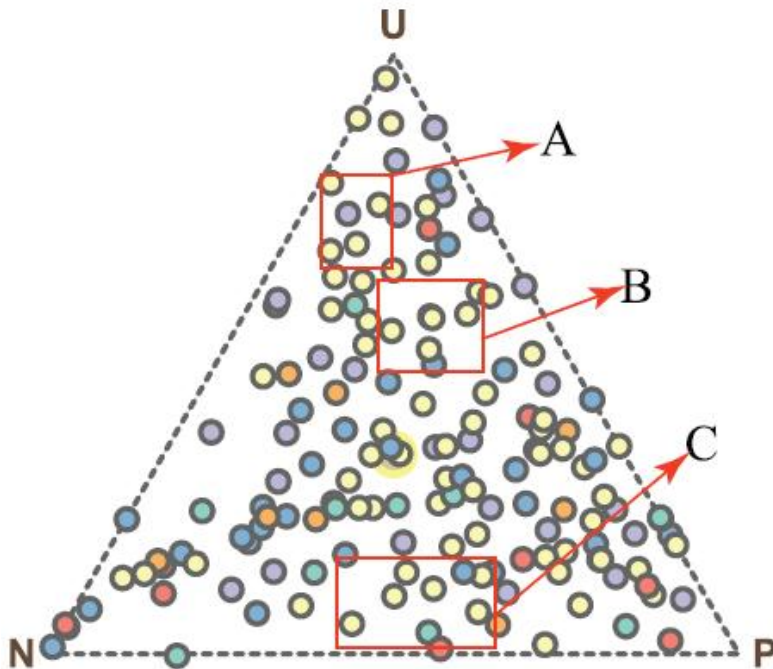
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Experiment

Demonstrate the usefulness of the uncertainty modeling



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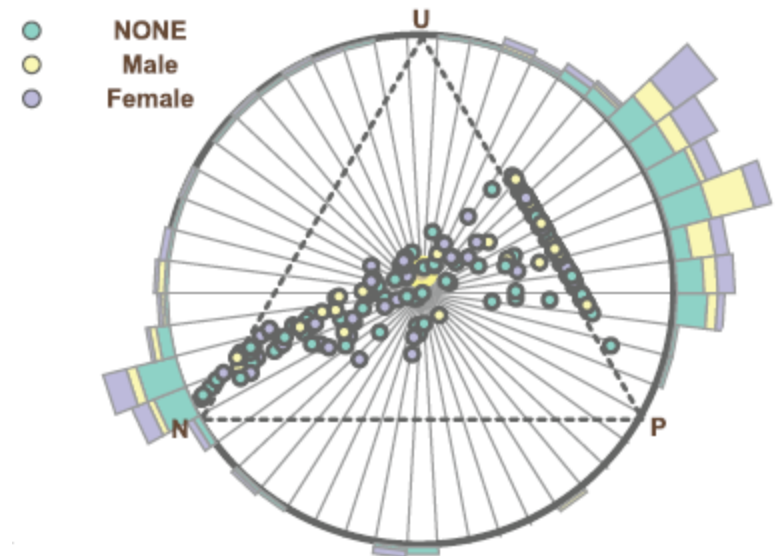
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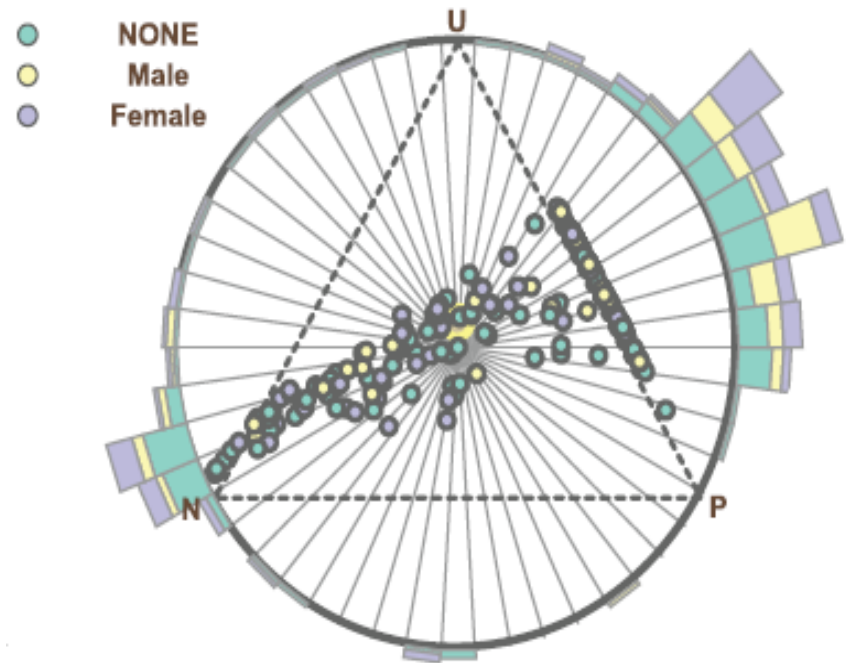
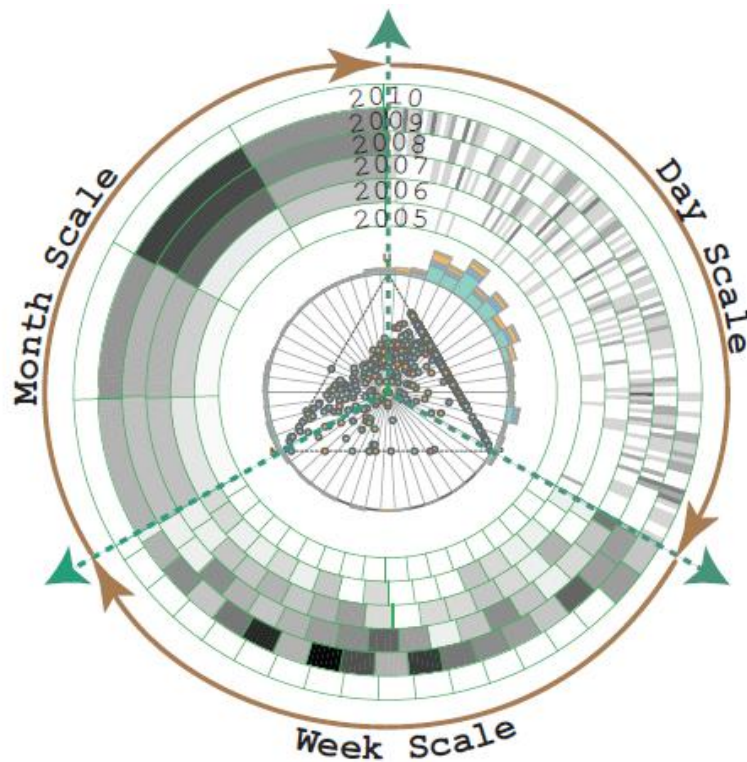
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Conclusion

- 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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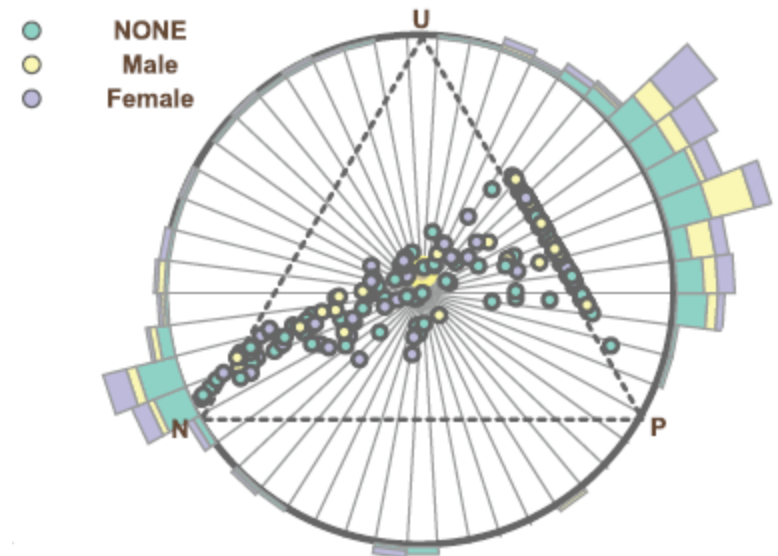
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References

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- [3] C. Chen, F. Ibekwe-SanJuan, E. SanJuan, and C. Weaver. [Visual analysis of conflicting pinions](#). In *IEEE Symposium On Visual Analytics Science And Technology*, pages 35 – 42, 2006.

Thank you