Opinion Analysis Syetem for NTCIR-7

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Abstract

We present our opinion analysis system for Japanese that was used in the Opinion Analysis Pilot Task at NTCIR-7. Our Purpose is to evaluate and validate the methods, then offer new insight into this area.

Keywords: *Opinion Extraction, Polarity, NTCIR, Opinion Analysis.*

1. Introduction

Various kinds of information sources are currently accessible through the Internet. News sites are one of the most useful sources of information from among them. It is frequent that a comments/message about the matter such as the news of the case accident or major event, an event of a season, some services or products.

Recently, opinion extraction and sentiment analysis has been receiving a lot of attention not only in the field of natural language processing but also in the Internet community.

Text-mining methods or system has been developed since since a long time. For example, customers contact the call center, a huge text data and survey results, some words (a set of words) and large and small, and to analyze the amount of increase, including product development and services to help improve the system.

CGM(UGM) media for the marketing research attracted attention in recent years, web marketing tools are numerous and development. An web service that searches a word-of-mouth communication opinion written to CGM(UGM) such as the blog, and to analyze appears to offer materials of an action the judgment to the Internet user appears . [1]-[4]

It is important to extract faith, feelings , reputation or thought of affirmation or negation related to a topic from an article taking up various topics on building such service.

After the event was held, how the reaction on the Internet or written, the event can be posted on the site. Current, Inc[6] and buzzmarkting, Inc start the service in succession last year . Gala[5] Inc and nifty Inc has provided the online service's to analyze reputation.

At the time, such as online bulletin boards do not have written a bad reputation whether it was monitoring. It writes Blogging has been a surge in public opinion now of trends can be used to grasp a lot.

It is nessesary to realize evaluation and demand, collection analyzing an opinion such as the impression or a document classification efficiently.

In this paper, we would consider directionality for further precision improvement through evaluation and analysis about opinion judgment techniques

2. Task analysis

2.1. Data Set

In this study, we used a Japanese collection distributed in the opinion analysis pilot task at NTCIR-7.

For the MOAT (Multilingual Opinion Analysis Task) task we have decided to use a Newspaper corpus and new topics for the NTCIR-7 evaluation. The data is drawn from a corpus covering news from 1998 to 2001 from a variety of sources in Japanese, English, and Chinese.

A. Corpus size at Japanese side in the NTCIR-7 MOAT formal run at Japanese side, Test documents relevant to 18 topics are privided. The corpus size of this data is as follows:

- 249 doucments
- 5885 sentences
- 6221 segmented clauses for opinion unit candidate

2.2. Task Features

A brief summary of the task description follows here.

- Opinionated (YES or NO) (Required)

A sentence is opinionated if it contains one or more opinion clauses

- Relevant (YES or NO or NA) (Optional)

A sentence is relevant if it is opinionated and an opinion that is pertinent to the topic is expressed. If the sentence is not opinionated, the relevance for the sentence will not be assessed, and is NA (Not Applicable.) If the sentence is opinionated but none of the opinion clauses are about the topic, the sentence is not relevant (NO).

- Polarity (NEG or NEU or POS) (Optional)

The polarity of the expressed opinion with regards to the topic. Values are either NEGATIVE, NEUTRAL, or POSITIVE.

- Opinion Holder (Optional)

The entity that expressed the opinion. This is a string value which generally will refer to a string that is written in the document. The entity may not appear in the given

opinion clause, but the annotation will relate anaphoric expressions to their target.

- Opinion Target (Optional)

The concept, entity, or object about which the opinion is expressed. This is a string value which generally will refer to a string that is written in the document. The entity may not appear in the given clause, but the annotation will relate anaphoric expressions to their target.

We participated in the Japanese opinion analysis subtask (Opinionated and Polarity).

3. Methods

In this section, we describe our methods to detect opinion sentences and judge the polarity .

By the opinion analysis technique,

judge the subjective information that are not objective such as praise or criticism

in a certain sentence whether there it is a non-opinion or opinion sentence.

In addition, there are expectation and the subjective opinion as the prospect with goodwill or criticism independently.

An opinionative judgment is processed based on such a signpost expressions.

The Opinionative signpost expressions are made from the opinion sentence that picked up as important characteristic identity to judge an opinion sentence definitely.

We have challenged how much performance appears only by extremely few expressions and a cheap method in this time.

These are opinionative signpost expression,

- Positive Set: $|POS| = 19$
- Neutral Set: $|NEU| = 21$
- Negative Set: $|NEG| - 35$

OSE (Opinionative signpost expressions) is a set of positive, negative and neutral expression.

$$OSE = (POS \cup NEU \cup NEG)$$

$S_{i,j} \equiv$ The substring begins at the specified i and extends to the character at index j

For example, $S_{0,5}$={chara} , $S_{1,7}$={haracte}, if S = {character},

Sub(S) is a set of all of substrings of S

Sub(S) is a set of all of substrings of S. Sub(S) ={ {c},{h},{a},{r},{t},{e} , {ch},{ha}….} in above instance.

$SCORE(S)$ means

$$Sub(S) \equiv \{ S_{i,j} \mid 0 \leq i < j \leq |S| \}$$

$$SCORE_O(S) \equiv |OSE \cap Sub(S)|$$

$$SCORE_P(S) \equiv |POS \cap Sub(S)|$$

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$$SCORE_N(S) \equiv |POS \cap Sub(S)|$$

If($threshold_o <$ $SCORE_O(S)$)

Then S is opinion

If($threshold_p <$ $SCORE_p(S)$)

Then S is positive

If($threshold_n <$ $SCORE_N(S)$)

Then S is negative

That S is opinion when S is positive or negative is obtained from the definition .Of cource, S is opinion if $threshold_p < SCORE_p(S)$ and $threshold_o < SCORE_O(S)$. Formula is speaking for itself.

However, whether S is negative or positive if $threshold_n < SCORE_N(S)$) and $threshold_p < SCORE_p(S)$. Relatively-major one is adopted in this case.

If($SCORE_p(S) < SCORE_N(S)$)

Then S is negative

If($SCORE_N(S) < SCORE_p(S)$)

Then S is positive

As is always the case with any rules, there is an exception. It is neither povitive nor negative , if both sides are too many.

If($threshold_t <$ $SCORE_O(S)$)

Then S is only neutral.

parameters are followings,. in this time(NTCIR7).

- $threshold_p$=1
- $threshold_n$=1
- $threshold_o$=1
- $threshold_t$=3

Notice, signpost expressions are only signposts, not a word , term or phrases, therefore,

POS={ "人気" (popular) , "強気" (strong) , "成功" (success) , "回復" (restitution) , "歓迎" (acclaim) , "着実" (steady) , "安定" (stability) … }

NEG={ "疑惑" (discredit) , "反発" (backlash) , "危機感" (crisis feeling) , "危険性" (dangerousness) , "問

題視" (suspicion) , "悪化" (degeneration) … }
Above instances are able to translate because of single word. However, there are unusual signposts.

POS={ "べきだ" , "見込ま" , "すべき" , "気掛か" ,…}
NEG={ "かねない" , "避けら" , "かけ離れ", "見込ま" , "かかわらず"…}

Those signposts are picked from news paper articles.

4. Evaluation

	Lenient		
	Precision	Recall	F
Opinionated	0.5191	0.2798	0.3636
Polarity	0.4638	0.1138	0.1828

table 1:opinionated/polarity analysis results Lenient

	Strict		
	Precision	Recall	F
Opinionated	0.4166	0.3083	0.3544
Polarity	0.5172	0.1316	0.2098

table 2: opinionated/polarity analysis results Strict

5. Conclusion

There are a certain effects by the cheap , heuristics and ad hoc technique with such simplicity.

We had planned ensemble learning with such an weak learner so that a better result was given than a random judged. We was not able to perform the quantity of the experiment enough because of the shortness of time.

References

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