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Empirically Implementation Adaboost to Solve Ambiguity

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ABSTRACT

Word sense disambiguation is process of identifying correct meaning based on algorithm used. Many more research is carried out in this domain popular dataset referred is wordnet. This paper discuss about word sense disambiguation using adaboost algorithm. In this work wordnet data and senseval standards are used resolve meaning of word with the help of given context.

Key words: WSD, Supervised learning approaches, Senseval-3, WSD, WordNet.

INTRODUCTION

One of natural language processing applications is word sense disambiguation. There are two main ways to identify meaning of word correctly:

Supervised Approach

Where along with the algorithm context is used to train system to identify word correctly. Adaboost, is theoretical approach for learning model called probably Approximately correct (PAC). Adaptive Boosting constructs a strong classifier by taking a linear combination of a number of weak classifier. This approach is known as adaptive boosting, because classifier technique helps to classify those words which were not classified correctly.

Unsupervised Approach

In these approaches acquire information from unannotated raw text. Always the performance of unsupervised approaches is been lower than that of the other approaches used for word sense disambiguation

Problem Definition

To identify meaning of word correctly using adaptive boosting approach to improve overall classification. In this case algorithms are used to report their classification and then overall accuracy of classification is improved.

Excremental Setup

To address the problem statement discussed so far experiment is preformed and set up for that is as below.

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- 1. Data set: 10 nouns, 5 verbs.
- 2. Reference for meaning and POS: WordNet ver. 2.1.
- 3. Algorithm: Adaboost.
- 4. Dictionary file: To specify meaning.
- 5. Training: To train system with given context.
- 6. Senseval format: Representation in the form of XML.
- 7. IDE: Eclipse kepler 6.0.
- 8. P.L.: J2SE 6.0.
- 9. O.S.: Windows 7 32 bit.

Implementation and algorithm used

Adaptive boosting approach identifies week learner (classifier) and boosts performance of these classifiers. The actual process carried out is as mentioned below.

Box (1): Adaboost Algorithm implemented

For x =1; x< m; x++) { Fetch weight áx from classifier cx

$$H(x) = sign \sum_{i=1}^{y} a_i x(x(X$$

}

Where H(x) sign is function for linear combine of weak learner to boost the performance.

To make learning process easier members of training data are weighted equally. Adaboost Algorithm treats it as an input. For X components, it is iterated y times one turn is allotted for each classifier.

The training phase

Data set of 10 nouns and 5 verbs is used. To make understanding of senses, system is trained by referring senseval-3 structure to map word with sense by using surrounding context. This entire structure uses XML format to represent and process data using semi structured approach.

🖓 WordNet218 Rowser 🗰 🙀 👘 👘 👘
File History Options Help
Search Word Name
Searchestor Name Noun Veb Senses
The noun name has 6 senses (first 6 from tagged texts)
 (698) name (a language unit by which a person or thing is known; "his name really is George Washington"; "those are two names for the same thing") (24) name (by the sanction or authority of; "halt in the name of the law") (26) name (a person's reputation; "he wanted to protect his good name") (15) name, figure, public figure (a well-known or notable person; "they studied all the great names in the history of France"; "she is an important figure in modern music") (20) name, enc. (family based on make descent; "he had no sons and there was no one to carry on his name") (20) name, epithet (a defamatory or abusive word or phrase)
The verb name has 9 senses (first 6 from tagged texts)
 (3) name, call (assign a specified (usually proper) proper name to; "They named their son David"; "The new school was named after the famous Civil Rights leader") (6) name, identify (give the name or identifying characteristics of, refer to by name or some other identifying characteristic property, "Many senators were named in connection with the scandal"; "The almanac identifies the asspicious months") (3) name, nominate, nake (charge with a function; charge to be; "She was named Head of the Committee"; "She was made president of the club") (4) appoint, name, nominate, constitute (create and charge with a task or function; "nominate a committee") (4) appoint, name (mention and identify by name; "name your accomplices!") (4) appoint, name (mention and identify by name; "name your accomplices!") (5) usane, nominate, constitute (create and charge with a task or function; "nominate a committee") (4) appoint, name (mention and identify by name; "name your accomplices!") (5) usane, nominate, constitute (create and charge with a task or function; "nominate a committee") (4) appoint, name (cover, key, key out, kisfinguish, describe, name (dentify as in botany or biology, for example) 7. mention, advert, bring up, cite, name, tefer (make reference to; "His name was mentioned in connection with the invention") 8. ist, name (give or make a list of name individually; give the names of, "List the states west of the Mississept") 9. diagnose, name (determine or distinguish the nature of a problem or an illness through a dagnostic analysis)
Overview of Name
🥐 🤶 🖸 🎬 🧟 Stype 🔤 Microsoft Word 🖉 WordNet 21 Bro 💷 🖬 🖉 🖉 🦉 🕷 🖉 🖗 👘 🖻 all (9)

Fig. 1: The Screenshot Shows the Multiple of Name Word

The system answer File

This file provide accuracy related with various senses and meaning with high accuracy is identified and considered as a final answer by refering context. The screenshot below shows the System Answer. Txt file for Adaboost algorithm implemented

RESULT

The results for our dataset shown in table (1) below:

CONCLUSION

After performing this experiment for some words adaboost delivers more accurate results, for example {Day, Recompense, Owner, Lord, Worlds, Name, and Praise}. But for other words accuracy is not maintained this accuracy need to be modified to increase the probability of identifying word with correct meaning. In this part of our work Adaboost achieved 65.27% accuracy according to the data set using WordNet andSenseval-3.

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Table 1: Data Set of Words and Results of Adaboost Classifier

Word	POS	# Senses	Score	Accuracy
Praise	n	2	812	1000
Name	n	6	1000	1000
Worship	v	3	450	485
Worlds	n	8	143	1000
Lord	n	3	500	1000
Owner	n	2	811	1000
Recompense	n	2	815	1000
Trust	v	6	167	167
Guide	v	5	371	431
Straight	n	3	500	500
Path	n	4	333	333
anger	n	3	500	500
Day	n	10	111	1000
Favored	v	4	250	250
Help	v	8	125	125

Overall accuracy of adaboost is 65.27%, which is quite good.



Fig. 2: The Screenshot Shows Taraining and Compilation Model

```
lord.n lord.n.bnc.00001189 lord%1:07:00::/500 lord%1:05:00::/500
lord.n lord.n.bnc.00001190 lord%1:07:00::/500 lord%1:05:00::/500
lord.n lord.n.bnc.00001191 lord%1:09:00::/1000
praise.n praise.n.bnc.00001235 lord%1:07:00::/812 praise%
1:06:00::/188
praise.n praise.n.bnc.00005679 lord%1:07:00::/1000
owner.n owner.n.bnc.00001235 owner%1:07:00::/811 owner%
1:06:00::/189
owner.n owner.n.bnc.00005679 owner%1:07:00::/1000
recompense.n recompense.n.bnc.00001239 recompense%1:06:00::/815
recompense%1:07:00::/185
recompense.n recompense.n.bnc.00005683 recompense%1:06:00::/1000
straight.n straight.n.bnc.000011891 straight%1:09:00::/500
straight%1:08:00::/500
straight.n straight.n.bnc.000011901 straight%1:09:00::/500
straight%1:08:00::/500
straight.n straight.n.bnc.000011911 straight%1:09:00::/500
straight%1:08:00::/500
straight.n straight.n.bnc.000011921 straight%1:09:00::/500
straight%1:08:00::/500
straight.n straight.n.bnc.000011931 straight%1:09:00::/500
straight%1:08:00::/500
straight n straight n hng 000011941 straight%1.09.00../500
```

Fig. 3: The Screenshot Shows The System Answer.Txt File Compilation Model

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