What are **Latent Aspects**?

Aspect: targeted in an opinion to convey a sentiment.

Latent Aspects: aspects where the term is not explicitly mentioned.
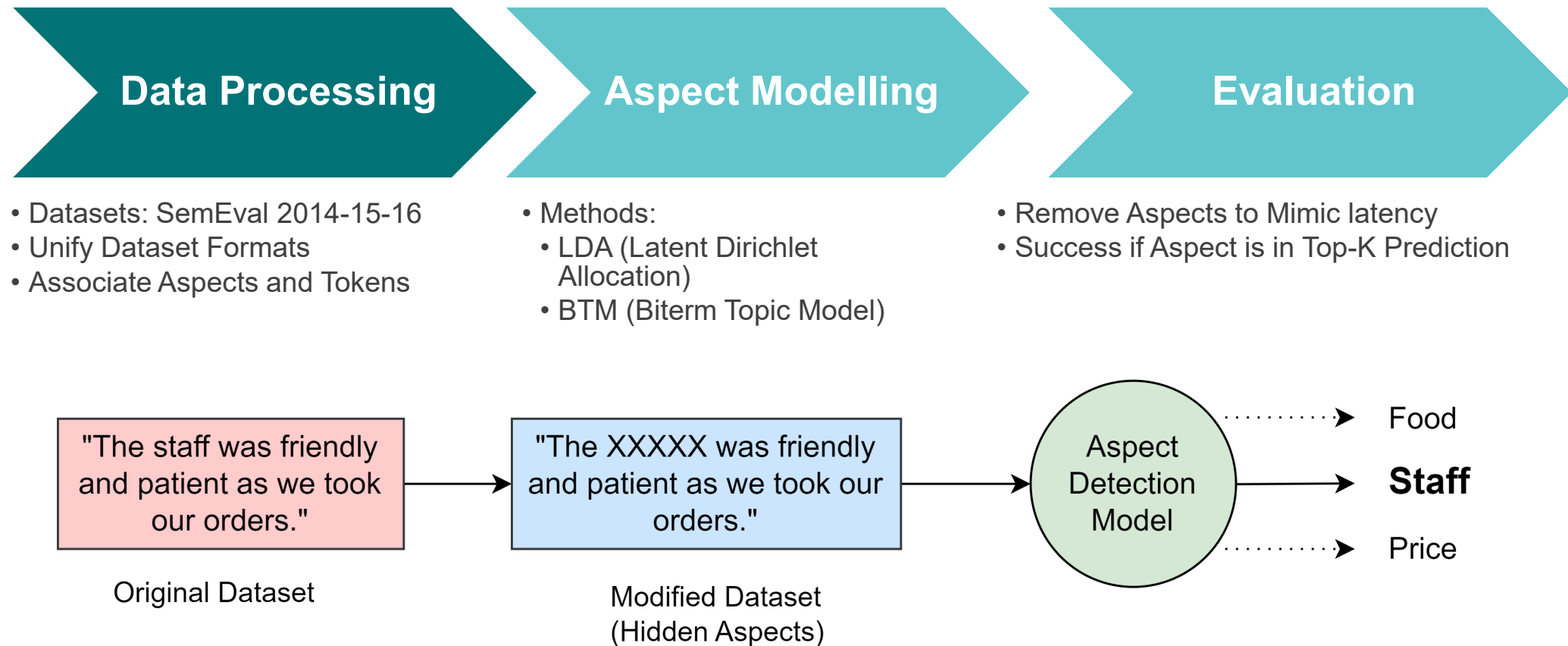
'…**advertise** free wifi but charge you for that,…'

Aspect: 'advertisement'
Sentiment: 'negative'

'**mine** was a little burnt but still delicious…'

Aspect: 'food' ("…[my food] was…")
Sentiment: 'neutral'

LADy's Pipeline

Data Processing

Aspect Modelling

Evaluation

- Datasets: SemEval 2014-15-16
- Unify Dataset Formats
- Associate Aspects and Tokens

- Methods:
  - LDA (Latent Dirichlet Allocation)
  - BTM (Biterm Topic Model)

- Remove Aspects to Mimic latency
- Success if Aspect is in Top-K Prediction

"The staff was friendly and patient as we took our orders."

Original Dataset

"The XXXXX was friendly and patient as we took our orders."

Modified Dataset (Hidden Aspects)

Aspect Detection Model

Food

Staff
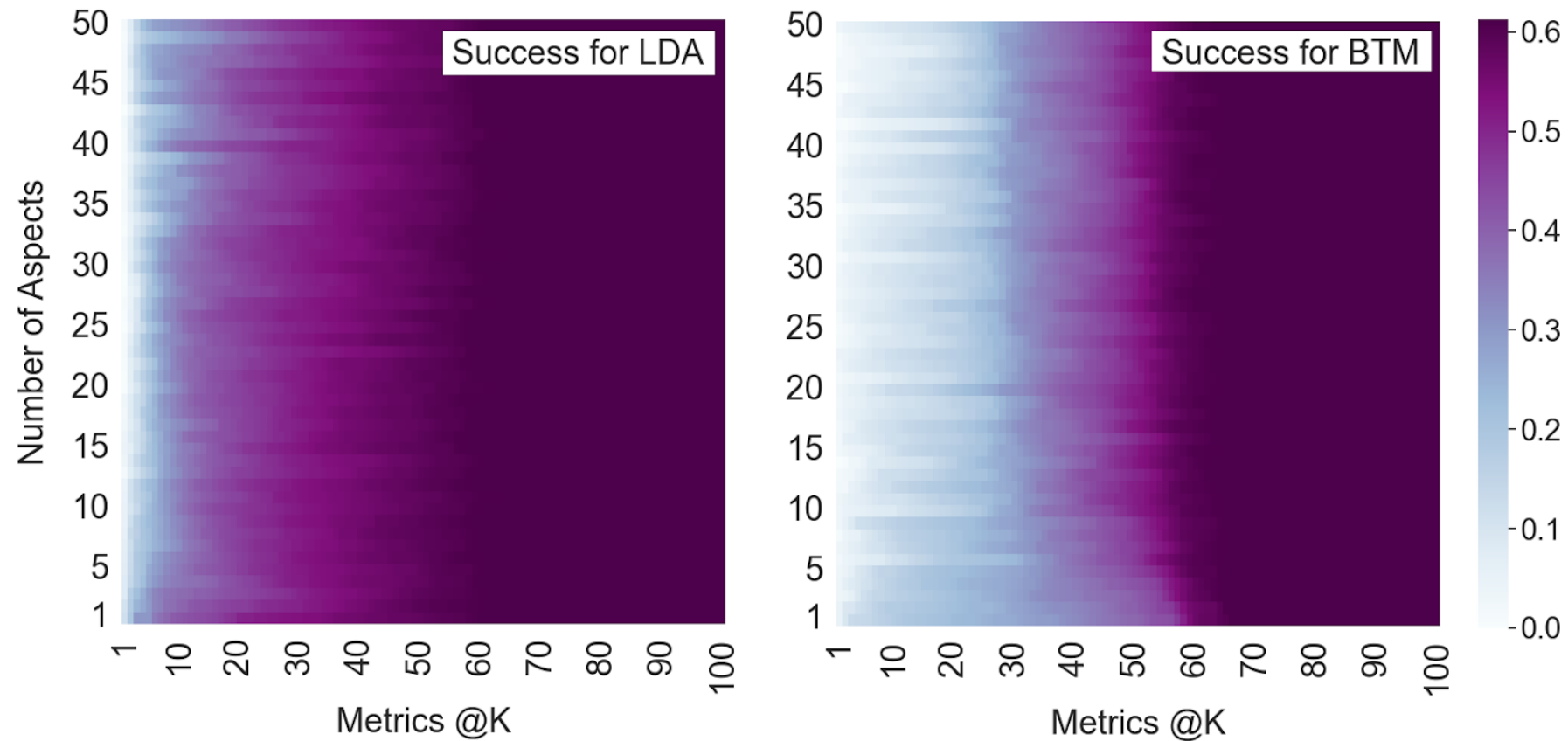
Price

Pontiki et al., 2014, 2015, and 2016. Aspect based sentiment analysis. Association for Computational Linguistics.
Blei et al., 2003. Latent dirichlet allocation. Journal of Machine Learning Research.
Cheng et al., 2014. BTM: Topic Modeling over Short Texts. IEEE Transactions on Knowledge and Data Engineering.

LADy's Results

Heatmap comparison of success between LDA and BTM.
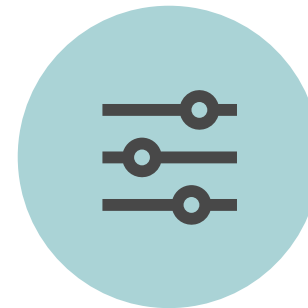
LADy's Applications

Business Consultation Tool

Use consumer reviews to identify business strengths and weaknesses.

HR Analysis Tool

Analyze workplace dynamic from employee reviews.

Personalized Analysis

Study user's past reviews to better understand current reviews.

Entrepreneurship Idea Identification

Analyze popular industry and trend patterns from community posts and news.

Napitu et al., 2017. Twitter opinion mining predicts broadband internet's customer churn rate. IEEE International Conference on Cybernetics and Computational Intelligence.
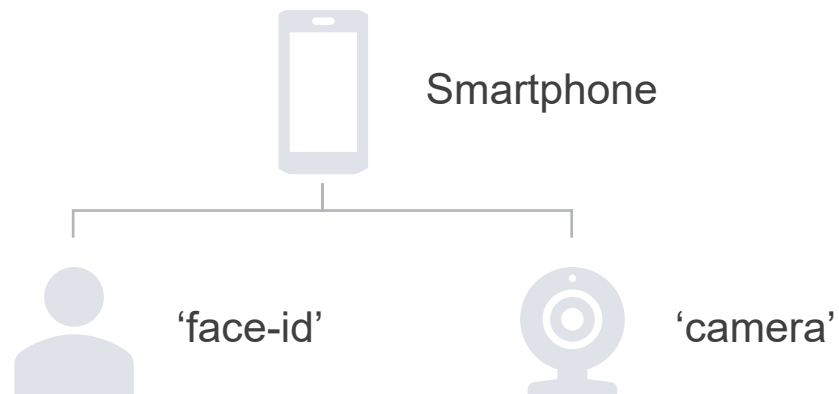
LADy's Benefits to SDG Goals

1 Optimize for sustainable resource consumption and economic growth

2 Promote tailored business opportunities for local communities

3 Improve workplace environment, attract suitable talent, and increase productivity

LADy's Challenges

Identification of New Aspects

- Falls short for aspects not seen in the training dataset

Smartphone

'face-id'   'camera'

Differentiation of Polysemous Words

- The same word may convey different semantics with opposite sentiments

"…items are great and **cheap**…"   "…not above ordinary and had **cheap** beef…"

Thank You!

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