**Boost Phrase-level Sentiment Labeling with Review-level Sentiment Classification**

1. INTRODUCTION

In general the framework is two-stage. In the first stage, the overall sentiment orientations of the product reviews are labeled using a review-level sentiment classier. In the second stage, we extract feature-opinion pairs from the corpus [5, 8], then use the overall sentiment orientations of the reviews as constraints to learn the sentiment polarities of these pairs automatically, using a novel optimization framework.

2. THE FRAMEWORK

The first stage of the framework determines the overall sentiment of each piece of review by conducting review level sentiment classification, and the second stage leverages the results for sentiment lexicon construction.

2.1 Review-Level Sentiment Classification

2.2 Sentiment Lexicon Construction

We consider four kinds of constraints to learn the sentiment lexicon X: 1) Review-level sentiment orientation, 2)

General sentiment lexicon, 3) Linguistic heuristics, and 4) Sentential sentiment consistency.

1. Review-level Sentiment Orientation
2. General Sentiment Lexicon
3. Linguistic Heuristic
4. Sentential Sentiment Consistency

2.3 The Unified Model for Polarity Labeling

3. EXPERIMENTS

3.1 User Rating Analysis

3.2 Phrase-Level Polarity Labeling

3.3 Parameter Analysis

4. CONCLUSIONS AND FUTUREWORK