

Crosslingual Opinion Extraction from Author and Authority Viewpoints at NTCIR-6

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Abstract

Opinion research has been paid much attention by the Information Retrieval community, and opinion holder extraction research is important for discriminating between opinions that are viewed from different perspectives. In this paper, we describe our experience of participation in the NTCIR-6 Opinion Analysis Pilot Task by focusing on opinion extraction results in Japanese and English. Our approach to opinion holder extraction was based on the discrimination between author and authority viewpoints in opinionated sentences, and the evaluation results were fair with respect to the Japanese documents.

Keywords: *Opinion Extraction, Opinion Holder, Relevance, Polarity, NTCIR.*

1 Introduction

Recently, opinion research has been paid much attention by the Information Retrieval community. Opinion research is divided into two categories, namely opinion extraction and opinion-based applications. Opinion extraction research is further divided into three subcategories. The first subcategory is opinion detection, involving opinionated document detection, opinionated sentence classification, and opinionated phrase extraction [17]. The second subcategory is polarity detection, involving positive or negative document classification and positive, neutral, or negative sentence/phrase detection [18]. The third subcategory is opinion holder extraction [1, 3, 4, 12, 13]. Opinion holder extraction research is important for discriminating between opinions that are viewed from different perspectives.

The first Opinion Analysis Pilot Task was conducted at the NTCIR-6 workshop in 2006–2007¹. This was an evaluation workshop to compare techniques for opinion extraction in three languages:

Japanese, Chinese, and English. In this paper, we describe our experience of participation by focusing on the opinion extraction results in Japanese and English.

This paper is organized as follows. In Section 2, we provide an overview of the NTCIR-6 Opinion Analysis Pilot Task. Section 3 describes our approach to Japanese and English opinion extraction. Section 4 presents the evaluation results. Section 5 gives the post submission analysis for opinion holder types. Section 6 discusses related work and, finally, we present our conclusions.

2 NTCIR-6 Opinion Analysis Pilot Task

2.1 Task overview

The opinion extraction subtask was conducted in 2006–2007, in the *NTCIR-6 Opinion Analysis Pilot Task*. The opinion extraction subtask was conducted in Japanese, Chinese, and English. For opinion extraction, the participants submitted two mandatory results, namely opinionated sentence and opinion holder extraction, and two optional results, namely relevant sentence judgment and polarity classification. Five, three, and six teams (14 teams in total) submitted 21 sets of results. The test collections for Japanese, Chinese, and English contained 15,279, 11,907, and 8,379 sentences, respectively, in 490, 843, and 439 documents for 30, 32, and 28 shared topics.

2.2 Annotation overview

The *NTCIR-6 Opinion Analysis Pilot Task* extended previous work on opinion analysis [9, 15, 5]. Table 1 summarizes the annotation categories that were performed for the three languages. All categories were annotated using three annotators in each language. For Japanese side only, one sample topic was used for the intercoder session to improve the agreement between assessors. The time taken for this session was six hours.

¹ <http://research.nii.ac.jp/ntcir/ntcir-ws6/opinion/index-en.html>

Table 1. The Four Annotation Categories

Categories	Value	Req'd?
Opinionated Sentences	YES, NO	Yes
Opinion Holders	String (multiple)	Yes
Relevant Sentences	YES, NO	No
Opinionated Polarities	POS., NEG., NEUT.	No

We also discriminated between opinion holder types by annotating them with subsidiary information according to [15] as follows.

1. A person, nation, or organization expressing private states explicitly:
 - “The **U.S.** fears a spill-over,” said Xirao-Nima.
2. An agent of speaking/writing events:
 - “The report is full of absurdities,” **Xirao-Nima** said.
3. An agent expressing expressive subjective elements:
 - “The time has come, gentlemen, for Sharon, the assassin, to realize that injustice cannot last long.” (Opinion holder: **author**)
4. Other opinion holder types not included in 1–3.

For opinionated information annotation, we decided to annotate the following sentences as “not opinionated” from the intercoder session results.

- Indirect hearsay evidence or opinions held by the general public were regarded as general facts.
- Public announcements from the government/nation or declarative pronouncements from an organization were regarded as plans.

For polarity annotation in sentence units, the polarity in the main clause preceded the polarity in the subordinate clause.

2.3 Evaluation methodology

The evaluation was based on the precision, recall, and F-measure values obtained: the number of correct opinionated sentences, the correct opinion holder, the correct relevant sentence, and the correct polarity. The correctness was specified using two standards. The *lenient* standard was based on agreement between two out of three assessors. The *strict* standard was based on agreement between three out of three assessors. The population parameters for the precision and recall

values were computed from the total number of sentences assessed. We applied a sentence-based evaluation to evaluate the opinion holders. If multiple opinion holders existed in one sentence, and the system detected one of them, then we regarded the system’s extraction as valid.

In addition, we applied a five-grade evaluation of the agreement between the system’s and the assessor’s detection as follows.

1. Agreed semantically and strings were matched almost completely.
2. Agreed semantically and strings were matched partially, but a proper name was not detected.
3. Agreed semantically, but strings were not matched.
4. Agreed partially in some respect, but a proper entity could not be specified.
5. Not agreed.

We counted the results using the grades 1–3 for valid extractions, and computed the precision, recall, and F-measure values.

3 Opinion Extraction from Author and Authority Viewpoints

3.1 Opinionated sentence classification from author and authority viewpoints

An automatic opinionated sentence classification from author and authority viewpoints was implemented in terms of two types of opinionated sentence estimation using a SVM². The effective feature set for opinionated sentence classification was as follows.

- 155 (author) / 569 (authority) **syntactic pairs** of grammatical subjects and predicates were used in Japanese.
 - Subjects were categorized using named entities, semantic primitives, or key terms such as pronouns.
 - Predicates were categorized using semantic primitives from a thesaurus Bunrui-Goi-Hyou [8].
- 565 (author) / 376 (authority) **syntactic pairs** following five syntactic patterns such as nouns and adjectives/verbs were used in English.
 - Terms were categorized using named entities, semantic hypernyms from a thesaurus WordNet [7], key terms such as pronouns, and polarity term types.

² SVM^{light} from <http://svmlight.joachims.org/>.

- Polarity term types were determined using adjective entries [2] and the General Inquirer [11] in English.

Syntactic dependency was checked using Cabocha [14] in Japanese and Minipar [6] in English. Table 2 lists the clue pair examples used in our system. They were defined from the analysis on the sample data and *MPQA corpus* [16].

In addition, we utilized the following features for opinionated sentence classification in Japanese.

1. The number of sentences in the document.
2. Sentence-based statistical features: (a) sentence position in document, and (b) sentence length.
3. Sentence-based term frequency features: (c) the number of heading words in the sentence; (d) the number of words with high TF/IDF values in the sentence; (e) voice, tense, and modality information as judged by auxiliary verbs; (f) seven types of named entity frequencies³; and (g) quote symbol frequencies.
4. Approximately 20 types of semantic primitives for predicates extracted using the thesaurus Bunrui-Goi-Hyou [8] for Japanese or WordNet [7] for English.
5. Frequencies of approximately 40 types of keywords for author and authority opinion types.

We also utilized the following frequency features for opinionated sentence classification in English.

1. Polarity plus type adjectives in a sentence.
2. Polarity minus type adjectives in a sentence.
3. Gradability plus type adjectives in a sentence.
4. Gradability minus type adjectives in a sentence.
5. Dynamic adjectives in a sentence.
6. Strong positive words in a sentence.
7. Strong negative words in a sentence.
8. Weak positive words in a sentence.
9. Weak negative words in a sentence.

For features 1–5, we used adjective entries collected by Hatzivassiloglou et al. [2], which contained 1,914 word entries. For features 6–9, we used the General Inquirer [11], which contained 1,168 word entries.

As training data for author and authority viewpoints, we utilized the annotation information for

³ Named entity elements were extracted using NExT (<<http://www.ai.info.mie-u.ac.jp/~next/next.html>>) and OAK (<<http://nlp.cs.nyu.edu/oak/>>).

opinion holder types in Japanese. If opinionated sentences contain a type 3 opinion holder (an agent expressing expressive subjective elements), we regard them as having the opinion-from-author viewpoint. If they contain another opinion holder type, namely type 1 (a person, nation, or organization expressing private states explicitly) or type 2 (an agent of speaking/writing events), we regard them as having the opinion-from-authority viewpoint.

For English training data, we utilized the *MPQA corpus* [16]. An opinionated sentence was defined in terms of the strength, e (extreme), h (high), and m (middle), as follows.

- The sentence contains a “GATE_direct-subjective” annotation WITH attribute intensity NOT IN [‘low’, ‘neutral’] AND NOT WITH attribute insubstantial.
- The sentence contains a “GATE_expressive-subjectivity” annotation WITH attribute intensity NOT IN [‘low’].

For author and authority viewpoints, we discriminated opinionated sentence types using “nested source” attributes. If the value was “w” (writer), we regard those sentences as having the opinion-from-author viewpoint. Otherwise, we regard them as having the opinion-from-authority viewpoint.

3.2 Opinion holder extraction based on opinionated sentence types

The opinion holder was extracted by using a named entity extraction approach. That is, the author’s holder and other authority holder was discriminated by using the opinionated sentence types of Section 3.1. In Japanese cases, the author’s name was discriminated and extracted from the signature. To determine authority holder elements, we set four grades for priority rules using three named entity elements as follows:

1. Bracketed elements of person, organization, and location (prioritized in this order and also was in 2, 3, and 4) in the sentence.
2. Grammatical subject elements of person, organization, and location in the sentence.
3. Grammatical subject elements of person, organization, and location in the previous sentences.
4. Person, organization, and location elements in the sentence other than (1) or (2).

3.3 Relevant sentence judgment

Our relevant sentence judgment was based on the cosine similarity approach using tf.idf term weights. The target parts of speech are: self-sufficient noun,

Table 2. Syntactic Pair Clue Examples Used in Our System

Language	Author Clues		Authority Clues	
Japanese	LOCATION	生	LOCATION	生
	LOCATION	研究・試験・調査・検査など	DATE	生
	DATE	生	DATE	宣告・宣言・発表
	LOCATION	行為・活動	LOCATION	応接・送迎
	LOCATION	応接・送迎	ORGANIZATION	研究・試験・調査・検査など
	専門的・技術的職業	応接・送迎	専門的・技術的職業	応接・送迎
	経済・収支	詳細・正確・不思議	LOCATION	賛否
	LOCATION	宣告・宣言・発表	DATE	行為・活動
	PERSON	練り・塗り・撃ち・録音・撮影	LOCATION	練り・塗り・撃ち・録音・撮影
	求める	裁判	ORGANIZATION	会議・論議
English	to	IPS	to	IPS
	GRAM	IPS	GRAM	IPS
	to	INS	to	INS
	he	express	he	express
	POLP	IPS	GRAM	INS
	POLP	INS	POLP	INS
	INS	INS	IPS	IPS
	GPE	INS	POLP	INS
	engineering	IPS	to	act
	GRAM	country	engineering	INS

verb, adjective, and adverbs. The IDF value was based on the local document frequency, and the number of documents was computed from the documents in the test collection. Topic description was extracted from the <TITLE>, <DESC>, <BACK>, <REL>, and <CONC> parts. Terms were stemmed using Chasen⁴ and OAK[10].

3.4 Polarity classification

Our polarity classification was based on a multi-class classification combining three biclass SVM classifiers: positive/nonpositive, negative/nonnegative, and neutral/nonneutral.

- If the output value of the positive classifier is greater than the output values of the negative and neutral classifiers, the polarity was “positive”.
- If the output value of the negative classifier is greater than the output values of the positive and neutral classifiers, the polarity was “negative”.
- Otherwise, the polarity was “neutral”.

With English, we used the same strategy for TUT-1. For TUT-2, we took a different approach as follows. In the following, *positive/negative* means the output value’s plus/minus characteristics.

- If the output value of the positive classifier is *positive* and the output value of the negative classifier is *negative*, the polarity was “positive”.
- If the output value of the positive classifier is *negative* and the output value of the negative classifier is *positive*, the polarity was “negative”.

- If the output values of the positive and negative classifier are both *positive*, we used the same rule as for TUT-1.
- If the output values of the positive and negative classifiers are both *negative*,
 - if the output value of the neutral classifier is *positive*, the polarity was “neutral”.
 - if the output value of the positive classifier is greater than the output value of the negative classifier, the polarity was “positive”.
 - otherwise, the polarity was “negative”.

For features in polarity classifiers, we used similar features to those for opinionated sentence classification.

4 Evaluation Results

Table 3 and Table 4 list the evaluation results for a Japanese and English opinion & holder analysis based on *lenient* (L) and *strict* (S) standards. Table 5 and Table 6 list the evaluation results of a Japanese and English relevance & polarity analysis based on these two standards. Our group is represented as “TUT”. The results of opinionated sentence and opinion holder extraction were fair for Japanese, but not as good for English. The results for relevant sentence judgment were in the first rank for Japanese and English. The polarity classification was fair for Japanese and not too bad for English.

5 Post Submission Discussion

We also conducted post submission analysis for opinion holder extraction to investigate the effectiveness of our approach.

⁴ <http://chasen.org/>

Table 3. Japanese Opinion & Holder Analysis Results

Group	L/S	Opinionated			Holder		
		P	R	F	P	R	F
EHBN-1	L	0.531	0.453	0.489	0.138	0.085	0.105
	S	0.414	0.479	0.444	0.079	0.094	0.086
EHBN-2	L	0.531	0.453	0.489	0.314	0.097	0.149
	S	0.414	0.479	0.444	0.183	0.110	0.137
NICT-1,2	L	0.671	0.315	0.429	0.238	0.102	0.143
	S	0.546	0.348	0.425	0.133	0.110	0.120
TUT	L	0.552	0.609	0.579	0.226	0.224	0.225
	S	0.414	0.620	0.497	0.131	0.251	0.172

Table 4. English Opinion & Holder Analysis Results

Group	L/S	Opinionated			Holder		
		P	R	F	P	R	F
IIT-1	L	0.325	0.588	0.419	0.198	0.409	0.266
	S	0.070	0.578	0.125	0.054	0.461	0.097
TUT-1	L	0.310	0.575	0.403	0.117	0.218	0.153
	S	0.065	0.553	0.117	0.029	0.241	0.051
Cornell†	L	0.317	0.651	0.427	0.163	0.346	0.222
	S	0.069	0.662	0.125	0.041	0.392	0.074
NII	L	0.325	0.624	0.427	0.066	0.166	0.094
	S	0.073	0.642	0.131	0.018	0.169	0.032
GATE-1	L	0.324	0.905	0.477	0.121	0.349	0.180
	S	0.070	0.940	0.130	0.029	0.398	0.055
ICU-KR	L	0.396	0.524	0.451	0.303	0.404	0.346
	S	0.102	0.616	0.175	0.085	0.515	0.146

†Two weeks after the deadline, as noted by the dagger in the tables, but before the distribution of any results

Table 5. Japanese Relevance & Polarity Analysis Results

Group	L/S	Relevance			Polarity		
		P	R	F	P	R	F
NICT-1	L	0.598	0.669	0.632	0.299	0.149	0.199
	S	0.470	0.693	0.560	0.168	0.150	0.158
NICT-2	L	0.644	0.417	0.506	0.299	0.149	0.199
	S	0.525	0.446	0.482	0.168	0.150	0.158
TUT	L	0.630	0.646	0.638	0.274	0.322	0.296
	S	0.505	0.681	0.580	0.161	0.339	0.218

Table 6. English Relevance & Polarity Analysis Results

Group	L/S	Relevance			Polarity		
		P	R	F	P	R	F
IIT-1	L	—	—	—	0.120	0.287	0.169
	S	—	—	—	0.027	0.322	0.049
IIT-2	L	—	—	—	0.086	0.376	0.140
	S	—	—	—	0.016	0.359	0.031
TUT-1	L	0.392	0.597	0.473	0.088	0.215	0.125
	S	0.171	0.605	0.266	0.016	0.195	0.029
TUT-2	L	0.392	0.597	0.473	0.094	0.230	0.134
	S	0.171	0.605	0.266	0.019	0.229	0.034
Cornell†	L	—	—	—	0.073	0.197	0.107
	S	—	—	—	0.010	0.135	0.018
NII	L	0.510	0.322	0.395	0.077	0.194	0.110
	S	0.242	0.355	0.287	0.014	0.185	0.027
GATE-1,2	L	0.286	0.632	0.393	—	—	—
	S	0.112	0.579	0.188	—	—	—
ICU-KR	L	0.409	0.263	0.320	0.151	0.264	0.192
	S	0.177	0.266	0.213	0.034	0.301	0.061

5.1 Investigation by Opinion Holder Types

We checked our results by holder types, as shown in Tables 7 and 8.

- Holder types were defined from the discussion in Section 2.2.
- For Japanese lenient/strict results, we categorized holder types based on the lenient/strict agreements for holder annotation. For English lenient/strict results, we categorized holder types based on the lenient/strict agreements for holder type annotation because holder annotation in English did not agree as in Japanese from the lack of intercoder session.
- The summation of the number of sentences by holder types was less than the number of opinionated sentences leniently or strictly agreed, partly because opinionated sentence annotation agreements were slightly differ from holder annotation agreements.
- Author & authority items referred to the number of sentences estimated from our system. Match row in these fields was counted in the following cases.
 - When an estimated author opinion sentence was matched with the opinionated sentence with holder type 3 because we implemented Japanese opinion extraction system following this strategy.
 - When an estimated authority opinion sentence was matched with the opinionated sentence with holder type 1 or type 2.
- We modified the English gold standard errors, so the results are slightly changed from Table 3.

Table 7. Japanese Opinionated Sentence Classification Results by Holder Types

L/S		Answer	System	Match	Recall	Precision
L	Total	2974	—	1812	0.609	—
	Type1	219	—	115	0.525	—
	Type2	1283	—	824	0.642	—
	Type3	1250	—	738	0.590	—
	Total	—	3281	1812	—	0.552
	Author	—	890	379	—	0.426
	Authority	—	2391	1047	—	0.438
S	Total	2191	—	1359	0.620	—
	Type1	139	—	72	0.518	—
	Type2	425	—	293	0.689	—
	Type3	804	—	472	0.587	—
	Total	—	3281	1359	—	0.414
	Author	—	890	212	—	0.238
	Authority	—	2391	490	—	0.205

From these tables, we found the insights as follows:

Table 8. English Opinionated Sentence Classification Results by Holder Types

L/S		Answer	System	Match	Recall	Precision
L	Total	1969	-	1124	0.571	-
	Type1	1109	-	662	0.597	-
	Type2	19	-	9	0.474	-
	Type3	209	-	113	0.541	-
	Total	-	3610	1124	-	0.311
	Author (Type 3)	-	1642	60	-	0.037
	Author (Type 1) Authority	-	1642	266	-	0.162
S	Total	429	-	238	0.555	-
	Type1	152	-	93	0.612	-
	Type2	2	-	0	0.000	-
	Type3	10	-	5	0.500	-
	Total	-	3610	238	-	0.066
	Author (Type 3)	-	1642	5	-	0.003
	Author (Type 1) Authority	-	1642	36	-	0.022
		1968	641	-	0.326	

- In Japanese, the number of opinionated sentences with holder type 1 was comparatively fewer than the number of them with holder types 2 & 3. In English, the number of opinionated sentences with holder type 2 & 3 was considerably fewer than the number of them with holder types 1.
- In Japanese, the estimation has a tendency from easy to difficulty with holder type 2 > holder type 3 > holder type 1. In English, the estimation has a tendency from easy to difficulty with holder type 1 > holder type 3 > holder type 2.
- In Japanese, although author & authority opinionated sentence estimation was still not matched straightforwardly from the estimation of holder types, they attained more than about 0.4 precision based on lenient standards.
- In English, author opinionated sentence estimated from *MPQA corpus* (because of lack of training data in English side of NTCIR-6 opinion corpus) was not matched with holder type 3. Author rather often appeared as holder type 1. This is partly from referring style difference for authors between Japanese and English.

5.2 Investigation by Topics

We conduct the analysis by topics both in English and Japanese, as shown in Table 9.

We draw the cultural insights as follows:

- Topic 007 (Ichiro) performed better in Japanese, but poor in English.
- Topic 009 (F-8 aircraft collision) performed better in English, but not so good in Japanese.

- Topic 010 (history textbook in World War II) and 031 (college admission policy) performed better in English, average in Japanese.
- Topic 014 (IMF, Asian countries) performed better in Japanese, average in English.

6 Related Work

Much work [1, 3, 4, 12, 13] on opinion holder extraction⁵ has been conducted recently. Choi et al. [1] proposed opinion holder extraction utilizing CRFs with features from part of speech information such as nouns (for opinion holders) and from syntactic dependency information on the semantic classes (for opinionated phrases). They evaluated their approach and attained 0.6 F-values, but did not solve the problem of multiple opinion holders in one sentence. Kim et al. [4] focused on this problem and discriminated opinions within one sentence. They also proposed an opinion holder and topic detection method using a maximum entropy model [4] and FrameNet [3].

To implement opinion-oriented summarization, Stoyanov et al. [12, 13] proposed a coreference resolution approach for opinion holders. They also proposed a partially supervised clustering approach to solve the training data problem for coreference resolution annotation in the opinion corpus.

However, these researches did not focus on the discrimination between author and authority viewpoints.

7 Conclusions

We have proposed an opinion and holder extraction system from author and authority viewpoints in both Japanese and English. We participated in the *NTCIR-6 Opinion Analysis Pilot Task* and evaluated the effectiveness of our system. The results show that our system performed fairly well with respect to Japanese documents, but we found that improvements could be made with respect to English documents by conducting post submission analysis.

Acknowledgments

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References

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⁵ The alternative term “opinion source extraction” was used in research using *MPQA corpus* [16].

Table 9. Japanese & English Opinionated Sentence Classification Results by Topics

Topic	Japanese						English					
	Lenient			Strict			Lenient			Strict		
	P	R	F	P	R	F	P	R	F	P	R	F
001	-						0.413	0.619	0.495	0.064	0.333	0.107
002	-						0.294	0.553	0.384	0.035	1.000	0.068
003	-						0.321	0.580	0.413	0.104	0.587	0.177
004	0.406	0.684	0.510	0.219	0.636	0.326	0.429	0.840	0.568	0.020	1.000	0.040
005	0.537	0.557	0.547	0.402	0.544	0.462	0.310	0.647	0.419	0.102	0.697	0.178
006	0.429	0.667	0.522	0.286	0.800	0.421	0.313	0.667	0.426	0.063	0.571	0.113
007	0.713	0.681	0.697	0.685	0.698	0.692	0.196	0.456	0.274	0.045	0.429	0.082
008	0.739	0.523	0.613	0.565	0.565	0.565	0.111	0.500	0.182	0.028	0.500	0.053
009	0.493	0.597	0.540	0.250	0.563	0.346	0.368	0.547	0.440	0.147	0.467	0.224
010	0.534	0.644	0.584	0.318	0.627	0.422	0.431	0.615	0.507	0.223	0.617	0.328
011	0.353	0.367	0.360	0.235	0.375	0.289	0.304	0.571	0.397	0.109	0.556	0.182
012	0.300	0.600	0.400	0.100	1.000	0.182	0.107	0.471	0.074	0	-	-
013	-						-					
014	0.647	0.710	0.677	0.517	0.703	0.596	0.351	0.605	0.444	0.059	0.667	0.108
015	0.620	0.602	0.611	0.554	0.621	0.586	0.310	0.574	0.403	0.061	0.559	0.110
016	0.468	0.598	0.525	0.372	0.598	0.459	0.293	0.500	0.370	0.027	0.400	0.050
017	0.515	0.597	0.553	0.364	0.667	0.471	0.396	0.656	0.494	0	0	-
018	0.459	0.626	0.530	0.282	0.731	0.406	0.300	0.529	0.383	0.05	0.429	0.090
019	0.545	0.668	0.600	0.439	0.690	0.536	0.195	0.417	0.266	0.065	0.417	0.112
020	0.645	0.715	0.678	0.368	0.727	0.489	0.310	0.500	0.383	0.035	0.800	0.068
021	0.569	0.573	0.571	0.438	0.589	0.502	0.281	0.538	0.369	0.013	0.333	0.025
022	0.406	0.455	0.429	0.331	0.483	0.393	0.279	0.578	0.376	0.014	0.182	0.025
023	0.409	0.500	0.450	0.227	0.455	0.303	-					
024	-	-	-	-	-	-	-					
025	-						-					
026	-						0.272	0.571	0.368	0.103	0.633	0.178
027	0.559	0.578	0.568	0.418	0.605	0.494	0.384	0.545	0.450	0.049	0.500	0.088
028	0.599	0.580	0.589	0.490	0.588	0.535	0.188	0.409	0.257	0.021	1.000	0.041
029	0.624	0.757	0.684	0.480	0.769	0.591	0.345	0.641	0.448	0.034	0.571	0.064
030	0.574	0.552	0.563	0.386	0.520	0.443	0.348	0.554	0.427	0.009	0.250	0.016
031	0.512	0.615	0.559	0.395	0.642	0.489	0.542	0.520	0.531	0.208	0.455	0.286
032	0.360	0.692	0.474	0.160	0.500	0.242	0.154	0.222	0.182	0	-	-
Total	0.552	0.609	0.579	0.414	0.620	0.497	0.311	0.571	0.403	0.066	0.555	0.118

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