Worker Reputation Information using Sentiment Analysis

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Abstract: *Sentiment analysis and opinion mining, as a special text mining task for determining the subjective attitude (i.e., sentiment) expressed by the text, is becoming a hotspot in the field of data mining and natural language processing. Sentiment classification is a basic task in sentiment analysis, with its aim to classify the sentiment (e.g., positive or negative) of a given text. The general practice in sentiment classification follows the techniques in traditional topic-based text classification, where the bag-of-words (BOW) model is typically used for text representation. Polarity shift is a kind of linguistic phenomenon which can reverse the sentiment polarity of the text.The two sentiment-opposite texts are considered to be very similar by the BOW representation. This is the main reason why standard machine learning algorithms often fail under the circumstance of polarity shift. We propose sentiment analysis algorithm with classification technique for evaluation employee performance.*

Keywords—component; formatting; style; styling; insert (key words)

I. INTRODUCTION

Data mining is an interdisciplinary subfield of computer science. It is the computational process of discovering patterns in large data sets involving methods at the intersection of artificial intelligence, machine learning, statistics, and database systems. The overall goal of the data mining process is to extract information from a data set and transform it into an understandable structure for further use. Aside from the raw analysis step, it involves database and data management aspects, data pre-processing, model and inference considerations, interestingness metrics, complexity considerations, post-processing of discovered structures, visualization, and online updating. Data mining is the analysis step of the "knowledge discovery in databases" process, or KDD.

Opinion mining is a type of natural language processing for tracking the mood of the public about a product.

Opinion mining, which is also called sentiment analysis, involves building a system to collect and categorize opinions about a product. Automated opinion mining often uses machine learning, a type of artificial intelligence (AI), to mine text for sentiment.

What other people think" has always been an important piece of information for most of us during the decision-making process. Long before awareness of the World Wide Web became widespread, many of us asked our friends to recommend an auto mechanic or to explain who they were planning to vote for in local elections, requested reference letters regarding job applicants from colleagues, or consulted Consumer Reports to decide what dishwasher to buy. But the Internet and the Web have now (among other things) made it possible to find out about the opinions and experiences of those in the vast pool of people that are neither our personal acquaintances nor well-known professional critics — that is, people we have never heard of. And conversely, more and more people are making their opinions available to strangers via the Internet. Indeed, according to two surveys of more than 2000 American adults each,

II. LITERATURE REVIEW

Crowdsourcing systems, in which numerous tasks are electronically distributed to numerous information piece-workers", have emerged as an effective paradigm for human-powered solving of large scale problems in domains such as image classification,
data entry, optical character recognition, recommendation, and proofreading. Because these low-paid workers can be unreliable, nearly all such systems must devise schemes to increase confidence in their answers, typically by assigning each task multiple times and combining the answers in an appropriate manner, e.g. majority voting.

In this paper, we consider a general model of such crowdsourcing tasks and pose the problem of minimizing the total price (i.e., number of task assignments) that must be paid to achieve a target overall reliability. We give a new algorithm for deciding which tasks to assign to which workers and for inferring correct answers from the workers' answers. We show that our algorithm, inspired by belief propagation and low-rank matrix approximation, significantly outperforms majority voting and, in fact, is optimal through comparison to an oracle that knows the reliability of every worker. Further, we compare our approach with a more general class of algorithms which can dynamically assign tasks. By adaptively deciding which questions to ask to the next arriving worker, one might hope to reduce uncertainty more efficiently. We show that, perhaps surprisingly, the minimum price necessary to achieve a target reliability scales in the same manner under both adaptive and non-adaptive scenarios. Hence, our non-adaptive approach is order-optimal under both scenarios. This strongly relies on the fact that workers are meeting and cannot be exploited. Therefore, architecturally, our results suggest that building a reliable worker-reputation system is essential to fully harnessing the potential of adaptive designs.

Crowdsourcing is evolving as a distributed problem solving and business production model in recent years. In crowdsourcing paradigm, tasks are distributed to networked people to complete such that a company's production cost can be greatly reduced. In 2003, Luis von Ahn and his colleagues pioneered the concept of "human computation", which utilizes human abilities to perform computation tasks that are difficult for computers to process. Later, the term "crowdsourcing" was coined by Jeff Howe in 2006. Since then, a lot of work in crowdsourcing has focused on different aspects of crowdsourcing, such as computational techniques and performance analysis. In this paper, we give a survey on the literature on crowdsourcing which are categorized according to their applications, algorithms, performances and datasets. This paper provides a structured view of the research on crowdsourcing to date.

Micro-task crowdsourcing is rapidly gaining popularity among research communities and businesses as a means to leverage Human Computation in their daily operations. Unlike any other service, a crowdsourcing platform is in fact a marketplace subject to human factors that affect its performance, both in terms of speed and quality. Indeed, such factors shape the dynamics of the crowdsourcing market. For example, a known behavior of such markets is that increasing the reward of a set of tasks would lead to faster results. However, it is still unclear how different dimensions interact with each other: reward, task type, market competition, requester reputation, etc. In this paper, we adopt a data-driven approach to (A) perform a long-term analysis of a popular micro-task crowd-sourcing platform and understand the evolution of its main actors (workers, requesters, tasks, and platform). (B) We leverage the main _endings of our _ve year log analysis to propose features used in a predictive model aiming at deter- mining the expected performance of any batch at a specific point in time. We show that the number of tasks left in a batch and how recent the batch is are two key features of the prediction. (C) Finally, we conduct an analysis of the demand (new tasks posted by the requesters) and supply (number of tasks completed by the workforce) and show how they affect task prices on the marketplace.

Crowdsourcing systems like Amazon's Mechanical Turk have emerged as an effective large-scale human-powered platform for performing tasks in domains such as image classification, data entry, recommendation, and proofreading. Since workers are low-paid (a few cents per task) and tasks performed are monotonous, the answers obtained are noisy and hence unreliable. To obtain reliable estimates, it is essential to utilize appropriate inference algorithms (e.g. Majority voting) coupled with structured redundancy through task assignment. Our goal is to obtain the best possible trade-o_ between reliability and redundancy.

In this paper, we consider a general probabilistic model for noisy observations for crowd-sourcing systems and pose the problem of minimizing the total price (i.e. redundancy) that must be paid to achieve a target overall reliability. Concretely, we show that it is possible to obtain an answer to each task correctly with probability 1 " as long s the redundancy per task is O (K=q) log(K=") _ , where each task can have any of the K distinct answers equally likely, q is the crowd-quality parameter that is defined through a probabilistic model. Further, electively this is the best possible redundancy-accuracy trade-o_ any system design can achieve. Such a single-parameter crisp characterization of the (order-) optimal trade-o_ between redundancy and reliability has various useful operational consequences. Further, we analyze the robustness of our approach in the presence of adversarial workers and provide a bound on their influence on the redundancy-accuracy trade-off

III. ANALYSIS AND DESIGN OF THE APPLICATION

A. EXISTING WORK

Dual sentiment analysis was use only selective data technique that chooses training reviews, so the experimental results not convincing. The experimental results show that using a selected part of training reviews for data expansion so we can't get optimal result.

Implemented on the dual training and dual prediction algorithm by taking the neutral reviews only so the positive and negative reviews considered low when compare to neutral reviews.

B. Drawbacks:

- Assumptions of attributes being independent, which may not be necessarily valid
- in case of categorical or missing value it needs pre-processed.
- Difficult interpretation of resulting model

IV. SYSTEM IMPLEMENTATION

A. Task Assignment:

We first formalize the optimal task assignment problem when workers' reputation estimates are available, as the maximization of a monotone (submodular) function subject to Matroid constraints. Then, being the optimal problem NP-hard, we propose a simple but efficient greedy heuristic task allocation algorithm. Our main findings are that: i) even largely inaccurate estimates of workers' reputation can be effectively exploited in the task assignment to greatly improve system performance; ii) the performance of the maximum a-posteriori decision rule quickly degrades as worker reputation estimates become inaccurate; this paper deals mainly with task assignment and with the quantitative assessment of the gain (in terms of increased decision reliability for a given cost) that a coarse knowledge of worker quality can offer. Indirectly, thus, we deal also with worker reputation, although we do not study mechanisms through which reputation is built upon time.

B. Worker Reputation Information:

although we will analyze the effect of errors in this classification on the decision reliability. Whenever worker reputation is not known a-priori, the above decision rule is no more optimal, since it neglects the information that answers to other tasks can provide about worker reputation.

C. Microtask-based Crowd Work Systems:

We specialize to micro-task-based crowd work systems. The key characteristic of these systems is that a requester structures his problem in a set of tasks, and then assigns tasks to workers that provide answers, which are then used to determine the correct task solution through a decision rule. A well-known example of such systems is Amazon. Some believe that micro-task-based crowd work systems will provide a significant new type of work organization paradigm, and will employ ever increasing numbers of workers in the future, provided that the main challenges in this new type of organizations are correctly solved. We also suppose that each single assignment of a task to a worker has a cost, which is independent of the worker's class. In practical micro-task-based crowd-sourcing systems, such cost represents the low wages per task the requester pays the worker, in order to obtain answers to his queries.

D. Message-passing:

It is shown that the improved decision rule can be efficiently implemented employing a message-passing technique. In an integrated estimation-allocation approach has been pursued with Bayesian inference and entropy reduction as utility function. Moreover, we introduce a message-passing decision algorithm, which is able to encompass a-priori information about workers' reputation, thus improving upon the one described. Finally, our proposed approach is tested in several scenarios, and compared to previous proposals. We have also described a simple "maximum a-posteriori" decision rule and a well-performing message-passing decision algorithm. We have tested our proposed algorithms, and compared them to different solutions, which can be obtained by extrapolating the proposals for the cases when reputation information is not available.

D. Naive Bayes Implementation:

The worker reputation, we do not study mechanisms through which reputation is built upon

time. Indeed, we consider a one-shot approach in which the requester has to assign a bunch of tasks to a pool of workers that are statically divided into classes according to their probabilities of answering correctly. We highlight that the way this division into classes is built is out of the scope of this paper,

The performance of BOW sometimes remains limited due to some fundamental deficiencies in handling the polarity shift problem. We propose a model called dual sentiment analysis (DSA), to address this problem for sentiment classification. We first propose a novel data expansion technique by creating a sentiment-reversed review for each training and test review. On this basis, we propose a dual training algorithm to make use of original and reversed training reviews in pairs for learning a sentiment

classifier, and a dual prediction algorithm to classify the test reviews by considering two sides of one review. We also extend the DSA framework from polarity (positive-negative) classification to 3-class (positive-negative-neutral) classification, by taking the neutral reviews into consideration. Finally, we develop a corpus-based method to construct a pseudo-antonym dictionary, which removes DSA's dependency on an external antonym dictionary for review reversion. We conduct a wide range of experiments including two tasks, nine datasets, two antonym dictionaries, three classification algorithms, and two types of features. The results demonstrate the effectiveness of Naïve Bayes in supervised sentiment classification.

V. SYSTEM ARCHITECTURE

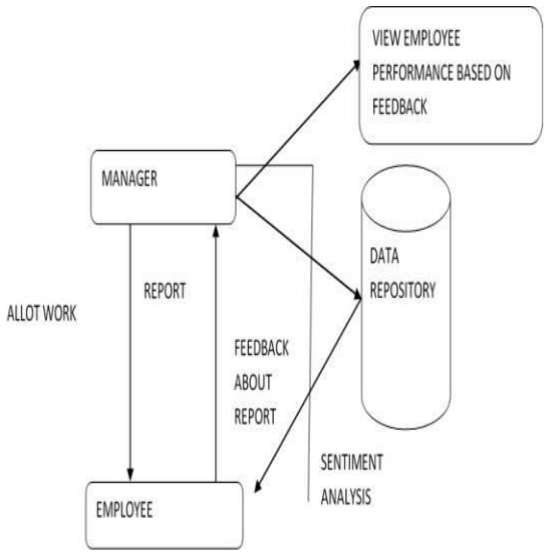


Fig:1 Architecture

DATA SET

SNO	TRAINING DATA SET		
	Table column subhead	*Subhead*	*Subhead*
1	GOOD	4	Positive
2	Excellent	5	Positive
3	Poor	0	Negative
4	Worst	-1	Negative
5	Bad	-2	Negative

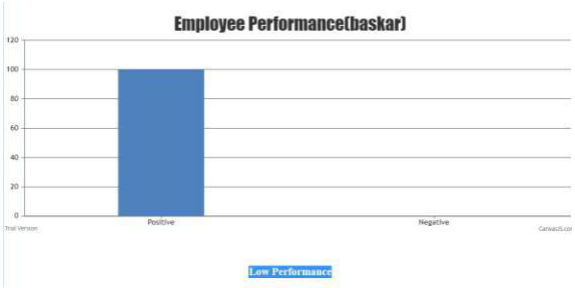
a.

Table1: Training Data Set

VI. RESULT

a. Feedback

b. Performance Chart:



VII. CONCLUSION & FUTURE ENHANCEMENT

A new method for identifying product aspects from customer re-views has been presented. First of all, the candidate product aspects are identified taking in consideration their grammatical structure. From this set, only those on which customers have expressed their opinions are selected. The pro-posed aspect altering considers the dependency relations between aspects and opinion words at three different levels of relation. Finally, the identified product aspects are ranked according to their relevance.To produce multidimensional structured summaries for a given product with all the compiled opinion information. A preliminary approach is presented in, where external knowledge sources are exploited to ensure the quality of the extracted aspects.

VIII. REFERENCES

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