Statistical Machine Translation with Long Phrase Table and without Long Parallel Sentences

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Abstract

In this study, we paid attention to the reliability of phrase table. To make phrase table, we have been used Och’s method[3]. And this method sometimes generate completely wrong phrase table. We found that such phrase table caused by long parallel sentences. Therefore, we removed these long parallel sentences from training data. Also, we utilized general tools for statistical machine translation, such as "Giza++"[4], "moses"[5], and "training-phrase-model.perl"[6].

We obtained a BLEU score of 0.2229 of the Intrinsic-JE task and 0.2393 of the Intrinsic-EJ task for our proposed method. On the other hand, we obtained a BLEU score of 0.2162 of the Intrinsic-JE task and 0.2533 of the Intrinsic-EJ task for a standard method.

This means that our proposed method was effective for the Intrinsic-JE task. However, it was not effective for the Intrinsic-EJ tasks. Also, our system was average performance of all system. For example, our system was the 20th place in 34 system for Intrinsic-JE task and the 12th place in 20 system for Intrinsic-EJ task.

Keywords: "SMT" "Long Phrase Table" "Remove Long Parallel Sentences"

1 Introduction

Many machine translation systems have been studied for long time and there was three generations of this technology.

The first generation was a rule-based translation method, which was developed over the course of many years. This method had translation rules that were written by hand. Thus, if the input sentence completely matched the rule, the output sentence had the best quality. However, many expressions are used for natural language, this technology had very small coverage. In addition, the main problem are that the cost to write rules was too high and that maintaining the rules was hard.

The second generation was example-based machine translation method. This method finds a similar sentence from corpus and generates a similar output sentence. The problem with this method is calculating the similarity. Many methods like dynamic program (DP) are available. However, they are very heuristic and intuitive and not based on mathematics.

The third generation was a statistical machine translation method and this method is very popular now. This method is based on the statistics, and it seems very reasonable. There are many versions of statistical machine translation models available. An early model of statistical machine translation was based on IBM1 ∼ 5[2]. This model is based on individual words, and thus a “null word” model is needed. However, this “null word” model sometimes has very serious problems, especially in decoding. Thus, recent statistical machine translation systems usually use phrase based models. This phrase based statistical machine translation model has translation model and language model. The phrase table is a translation model for phrase-based SMT and consists of Japanese language phrases and corresponding English language phrases and these probabilities. And word N-gram model is used as a language model.

By the way, there are two points to evaluate English sentences for Japanese to English machine translation. One is adequacy, and the other is fluency. We believe adequacy is related to translation model \( P(\text{English} | \text{Japanese}) \) and fluency is related to language model \( P(\text{English}) \). Similar languages like English and Italian may only require short phrases for accurate translations. However, languages that differ greatly, like Japanese and English, require long phrase table for accurate translation. We implemented our statistical machine translation model using long phrase tables.
Also, we found long parallel sentences for training parallel data are easily result into wrong phrase table, and wrong phrase table made poor translation results especially for the adequacy. Therefore we removed long parallel sentences.

We used general tools for statistic machine translation for this experiments. As the results, the proposed method was effective for the Intrinsic-JE task. However, it was not effective for the Intrinsic-EJ task. And our system had average performance for NTCIR-7 Patent Translation task. For example, our system was the 20th place in 34 system for Intrinsic-JE task and the 12th place in 20 system for Intrinsic-EJ task[1].

2 Concepts of our Statistical Machine Translation System

In this section, we will describe our concepts behind our Japanese English statistical machine translation system.

2.1 Long Phrase Tables (Adequacy)

We have been evaluated English translated sentences both the adequacy and the fluency. We believe that adequacy is related to translation model \(P(\text{English}/\text{Japanese})\). In similar languages like English and French, the difference in word position is small. In such a case, short phrase tables poses little problem. However, in Japanese to English translation, verbs are sometimes moved from their original position. Therefore, we needed to make long phrase tables. So, we set the parameter of max-phrase-length to 20 to make phrase table.

2.2 5 gram Language Model (Fluency)

We believe that fluency of English translated sentences is related to language model \(P(\text{English})\). In general, when we used a higher order \(N\)-gram, the number of parameters dramatically increases, and the reliability for each parameter decreases. Thus we used a normal 5-gram model and did not use a higher \(N\)-gram model. This model was the best language model among \(N\)-gram from our experiments at the previous dry-run Intrinsic-JE task.

2.3 Removed long parallel sentences

We used only the NTCIR-7 Patent Translation Task training corpus. This training corpus included some very long parallel sentences. And we found that long parallel sentences make wrong phrase table caused. Therefore, we removed these long parallel sentences from training data.

2.4 Standard Tools

Many statistical machine translation tools have been developed. These tools have been highly reliable and widely used. So whenever possible we did not make special tools.

3. training-release-1.3.tgz(train-phrase-model.perl) [6]

We made only a small number of minor tools for building temporal corpus.

3 Experiments with Statistical Machine Translation

3.1 Removed long parallel sentences

When we made phrase table for the NTCIR-7 Patent Translation Task training corpus, Some lists of phrase table are completely wrong. Table 1 presents such wrong phrase table. And wrong phrase table makes poor translation results especially for the adequacy.

Also, we found that long parallel sentences for training parallel data were easily result into such wrong phrase table. So we removed these long parallel sentences from training data.

Table 1. Examples of Wrong Phrase Table

<table>
<thead>
<tr>
<th>3 及び 4 に示すように</th>
<th>As shown in FIGS. 6 and 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.047619 4.03037e-09</td>
<td>0.0243902 1.52103e-11 2.718</td>
</tr>
<tr>
<td>3.84583e-05 0.0217391 4.24439e-09</td>
<td></td>
</tr>
</tbody>
</table>
| 3 は | is a
| 0.0010582 0.000901274 0.000698568 0.000721987 |
| 4.97396e-06 7.91046e-05 0.000349284 0.0497444 |
| コンデンサ | capacitor
| 0.000857633 0.0001482 9.04732e-05 0.0001555 |

We used only the NTCIR-7 Patent Translation Task training corpus, (Japanese-English parallel sentences). So, we used 1798581 Japanese-English parallel sentences for the Intrinsic-JE task and Intrinsic-EJ task. We refer to this experiments as “standard”.

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On the other hand, in the Intrinsic-JE task, we removed more than 64 characters Japanese sentences for training parallel data. So, we used 614298 Japanese-English parallel sentences. Also, in the Intrinsic-EJ task, we removed more than 128 character English sentences for training parallel data. So, we used 1062596 English-Japanese parallel sentences. We refer to this experiments as "proposed".

Examples of long parallel sentences are presented in table 2.

**Table 2. Example of Long Parallel Sentences**

<table>
<thead>
<tr>
<th>Japanese</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>23り3図に示す実施例は、踏面のセンターに1つのタイヤ5を敷設し、そのタイヤ5を車体15に取り付けたガイドローラ3により挟み込んで支持するとように構成したものであり、前方又は後方から観察した状況を示している。</td>
<td>The embodiment shown in FIG. 30, one guide 5 is laid at the center of the road surface, and the chassis 15 is supported by clamping the guide 5 by the guide rollers 3 attached to the chassis 15, the view being taken from the front or rear of the vehicle.</td>
</tr>
<tr>
<td>基本的には、図31(a)の平面図に示すようにタイヤ5を両側から挟み込んで支持する対のガイドローラー3を2基設けることによって、安定性を確保するものであり、図31(b)はその正面図を示している。</td>
<td>Basically, as shown in the plan view of FIG. 31(a), stability is secured by providing two sets of guide rollers 3 for clamping the guide 5 from both sides thereof to support the chassis 15, and FIG. 31(b) shows a front elevation view thereof.</td>
</tr>
<tr>
<td>また、車輪9は、ダブルウィッシュボーン式のリンク4に、車体15に支持されていると共に、コイルスプリング6及びダンパー（図不示）により衝撃が吸収緩和されるようにになっている。</td>
<td>The axle 9 is supported on a chassis 15 by means of a double wishbone type link 14, and shocks are absorbed and alleviated by a coil spring 16 and a damper (not shown).</td>
</tr>
<tr>
<td>車両の場合は、その構造から明らかのようにセンターに軸心があるため、図30に示す実施例は適用できず、車両の両側に2つのガイド5を敷設した図34が最も適用しやすい構成である。</td>
<td>In the case of the three-wheeled vehicle, since one wheel is present at the center as is apparent from its structure, the embodiment shown in FIG. 30 is not applicable, and FIG. 34 in which two guides 5 are laid on the opposite outer sides of the vehicle is easiest to apply.</td>
</tr>
</tbody>
</table>

### 3.2 Tokenizer

We make the English punctuation procedure using "tokenizer.perl". This script was written by Josh Schroeder and based on code by Philipp Koehn. This procedure means that we changed :"", "" to ","", "" and ",". Also, we did not handle English case. The table 3 show the Japanese and English training parallel data. Also, we convert the complex symbols to simple symbols, like ":":"" to ",":"".

**Table 3. Patent-JE training-data**

<table>
<thead>
<tr>
<th>Japanese</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>車体圧シリンダ31の場合は流体が徐々に排出されることとなる。</td>
<td>When the fluid pressure cylinder 31 is used, fluid is gradually applied.</td>
</tr>
<tr>
<td>そして、上記関係を少なくとも10枚通紙しても維持しなければならない。</td>
<td>This relation must be maintained even after passing at least 100,000 sheets.</td>
</tr>
<tr>
<td>以下、図面を用いて本発明の実施例を説明する。</td>
<td>Referring now to the accompanying drawings, a description will be given of the embodiments of the present invention.</td>
</tr>
<tr>
<td>このようにして車体を浮上させた場合には、摩擦駆動は行われず、磁気誘導による推進駆動、さらにはこの推進駆動にプロペラによる補助推進駆動を加えた推進駆動となる。</td>
<td>In the case where the chassis is made to float in this manner, frictional drive is not provided, and propelling drive derived from magnetic induction, or auxiliary propelling drive using propellers is added.</td>
</tr>
</tbody>
</table>

### 3.3 Phrase Tables

We used the "train-phrase-model.perl[6]" in "training-release-1.3.tgz" to make a phrase table. Also, to make long phrase tables, We set the parameter of max-phrase-length to 20. Other parameters were set to defaults values. Table 4 shows examples of phrase tables for the Intrinsic-JE task. Table 5 shows examples of phrase tables for the Intrinsic-EJ task.

**Table 4. Examples of phrase-tables (Intrinsic-JE)**

<table>
<thead>
<tr>
<th>Japanese</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>よく構成されている[[design]]</td>
<td>designed to have a</td>
</tr>
<tr>
<td>0.2 1.95299e-07 0.0030581 1.46286e-06</td>
<td>0.25 7.72576e-10 0.0030581 0.000138348</td>
</tr>
<tr>
<td>よく構成されている[[embodiment]]</td>
<td>is constituted in such a manner that</td>
</tr>
<tr>
<td>1.1 94048e-06 0.0030581 5.99598e-12</td>
<td>0.5 0.011968 1.42857 4.8515e-05</td>
</tr>
<tr>
<td>よく構成されている[[extends]]</td>
<td>is in an ON state,</td>
</tr>
<tr>
<td>0.333333 0.00068226 0.2 0.599531e-05</td>
<td>1.000199222 0.2 0.2606e-06</td>
</tr>
<tr>
<td>よく構成されている[[is]]</td>
<td>is in an ON state,</td>
</tr>
<tr>
<td>1.00199222 0.2 0.2606e-06</td>
<td>0.011968 1.42857 4.8515e-05</td>
</tr>
<tr>
<td>オン状態で [[is]]</td>
<td>is turned on</td>
</tr>
<tr>
<td>0.011968 1.42857 4.8515e-05</td>
<td>0.2 0.011968 1.42857 4.8515e-05</td>
</tr>
<tr>
<td>オン状態で [[is]]</td>
<td>is in an ON state,</td>
</tr>
<tr>
<td>0.333333 0.00068226 0.2 0.599531e-05</td>
<td>1.000199222 0.2 0.2606e-06</td>
</tr>
<tr>
<td>オン状態で [[is]]</td>
<td>is turned on</td>
</tr>
<tr>
<td>0.011968 1.42857 4.8515e-05</td>
<td>0.2 0.011968 1.42857 4.8515e-05</td>
</tr>
<tr>
<td>オン状態で [[is]]</td>
<td>is in an ON state,</td>
</tr>
<tr>
<td>0.333333 0.00068226 0.2 0.599531e-05</td>
<td>1.000199222 0.2 0.2606e-06</td>
</tr>
<tr>
<td>オン状態で [[is]]</td>
<td>is turned on</td>
</tr>
<tr>
<td>0.011968 1.42857 4.8515e-05</td>
<td>0.2 0.011968 1.42857 4.8515e-05</td>
</tr>
<tr>
<td>オン状態で [[is]]</td>
<td>is in an ON state,</td>
</tr>
<tr>
<td>0.333333 0.00068226 0.2 0.599531e-05</td>
<td>1.000199222 0.2 0.2606e-06</td>
</tr>
<tr>
<td>オン状態で [[is]]</td>
<td>is turned on</td>
</tr>
<tr>
<td>0.011968 1.42857 4.8515e-05</td>
<td>0.2 0.011968 1.42857 4.8515e-05</td>
</tr>
<tr>
<td>オン状態で [[is]]</td>
<td>is in an ON state,</td>
</tr>
<tr>
<td>0.333333 0.00068226 0.2 0.599531e-05</td>
<td>1.000199222 0.2 0.2606e-06</td>
</tr>
</tbody>
</table>
Table 5. Examples of phrase-tables (Intrinsic-EJ)

<table>
<thead>
<tr>
<th>Phrase-tables</th>
<th>Intrinsic-EJ</th>
<th>Extrinsic-EJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0434783 0.156401 0.0434783 0.000416834</td>
<td>0.000112931 0.000664452 4.53071e-13</td>
<td></td>
</tr>
<tr>
<td>0.01 0.273241 0.0434783 0.0507808</td>
<td>0.125 0.154806 0.130435 0.000352995</td>
<td></td>
</tr>
<tr>
<td>1 0.0797747 0.0869565 0.047392</td>
<td>0.111111 0.0497635 0.0869565 0.000970585</td>
<td></td>
</tr>
<tr>
<td>0.1 0.154506 0.130435 0.0430036</td>
<td>0.333333 0.000112931 0.000664452 5.35834e-12</td>
<td></td>
</tr>
<tr>
<td>1 0.000268318 0.000664452 0.000898069</td>
<td>1.0 0.000664452 4.53071e-13</td>
<td></td>
</tr>
<tr>
<td>FIGS.1 and 2</td>
<td>1.0 0.000268318 0.000664452 0.000898069</td>
<td></td>
</tr>
<tr>
<td>0.375 0.26993 0.130435 0.0430036</td>
<td>0.375 0.26993 0.130435 0.0430036</td>
<td></td>
</tr>
</tbody>
</table>

4 Results of Statistical Machine Translation

Table 7 shows the summary of the results of our statistical machine translation evaluation for the Intrinsic-JE and Intrinsic-EJ and Extrinsic-EJ tasks. Human evaluation results are also included. In this table, "standard" means the results of normal statistical machine translation and "proposed" means the results of removed long parallel sentences from the training parallel data.

As can be seen this table, our proposed method was effective for the Intrinsic-JE task. However, it was not effective for the Intrinsic-EJ tasks.

Table 6. Parameters of moses.ini

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>table-limit</td>
<td>40</td>
</tr>
<tr>
<td>weight-d</td>
<td>0.2</td>
</tr>
<tr>
<td>weight-l</td>
<td>1.0</td>
</tr>
<tr>
<td>weight-t</td>
<td>0.5 0.0 0.5 0.0 0.0</td>
</tr>
<tr>
<td>weight-w</td>
<td>-1</td>
</tr>
<tr>
<td>distortion-limit</td>
<td>-1</td>
</tr>
</tbody>
</table>

3.4 5 gram model language

We calculated the 5-gram model using ngram-count in the Stanford Research Institute Language Model (SRILM) toolkit[7], and set the smoothing parameter as -.ukndiscount. It means original KneserNey discounting. This model is the best language model among N-gram from our previous results at the NTCIR-7 Patent Translation Task dry-run task.

With the 1798581 parallel sentences, we obtained the followings.

In Japanese to English translation, we had 214265 lines for 1-gram, we had 3249108 lines for 2-gram, we had 4097405 lines for 3-gram, we had 5697384 lines for 4-gram, we had 3872153 lines for 5-gram.

In English-Japanese translation, we had 91772 lines for 1-gram, we had 1754357 lines for 2-gram, we had 3752249 lines for 3-gram, we had 6262883 lines for 4-gram, we had 7684568 lines for 5-gram.

3.5 Decoder

We used "Moses[5]" as a decoder. In a Japanese to English translation, the position of the verb is sometimes significantly changed from its original position. Thus, we set the "distortion weight (weight-d)" to "0.2" and "distortion-limit" to "-1". Table 6 shows the other parameters. Also, we did not optimize these parameters or did not use the reordering model.

Table 7. Results

<table>
<thead>
<tr>
<th>Task</th>
<th>Method</th>
<th>BLUE</th>
<th>Adequacy</th>
<th>Fluency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic-JE</td>
<td>proposed</td>
<td>22.29</td>
<td>2.58</td>
<td>3.44</td>
</tr>
<tr>
<td></td>
<td>standard</td>
<td>21.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrinsic-EJ</td>
<td>proposed</td>
<td>23.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>standard</td>
<td>25.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extrinsic-EJ</td>
<td>standard</td>
<td>0.3197</td>
<td></td>
<td>0.7652</td>
</tr>
</tbody>
</table>
5 Discussion

5.1 Removal of long parallel sentences

We sometimes found that poor or wrong phrase tables caused long parallel sentences in training data. So, we removed these long parallel sentences. This method is effective for the Intrinsic-JE task. However, this method is not so effective for the Intrinsic-EJ tasks.

But, we had many experimental results for many parameters. And in many cases, this proposed method was effective.

5.2 Size of trainig parallel corpus

In this study, the amount of training parallel corpus was too large for us. So, we have a lot of time and a lot of memory to make a phrase-table. We had no time to optimize many parameters. If we have much times or memories, we would have been able to obtain a higher BLEU score.

Our system was average performance for NTCIR-7 Patent Translation task. Our system was the 20th place in 34 system for Intrinsic-JE task and the 12th place in 20 system for Intrinsic-EJ task. So we will improve many points to get better score.

5.3 Analysis of Outputs

We analyzed the outputs of our statistical machine translation. Single sentences provided better results with few or no errors. Long sentences such as complex or compound sentences were difficult to translate. Long sentences seemed completely wrong. We must survey why they occurred in future work.

5.4 Statistical Example Based Translation

Our system was a standard statistical machine translation system and we used long phrase tables. Thus, our system was very similar to an example based translation method, and we called our method a statistical example based translation. We believe statistical example based translation may be the better solution for Japanese-English translation.

6 Conclusions

We sometimes found such a wrong or poor phrase tables causes long parallel sentences in training data. So, we removed these long parallel sentences. We used standard statistical machine translation tools, such as "Moses"[5] and "GIZA++"[4] for our statistical machine translation systems.

We obtained a BLEU score of 0.2229 of the Intrinsic-JE task and 0.2393 of the Intrinsic-EJ task for our proposed method. On the other hand, we obtained a BLEU score of 0.2162 of the Intrinsic-JE task and 0.2533 of the Intrinsic-EJ task for a standard method. It means that our proposed method was effective for the Intrinsic-JE task. However, this method was not so effective for Intrinsic-EJ task.

Our system had average performance. For example, our system was the 20th place in 34 system for Intrinsic-JE task and the 12th place in 20 system for Intrinsic-EJ task. We did not optimize these parameters or did not use the reordering model. For future experiments, we will optimize these parameters and may be add a structure information, which will enable our system to perform better.

7 Acknowledgements

We thank for the students of Tottori University for their valuable works.

References


In this mounting, the core wires 51 of the coaxial cables 50 are sandwiched with laminated films 59 to prevent deformation of the core wires 51 for the purpose of maintaining their relative positions intact.

Further, the leading end portion of the core wire 51 is clamped and held by the pitch deviation of the laminated film 59, the deformation is prevented.

Moreover, the front ends of the core wires 51 are sandwiched with laminated films 59 to prevent deformation of the core wires 51 for the purpose of maintaining their relative positions intact.

FIG. 6 shows the shield cover 30, which is to be mounted on the insulative housing 10.

The rotator 2 driven by a motor structure shown in FIG. 5.

Also, behind the openings of the contact insertion slots 11 at the positions which corresponds to the base portions 21 of the female contacts 20 in the direction of the front and rear of the cable connector (hereinafter referred to as “axial direction”), a plurality of front cable support recesses 12 are provided aligned in the width direction and opening upward.

At this time, the core wire 51 of the base portion 21 of the coaxial cable 50 is inserted into the groove 12 before the inner insulating cover layer 52 is mounted on the female contacts 20 in a coaxial cable 50, as shown in FIG. 10, are inserted in the central groove 14.

In this mounting, the core wires 51 of the coaxial cables 50 are mounted on the insulative housing 10, and the exposed shielding layers 53 and outer insulating layers 54 of the coaxial cables 50 are positioned in the rear cable support recesses 14 of the housing 10 as shown in FIG. 10.
In this mounting, the core wires 51 of the coaxial cables 50 are positioned on the base portions 21 of the female contacts 20 in the direction of the front and rear of the cable connector (hereinafter referred to as "axial direction"), a plurality of front cable support recesses 12 are provided aligned in the width direction and opening upward.

Also, the openings of the contact insertion slots 11 at the positions which corresponds to the base portions 21 of the female contacts 20 in the direction of the front and rear of the cable connector (hereinafter referred to as "axial direction"), a plurality of front cable support recesses 12 are provided aligned in the width direction and opening upward.

In this mounting, the core wires 51 of the coaxial cables 50 are positioned on the base portions 21 of the female contacts 20, the inner insulating layers 52 of the coaxial cables 50 are positioned in the front cable support recesses 12 of the insulative housing 10, the binding plates 55 are positioned in the rear central groove 13 of the housing 10, and the exposed shielding layers 53 and outer insulating layers 54 of the coaxial cables 50 are positioned in the rear cable support recesses 14 of the housing 10 as shown in FIG. 10.

Table 11. Examples for Intrinsic-EJ standard

<table>
<thead>
<tr>
<th>in</th>
<th>out</th>
<th>output</th>
<th>cor</th>
<th>correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>G. S. 5 is a diagram showing a structural example of a motor for driving the rotating blade 2.</td>
<td>G. S. 5 is a diagram showing a structural example of a motor for driving the rotating blade 2.</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>諓囬 5, モータを駆動するための回転翼2の一構成例を示す図である。</td>
<td>諓囬 5, 第1の実施例による駆動するためのモータ回転翼2の構成例である。</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>5図是回転翼2を駆動するモータの構成例を示す図である。</td>
<td>5図は回転翼2を駆動するモータの構成例を示す図である。</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Moreover, the front ends of the core wires 51 are sandwiched with laminated films 59 to prevent deformation of the core wires 51 for the purpose of maintaining their relative positions intact.</td>
<td>Moreover, the front ends of the core wires 51 are sandwiched with laminated films 59 to prevent deformation of the core wires 51 for the purpose of maintaining their relative positions intact.</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>また、芯線59の変形を防止するようにして屋根面51の位置関係を維持するためには、そのままの芯線51の先端が保持されている。</td>
<td>また、先端の芯線51に挟まれて屋根面59の変形を阻止して芯線51の位置を保持するためそのまま保持される。</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>もちろん、芯線51の先端部がラミネートフィルム59により挟まれて保持され、その変形、ピッチの歪みを防止する。</td>
<td>もちろん、芯線51の先端部がラミネートフィルム59により挟まれて保持され、その変形、ピッチの歪みを防止する。</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>FIG. 6 shows the shield cover 30, which is to be mounted on the insulative housing 10.</td>
<td>FIG. 6 shows the shield cover 30, which is to be mounted on the insulsive housing 10.</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

Table 10. Examples for Intrinsic-EJ proposed

<table>
<thead>
<tr>
<th>in</th>
<th>out</th>
<th>output</th>
<th>cor</th>
<th>correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>G. S. 5 is a diagram showing a structural example of a motor for driving the rotating blade 2.</td>
<td>G. S. 5 is a diagram showing a structural example of a motor for driving the rotating blade 2.</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>図5は、モータを駆動するための回転翼2の一つの構成例を示す図である。</td>
<td>図5は、第1の実施例による駆動するためのモータ回転翼2の構成例である。</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>5図は回転翼2を駆動するモータの構成例を示す図である。</td>
<td>5図は回転翼2を駆動するモータの構成例を示す図である。</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Moreover, the front ends of the core wires 51 are sandwiched with laminated films 59 to prevent deformation of the core wires 51 for the purpose of maintaining their relative positions intact.</td>
<td>Moreover, the front ends of the core wires 51 are sandwiched with laminated films 59 to prevent deformation of the core wires 51 for the purpose of maintaining their relative positions intact.</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>また、芯線59の変形を防止するようにして屋根面51の位置関係を維持するためには、そのままの芯線51の先端が保持されている。</td>
<td>また、先端の芯線51に挟まれて屋根面59の変形を阻止して芯線51の位置を保持するためそのまま保持される。</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>もちろん、芯線51の先端部がラミネートフィルム59により挟まれて保持され、その変形、ピッチの歪みを防止する。</td>
<td>もちろん、芯線51の先端部がラミネートフィルム59により挟まれて保持され、その変形、ピッチの歪みを防止する。</td>
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</tr>
<tr>
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<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>
Table 12. Examples for Extrinsic-EJ standard

<table>
<thead>
<tr>
<th>In</th>
<th>Out</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>01</strong></td>
<td>A milk-derived calcium-containing composition comprising an inorganic salt mainly composed of calcium obtained by baking a milk-derived prepared matter containing milk casein-bonding calcium and/or colloidal calcium.</td>
</tr>
<tr>
<td><strong>02</strong></td>
<td>An objective lens driving device comprising a movable part including a bobbin with a focusing coil and a tracking coil, and a fixed part including a magnet, the bobbin being formed in a cylindrical shape having two pairs of hooks on peripheral parts formed at the upper and lower ends thereof; the focusing coil being wound in a winding part between the peripheral parts, while winding the tracking coil on the two pairs of hooks to be arranged on the focusing coil, and a focusing coil different from the focusing coil being further wound on the bobbin from above the tracking coil, whereby the center of gravity of the movable part, the center point of a composed force generated by the focusing coil, and the center point of a composed force generated by the tracking coil are mutually matched.</td>
</tr>
<tr>
<td><strong>03</strong></td>
<td>An improved production method of sake by liquefying fermentation, comprising adding an enzyme containing α-glucosidase as an effective component at the time of charging and/or fermenting mold rice to promote the fermentation of the mold rice.</td>
</tr>
<tr>
<td><strong>04</strong></td>
<td>A television camera device comprising a plurality of television cameras, each of which is connected to a power supply device through one coaxial cable for every camera for imposing and multiplex-transmitting power and signal, so that electricity is supplied from the power supply device to the camera, and video output of the camera is externally outputted from the power supply device, the power supply device including an external synchronous imposing part for transmitting a vertical synchronizing signal of external synchronization and a field identification signal to the camera through the cable; and the camera including a signal separation part for separating and extracting the vertical synchronizing signal and field identification signal of the cable, and a timing part for controlling vertical synchronization and field synchronization by the vertical synchronizing signal and the field identification signal.</td>
</tr>
</tbody>
</table>