Report of MIRACLE team for the Ad-Hoc track in CLEF 2006

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Abstract

This paper presents the 2006 MIRACLE's team approach to the AdHoc Information Retrieval *track*. The experiments for this campaign keep on testing our IR approach. First, a baseline set of runs is obtained, including standard components: stemming, transforming, filtering, entities detection and extracting, and others. Then, a extended set of runs is obtained using several types of combinations of these baseline runs.
The improvements introduced for this campaign have been a few ones: we have used an entity recognition and indexing prototype tool into our tokenizing scheme, and we have run more combining experiments for the robust multilingual case than in previous campaigns. However, no significative improvements have been achieved.

For the this campaign, runs were submitted for the following languages and tracks:

- Monolingual: Bulgarian, French, Hungarian, and Portuguese.
- Bilingual: English to Bulgarian, French, Hungarian, and Portuguese; Spanish to French and Portuguese; and French to Portuguese.
- Robust monolingual: German, English, Spanish, French, Italian, and Dutch.
- Robust bilingual: English to German, Italian to Spanish, and French to Dutch.
- Robust multilingual: English to robust monolingual languages.

We still need to work harder to improve some aspects of our processing scheme, being the most important, to our knowledge, the entities recognition and normalization.

Categories and Subject Descriptors

H.3 [Information Storage and Retrieval]: H.3.1 Content Analysis and Indexing; H.3.2 Information Storage; H.3.3 Information Search and Retrieval ; H.3.4 Systems and Software. E.1 [Data Structures]; E.2 [Data Storage Representations]. H.2 [Database Management]

Keywords

Linguistic Engineering, Information Retrieval, Trie Indexing, more keywords

1 Introduction

The MIRACLE team is made up of three university research groups located in Madrid (UPM, UC3M and UAM) along with DAEDALUS, a company founded in 1998 as a spin-off of two of these groups. DAEDALUS is a leading company in linguistic technologies in Spain and is the coordinator of the MIRACLE team. This is our fourth participation in CLEF, after years 2003, 2004, and 2005. As well as bilingual, monolingual and robust multilingual tasks, the team has participated in the ImageCLEF, Q&A, and GeoCLEF tracks.

The starting point was a set of basic components: stemming, transformation (transliteration, elimination of diacritics and conversion to lowercase), filtering (elimination of stop and frequent words), proper nouns detection and extracting, and paragraph extracting, among others. Some of these basic components are used in different combinations and order of application for document indexing and for query processing. Results combinations were also tested, mainly by averaging or by selective combination of the documents retrieved by different approaches for a particular query. When evidence is found of better precision of one system at one extreme of the recall level (i.e. 1), complemented by the better precision of another system at the other recall end (i.e. 0), then both are combined to benefit from their complementary results.

Our group has used its own indexing and retrieval engine, which is based on the *trie* data structure [1]. Tries have been successfully used by the MIRACLE team for years, as an efficient storage and retrieval of huge lexical resources, combined with a continuation-based approach to morphological treatment [15]. However, the adaptation of these structures to manage efficiently document indexing and retrieval for IR applications has been a hard task, mainly in the issues concerning the performance of the construction of the index.

For this campaign, runs were submitted for the following languages and tracks:

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- Bilingual: English to Bulgarian, French, Hungarian, and Portuguese; Spanish to French and Portuguese; and French to Portuguese.
- Robust monolingual: German, English, Spanish, French, Italian, and Dutch.
- Robust bilingual: English to German, Italian to Spanish, and French to Dutch.
- Robust multilingual: English to robust monolingual languages.

2 Description of the MIRACLE Toolbox

MIRACLE toolbox has already been described in previous campaigns papers [11], [12], [16]. We will say here that document collections and topics were pre-processed before feeding the indexing and retrieval engine, using different combinations of elementary processes. We will repeat here some relevant facts about these:

- **Extraction:** The extraction treatment has a special filter for extracting topic queries in the case of the use of the narrative field: some patterns that were obtained from the topics of the past campaigns are eliminated, since they are recurrent and misleading in the retrieval process. For example, for English, we can mention patterns as *"… are not relevant."*, or *"…are to be excluded"*. All the sentences that contain such patterns are filtered out.

- **Paragraphs extraction:** We have not used paragraph indexing this year, since the results we have obtained in this campaign and past ones have been disappointing.

- **Tokenization:** This process extracts basic text components, detecting and isolating punctuation symbols. Some basic entities are also treated, such as numbers, initials, abbreviations, years, and some proper nouns (see next item). The outcomes of this process are only single words, years that appear as numbers in the text (e.g. 1995, 2004, etc.), or entities.

- **Entities:** We consider that entities detection and normalization plays a central role in Information Retrieval, but it is a difficult task. For this year we have integrated a special module in the tokenization process that detects and marks some entities that have been previously collected from several sources into a lexical database for entities. These entities, which can be people names, place names, initials, abbreviations, etc., can consist of one or more words and special symbols, and their correct treatment is integrated into the tokenizer. For now, no entity normalization is done, so the same entity can appear in different forms and these are treated as different entities.

- **Filtering:** *Stopwords* lists in the target languages were initially obtained from [38], but were extended using several other sources and our own knowledge and resources. We have also compiled other lists of words to exclude from the indexing and querying processes, which were obtained from the topics of past CLEF editions and from our own background. We consider that such words have no semantics in the type of queries used in CLEF. As example, we can mention some of the English list: *find, appear, relevant, document, report,* etc.

- **Transformation:** The items that resulted from tokenization were normalized by converting all uppercase letters to lowercase, and accents eliminated. This has not been done for Bulgarian.

- **Stemming:** We used standard stemmers from Porter [28] for most languages, except for Hungarian and Bulgarian, where we used stemmers from Neuchatel [38].

- **Indexing:** When all the documents processed through a combination of the former steps are ready for indexing, they are fed into our indexing *trie* engine to build the document collection index.

- **Retrieval:** When all the documents processed by a combination of the former steps are topic queries, they are fed to an ad-hoc front-end of the retrieval *tri*e engine to search the previously built document collection index. In the 2006 experiments, only OR combinations of the search terms were used. The retrieval model used is the well-known Robertson's Okapi BM-25 [32] formula for the probabilistic retrieval model, without relevance feedback.

- **Combination:** After retrieval, some other special combination processes were used to define additional experiments: The results from some basic experiments can be combined in different ways. The underlying hypothesis is that, to some extent, the documents with a good score in almost all experiments are more likely to be relevant than other documents that have a good score in one experiment but a bad one in others. Two strategies were followed for combining experiments:

  ► **Average:** Relevance figures obtained in all the experiments to be combined for a particular document in a given query are added. This approach combines the relevance figures of the experiments without highlighting a particular experiment.

  ► **Asymmetric WDX combination:** In this particular type of combination, two experiments are combined in the following way: The relevance of the first D documents for each query of the first experiment is preserved for the resulting combined relevance, whereas the relevance for the remaining documents in both experiments are combined using weights W and X. For example, for experiments labeled "011", the most relevant document from the first basic experiment is considered, and then all the remaining documents retrieved from the second basic experiment. Then all the obtained results are re-sorted using the obtained relevance measure values.

3 Description of the experiments

The experiments name reflects the processes made on the documents collections and the topic sets. The naming scheme we have used this year is, for basic experiments, as follows:

`<doclang><docproc><topiclang><topicproc>`

`<doclang>` and `<topiclang>` are the standard two letter abbreviations for the documents or topic languages[1] (i.e. *bg*, *de*, *en*, *es*, *fr*, *hu*, *it*, *nl*, and *pt*), or *ml* for documents language in multilingual robust runs. Except for multilingual runs, should be identical.

`<docproc>` reflects the processes made on the documents collection for the experiment. The first letter is always[2] F (for indexing the full texts). The second letter is S or W. Letter S is used for the standard or baseline treatment: tokenization, filtering, stemming, and transformation; whereas W is used for a non-stemming treatment: tokenization, filtering, and transformation.

`<topicproc>` reflects the processes made on the topics collection for the experiment. For monolingual runs, it also consists of two characters, being the second S or W, having the same meaning that in documents texts processing. The first character is one of the digits 2, 3, 4, 5 or 6; reflecting how many times the title (T), description (D) or narrative (N) of the topic has been taken into account, according to the following scheme: 2 (TD), 3 (TDN), 4 (TTTDN), 5 (TTTTDN), and 6 (TTTTDDN). For bilingual runs, some information is added before these two characters: the translation engine used and the standard two-letter code of the source topic language. For robust runs, the letter R is present in the first position of this field. The translation engine cndes used have been the following: L (Wordlingo [46]), W (Webtrance [34]), S (Systran [35]), V (Reverso [31]), A (Atrans [2]), B (Bultra [29]), and M (Mobicat [27]).

For combining experiments, we depart from this scheme. In the `<docproc>` position we indicate the type of combination: **xWDX**, for asymmetric WDX combination (see the meaning of the digits D, W, and X in the previous section); or **y**, for average combination of runs. In the `<topicproc>` position the runs that are combined are indicated in an ad-hoc, rather weird encoding. For example, run "nlx021nlRLfrFW4FS4" refers to a combined (robust) experiment made on the Dutch collection, with W=0, D=2, X=1, using French topics

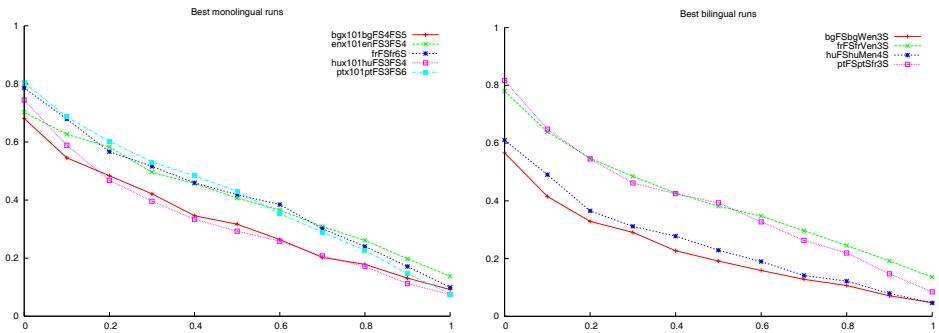
[1] These refer to the topic language of monolingual runs or the target language in a translated topic for cross-lingual runs.
[2] The letter H was reserved for paragraphs indexing, process which was not made this year, as mentioned.

translated into Dutch using the WordLingo [46] engine. The experiments combined are referred with FW4 and FS4, respectively. That means that the experiments are “nlFWnlRLfr4W” and “nlFSnlRLfr4S”.[3] Equally, for average experiments, run “fryfrFS3456” refers to an average-combining experiment run on the the French text collection, using French topics (monolingual), and averaging the results from runs FS3, FS4, FS5, and FS6; that is “frFSfr3S”, “frFSfr4S”, “frFSfr5S”, and “frFSfr6S”.

For (robust) multilingual runs, a special naming convention is used. It will be described in a later section.

4 Monolingual and bilingual tasks

The following figures and tables resume the performance of our best experiments in the monolingual and bilingual tasks. The details of all the experiments run and their performance figures and some graphic representations can be found in the appendix.



Best average precision figures for each monolingual and bilingual language pair

lang	run	avgp
bg	bgx101bgFS4FS5	0.3119
en	enx101enFS3FS4	0.3965
fr	frFSfr6S	0.4026
hu	hux101huFS3FS4	0.3089
pt	ptx101ptFS3FS6	0.4045

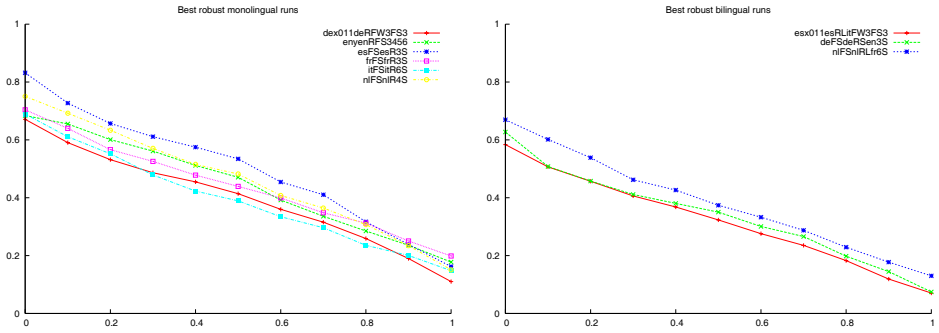
src-dst	run	avgp
en-bg	bgFSbgWen3S	0.2120
en-hu	huFShuMen4S	0.2420
en-fr	frFSfrVen3S	0.3868
de-fr	frFSfrVde3S	0.3805
es-fr	frFSfrSes3S	0.3511
pt-fr	frFSfrSpt3S	0.3470
fr-pt	ptFSptSfr3S	0.3750
en-pt	ptFSptSen4S	0.2926
es-pt	ptFSptLes6S	0.2838

Both in tthe monolingual and the bilingual cases, results obtained for “near” languages, such as French and Portuguese, are better than those obtained for Bulgarian and Hungarian. In the bilingual case, French experiments have better average precisions. Combined runs appear in several rows of the monolingual table, but in some cases, these runs were not submitted. We did not run combined bilingual experiments, so they do not appear in the bilingual table. Note that in all cases, the experiments having into account the topic narrative achieve best results.

5 Robust tasks

The following figures and tables resume the performance of our best experiments in the monolingual and bilingual robust tasks. The details of all the experiments run and their performance figures and some graphic representations can be also found in the appendix. We have not used a different system or different types of runs for the robust case, so we just present the results obtained. Please, note that in these tables, geometric mean average precision figures are given instead average precision figures.

[3] We have tested only some WDX sets: 011, 021, 091, 101, and 153. Regarding combined experiments, we tested these combinations: FS3FS4, FS3FS6, FS4FS5, FW3FS3, FW4FS4, FW4FS5, and FW4FS6.



Best geometric mean average precision figures for each monolingual and bilingual language pair

lang	run	gmavgp
de	deFSdeR6S	0.1198
en	enFSenR3S	0.1016
es	esFSesR3S	0.2650
fr	frFSfrR3S	0.1369
it	itFSitR6S	0.1153
nl	nlFSnlR4S	0.2073

src-dst	run	gmavgp
en-de	dex021deRSenFW3FS3	0.0662
fr-nl	nlFSnlRLfr3S	0.1253
It-es	esFSesRLit3S	0.0833

In the monolingual case, results for Spanish are much better than those obtained for the rest of the languages. In all cases the use of baseline runs has obtained results better than the use of combined ones. Curiously, target language Dutch runs have results better than the runs in other languages. Note that in all cases, the experiments having into account the topic narrative have best results, as happened in the non-robust case.

We used the traditional approach to multilingual information retrieval that translates topic queries to each of the documents collections. The probabilistic BM25 [32] approach used for monolingual retrieval gives relevance measures that depends heavily on parameters that are too dependent on the monolingual collection, so it is not very good for this type of multilingual merging, since relevance measures are not comparable among collections. In spite of this, we made merging experiments using the relevance figures obtained from each monolingual retrieval process, considering three cases:[4]

- Using original relevance measures for each document as obtained from the monolingual retrieval process. The results are composed of the documents with greater relevance measures.

- Normalizing relevance measures with respect to the maximum relevance measure obtained for each topic query *i* (*normal normalization*):

$$rel_{i\,norm} = \frac{rel_i}{rel_{i\,\max}}.$$

  The results are composed of the documents with greater normalized relevance measures.

- Normalizing relevance measures with respect to the maximum and minimum relevance measure obtained for each topic query *i (alternate normalization)*:

$$rel_{i\,alt} = \frac{rel_i - rel_{i\,\min}}{rel_{i\,\max} - rel_{i\,\min}}$$

  The results are composed of the documents with greater alternate normalized relevance measures.

We denote if normalization is done in the run identifier using the last character: **n** means normal normalization whereas **l** denotes alternate normalization. When neither **l** nor **n** is present, no normalization has been made for that run. For this "standard multilingual approach", the run naming convention follows this pattern:

```
mlRSFS(de|en|es|fr|it|nl)([23456])S([ln]?)
```

[4] Round-robin merging for results of each monolingual collection has not been used.

where usual regular expression patterns are used, but inclosed in "()". The meanings of the letters used should be evident from the described naming conventions for monolingual runs that are combined. Note that S is used both for "stemmed" and "Systran".

In addition to all this, we tried a different approach to merging: Considering that the more relevant documents for each of the topics are usually the first ones in the results list, we will select from each monolingual results file a variable number of documents, proportional of the average relevance number of the first N documents. Thus, if we need 1,000 documents for a given topic query, we will get more documents from languages where the average relevance of the first N relevant documents is greater. We did all this in two cases:

1. Using not normalized runs (we call it case X) to calculate the appropriate number of documents to aggregate. After having obtained such, the documents sets obtained are optionally normalized before merging (we tried not normalizing, and normalizing with both formulae).

2. Using normalized runs (we call it case Y) to calculate the appropriate number of documents to agregate. After obtaining such documents sets, merging is done. We also used both types of normalization.

The several cases tested are encoded in the run identifier. The first two characters are "`ml`", followed by two characters that indicate one of the two cases described above, and the parameters used:

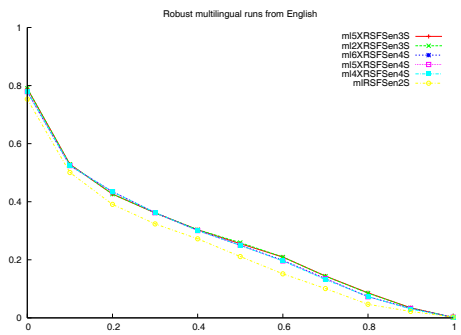
N	Normalized	Not normalized
1	1Y	1X
15	2Y	2X
75	3Y	3X
166	4Y	4X
300	5Y	5X
1000	6Y	6X

following the rest of the run identifier. The full run identifier follows one of the patterns:

```
ml([123456]X)RSFSen([23456])S([nl]?)
ml([123456]Y)RSFSen([23456])S([nl])
```

where usual regular expression patterns are used, but inclosed in "()". The same comments apply that for the previous naming scheme for multilingual runs.

The following figure resume the performance of our best experiments in the multilingual robust task. The details of all the experiments run and their performance figures can be found in the appendix. We have not used a different system or different types of runs for the robust case, so we just present the results obtained. Please, note that in these tables, geometric mean average precision figures are given instead average precision figures.



6 Conclusions and future work

This year we have not changed a lot our previous processing scheme, although some improvements have been incorporated regarding proper nouns and entities detection and indexing. For this reason we think that the

obtained results are quite similar to previous ones. We need to work harder in some stages of processing, especially these ones that can improve performance substantially.

It is clear that the quality of the tokenization step is of paramount importance for precise document processing. We still think that a high-quality entity recognition (proper nouns or acronyms for people, companies, countries, locations, and so on) could improve the precision and recall figures of the overall retrieval, as well as a correct recognition and normalization of dates, times, numbers, etc. Although we have introduced some improvements in our processing scheme, a good multilingual entity recognition and normalization tool is still missing. This step is the one in which we are currently devoting more work.

We are also mproving the architecture of our indexing and retrieval *trie*-based engine in order to get even better performance in the indexing and retrieval phases, tuning some data structures and algorithms.

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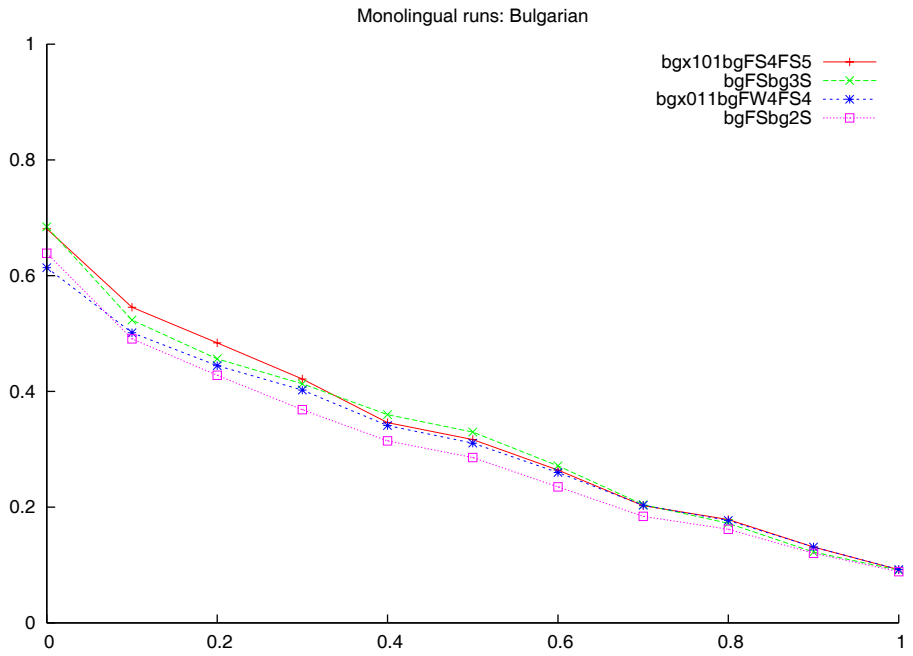
Appendix: Tables and figures

The results from our experiments follow. For each of the monolingual or bilingual tasks, we show a table with the precision at 0 and 1 points of recall, the average precision, the percentage deviation (in average precision) from best one obtained, the run identifier, and the precedence of the run, when the run was submitted. The results are sorted in average precision ascending order, but an asterisk marks all the best precision values for each column (in average precision, or in precision at 0 or 1 points of recall).

In the case of the robust tasks, in addition to the columns indicated above, the tables include a column with the geometric mean average precision, and the rows are sorted using this figure in ascending order. The percentage deviation in this case refers to the average precision, in order to facilitate the comparison with the ordering using this number.

In all cases a figure that compares the submitted runs and the best one, when it was the case that it was not submitted, is included for each task and language pair. The best run here refers that one with best average precision, not geometric mean average precision.



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0.5588	0.0730	0.2361	-24.30%	bgFWbg3W	
0.6530	0.0534	0.2476	-20.62%	bgx153bgFW3FS3	
0.5727	0.0572	0.2493	-20.07%	bgx153bgFW4FS5	
0.6136	0.0603	0.2503	-19.75%	bgx153bgFW4FS6	
0.5868	0.0594	0.2512	-19.46%	bgx153bgFW4FS4	
0.5817	0.0919	0.2752	-11.77%	bgx091bgFW4FS6	
0.5837	0.0930	0.2768	-11.25%	bgx091bgFW4FS5	
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0.6915*	0.0936	0.3063	-1.80%	bgx101bgFS3FS6	
0.6843	0.0911	0.3080	-1.25%	bgFSbg3S	2
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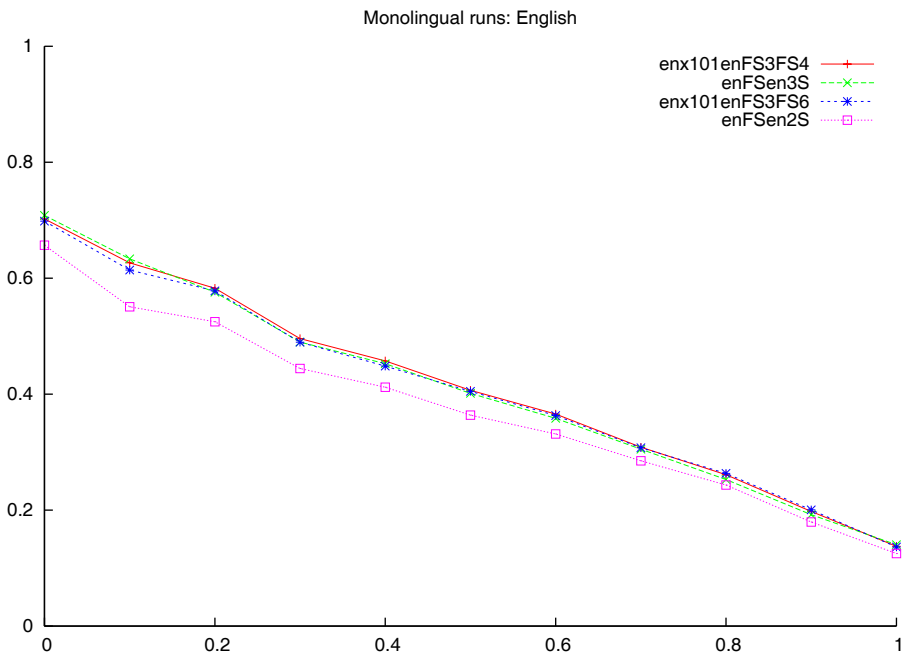
0.6844	0.0936	0.3110	-0.29%	bgx101bgFS3FS4	
0.6721	0.0922	0.3112	-0.22%	bgFSbg4S	
0.6810	0.0919	0.3119*	-0.00%	bgx101bgFS4FS5	



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0.5950	0.0879	0.2764	-30.29%	enx153enFW4FS4	
0.6641	0.1186	0.3345	-15.64%	enFWen2W	
0.7141	0.1230	0.3553	-10.39%	enFWen4W	
0.6570	0.1251	0.3575	-9.84%	enFSen2S	3
0.7163	0.1316	0.3583	-9.63%	enFWen3W	
0.7270*	0.1375	0.3766	-5.02%	enyenFS3FW3	
0.7105	0.1316	0.3867	-2.47%	enx091enFW4FS6	
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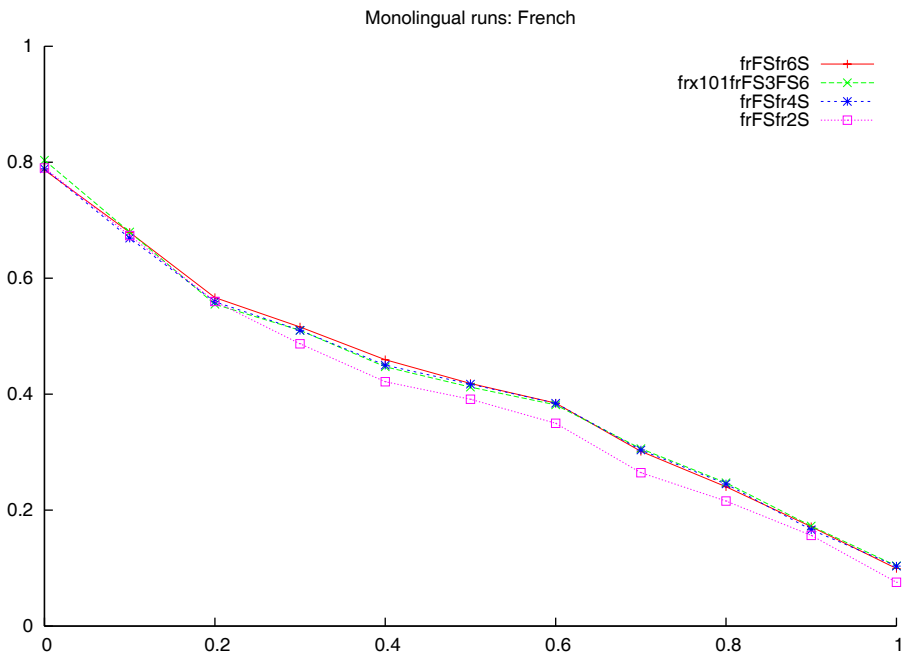
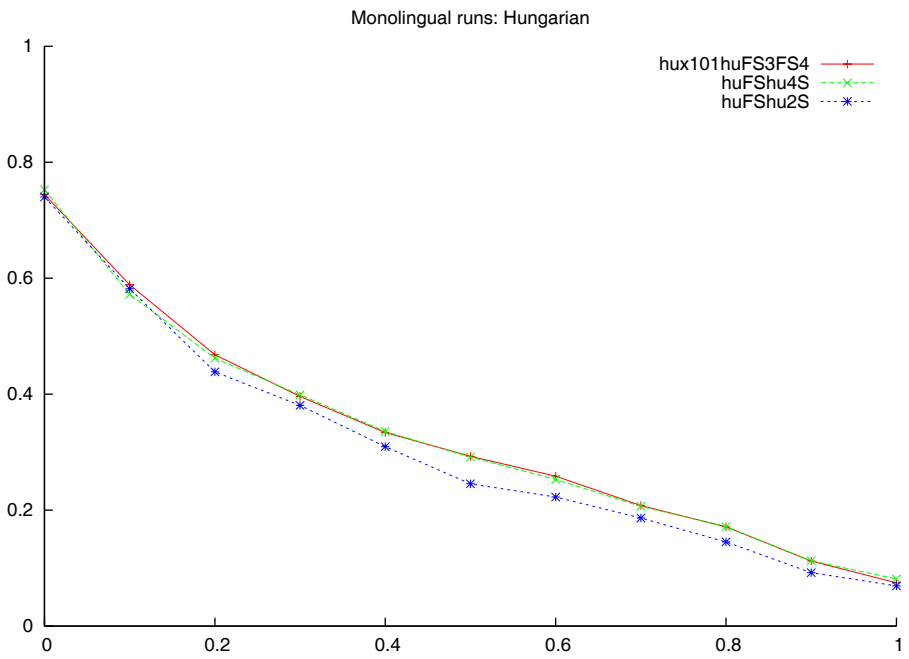
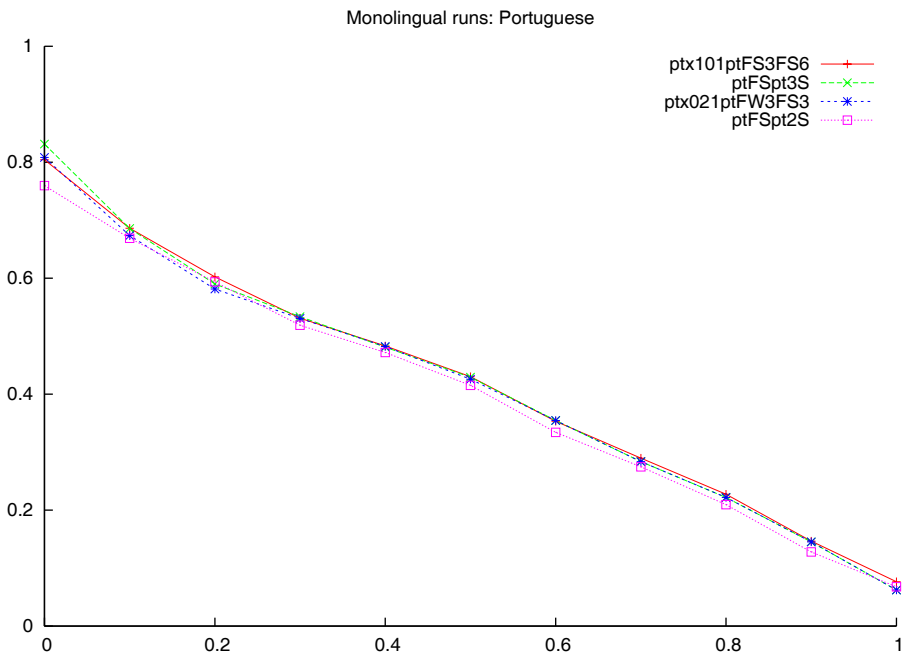
0.7117	0.1336	0.3882	-2.09%	enx091enFW4FS4	
0.6972	0.1338	0.3886	-1.99%	enFSen5S	
0.7139	0.1338	0.3893	-1.82%	enx011enFW4FS5	
0.7095	0.1371	0.3901	-1.61%	enx021enFW3FS3	
0.7052	0.1337	0.3907	-1.46%	enx101enFS4FS5	
0.6962	0.1354	0.3914	-1.29%	enyenFS3456	
0.7117	0.1336	0.3923	-1.06%	enx021enFW4FS4	
0.7144	0.1369	0.3930	-0.88%	enx011enFW4FS4	
0.7040	0.1369	0.3930	-0.88%	enFSen4S	
0.6985	0.1363	0.3934	-0.78%	enx101enFS3FS6	2
0.7170	0.1404*	0.3940	-0.63%	enx011enFW3FS3	
0.7083	0.1404*	0.3945	-0.50%	enFSen3S	1
0.7023	0.1376	0.3965*	-0.00%	enx101enFS3FS4	



at0	at1	avgp	%	run	x
0.6559	0.0766	0.2990	-25.73%	frx153frFW4FS5	
0.6562	0.0787	0.2998	-25.53%	frx153frFW3FS3	
0.6810	0.0776	0.3004	-25.38%	frx153frFW4FS4	
0.7025	0.0757	0.3040	-24.49%	frx153frFW4FS6	
0.6710	0.0701	0.3271	-18.75%	frFWfr2W	
0.7171	0.0928	0.3559	-11.60%	frFWfr3W	
0.7137	0.0955	0.3575	-11.20%	frFWfr4W	
0.7901	0.0756	0.3794	-5.76%	frFSfr2S	3
0.7229	0.1002	0.3803	-5.54%	frx091frFW4FS5	
0.7264	0.1073	0.3808	-5.41%	frx091frFW3FS3	
0.7235	0.1020	0.3821	-5.09%	frx091frFW4FS4	
0.7252	0.0977	0.3838	-4.67%	frx091frFW4FS6	
0.7426	0.1080*	0.3845	-4.50%	frx011frFW3FS3	
0.7420	0.1080*	0.3850	-4.37%	frx021frFW3FS3	
0.7377	0.1019	0.3857	-4.20%	frx021frFW4FS5	
0.7490	0.0996	0.3876	-3.73%	fryfrFS3FW3	
0.7420	0.1034	0.3877	-3.70%	frx021frFW4FS4	
0.7532	0.1019	0.3893	-3.30%	frx011frFW4FS5	
0.7662	0.1080*	0.3913	-2.81%	frFSfr3S	
0.7510	0.0993	0.3917	-2.71%	frx021frFW4FS6	
0.7559	0.1034	0.3924	-2.53%	frx011frFW4FS4	
0.7861	0.1019	0.3954	-1.79%	frFSfr5S	
0.7693	0.0993	0.3967	-1.47%	frx011frFW4FS6	
0.7901	0.1030	0.3973	-1.32%	frx101frFS4FS5	
0.8008	0.1059	0.3984	-1.04%	frx101frFS3FS4	
0.7888	0.1034	0.3992	-0.84%	frFSfr4S	2
0.7796	0.1044	0.3994	-0.79%	fryfrFS3456	
0.8034*	0.1039	0.4003	-0.57%	frx101frFS3FS6	1
0.7867	0.0993	0.4026*	-0.00%	frFSfr6S	

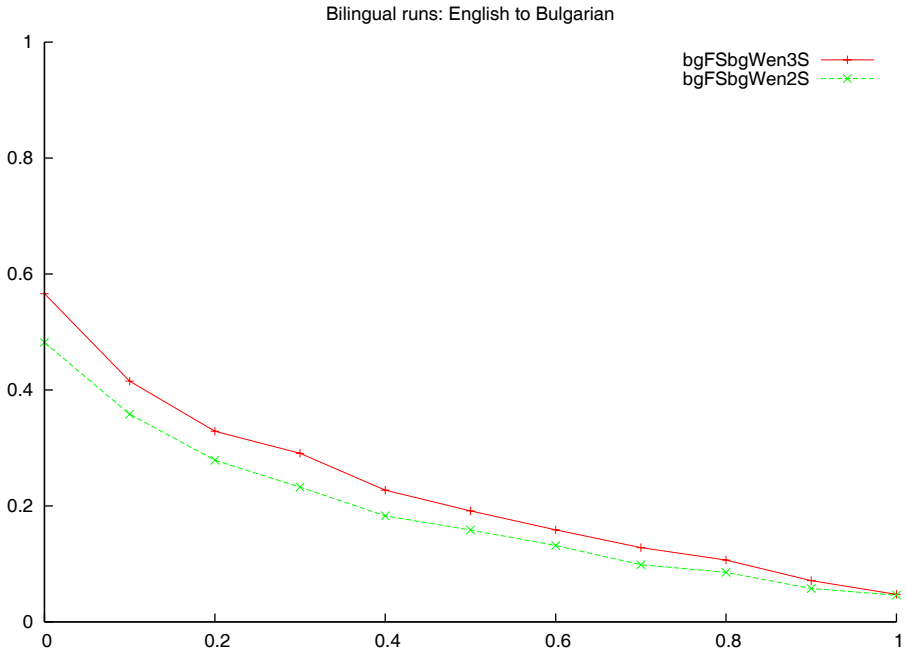


at0	at1	avgp	%	run	x
0.5137	0.0449	0.2010	-34.93%	huFWhu3W	
0.5354	0.0450	0.2034	-34.15%	huFWhu2W	
0.5282	0.0464	0.2113	-31.60%	huFWhu4W	
0.6257	0.0358	0.2429	-21.37%	hux153huFW3FS3	
0.6579	0.0500	0.2533	-18.00%	hux153huFW4FS6	
0.6586	0.0527	0.2546	-17.58%	hux153huFW4FS5	
0.6610	0.0508	0.2572	-16.74%	hux153huFW4FS4	
0.5611	0.0640	0.2584	-16.35%	hux091huFW3FS3	
0.5690	0.0734	0.2641	-14.50%	hux091huFW4FS5	
0.5705	0.0730	0.2653	-14.11%	hux091huFW4FS6	
0.5699	0.0759	0.2663	-13.79%	hux091huFW4FS4	
0.6581	0.0644	0.2768	-10.39%	huyhuFS3FW3	
0.6164	0.0692	0.2796	-9.49%	hux021huFW3FS3	
0.7401	0.0693	0.2842	-8.00%	huFShu2S	3
0.6274	0.0787	0.2853	-7.64%	hux021huFW4FS5	
0.6345	0.0692	0.2865	-7.25%	hux011huFW3FS3	
0.6334	0.0797	0.2871	-7.06%	hux021huFW4FS6	
0.6358	0.0812*	0.2886	-6.57%	hux021huFW4FS4	
0.6458	0.0787	0.2890	-6.44%	hux011huFW4FS5	
0.6588	0.0797	0.2911	-5.76%	hux011huFW4FS6	
0.6572	0.0812*	0.2927	-5.24%	hux011huFW4FS4	
0.7417	0.0692	0.3029	-1.94%	huFShu3S	
0.7227	0.0787	0.3043	-1.49%	huFShu5S	
0.7225	0.0804	0.3058	-1.00%	hux101huFS4FS5	
0.7498	0.0797	0.3074	-0.49%	huFShu6S	
0.7435	0.0737	0.3077	-0.39%	hux101huFS3FS6	
0.7430	0.0807	0.3077	-0.39%	huyhuFS3456	
0.7525*	0.0812*	0.3085	-0.13%	huFShu4S	2
0.7445	0.0747	0.3089*	-0.00%	hux101huFS3FS4	1

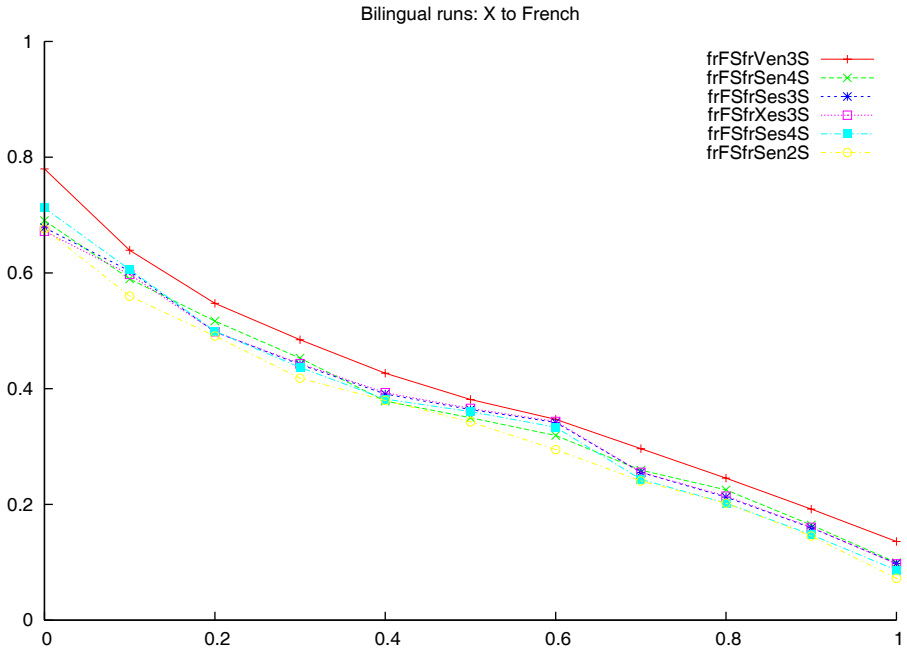


at0	at1	avgp	%	run	x
0.6964	0.0750	0.3406	-15.80%	ptx153ptFW4FS5	
0.7098	0.0773	0.3427	-15.28%	ptx153ptFW4FS4	
0.7157	0.0768	0.3453	-14.64%	ptx153ptFW4FS6	
0.7466	0.0641	0.3531	-12.71%	ptx153ptFW3FS3	
0.7836	0.0563	0.3539	-12.51%	ptFWpt2W	
0.7911	0.0526	0.3633	-10.19%	ptFWpt3W	
0.7872	0.0652	0.3656	-9.62%	ptFWpt4W	
0.7597	0.0677	0.3902	-3.54%	ptFSpt2S	3
0.7966	0.0621	0.3942	-2.55%	ptx091ptFW3FS3	
0.7974	0.0768	0.3943	-2.52%	ptx091ptFW4FS5	
0.8183	0.0644	0.3950	-2.35%	ptyptFS3FW3	
0.7800	0.0768	0.3964	-2.00%	ptFSpt5S	
0.7947	0.0768	0.3964	-2.00%	ptx021ptFW4FS5	
0.7904	0.0768	0.3965	-1.98%	ptx011ptFW4FS5	
0.7996	0.0776	0.3969	-1.88%	ptx091ptFW4FS4	
0.8148	0.0621	0.3977	-1.68%	ptx011ptFW3FS3	
0.8083	0.0621	0.3980	-1.61%	ptx021ptFW3FS3	1
0.7860	0.0767	0.3990	-1.36%	ptx101ptFS4FS5	
0.7992	0.0775	0.3995	-1.24%	ptx091ptFW4FS6	
0.8014	0.0776	0.3998	-1.16%	ptx021ptFW4FS4	
0.7970	0.0776	0.3999	-1.14%	ptx011ptFW4FS4	
0.7896	0.0776	0.4000	-1.11%	ptFSpt4S	
0.7891	0.0777*	0.4013	-0.79%	ptyptFS3456	
0.8314*	0.0621	0.4017	-0.69%	ptFSpt3S	2
0.8068	0.0769	0.4024	-0.52%	ptx101ptFS3FS4	
0.8031	0.0775	0.4028	-0.42%	ptx021ptFW4FS6	
0.7992	0.0775	0.4031	-0.35%	ptx011ptFW4FS6	
0.7846	0.0775	0.4036	-0.22%	ptFSpt6S	
0.8044	0.0764	0.4045*	-0.00%	ptx101ptFS3FS6	

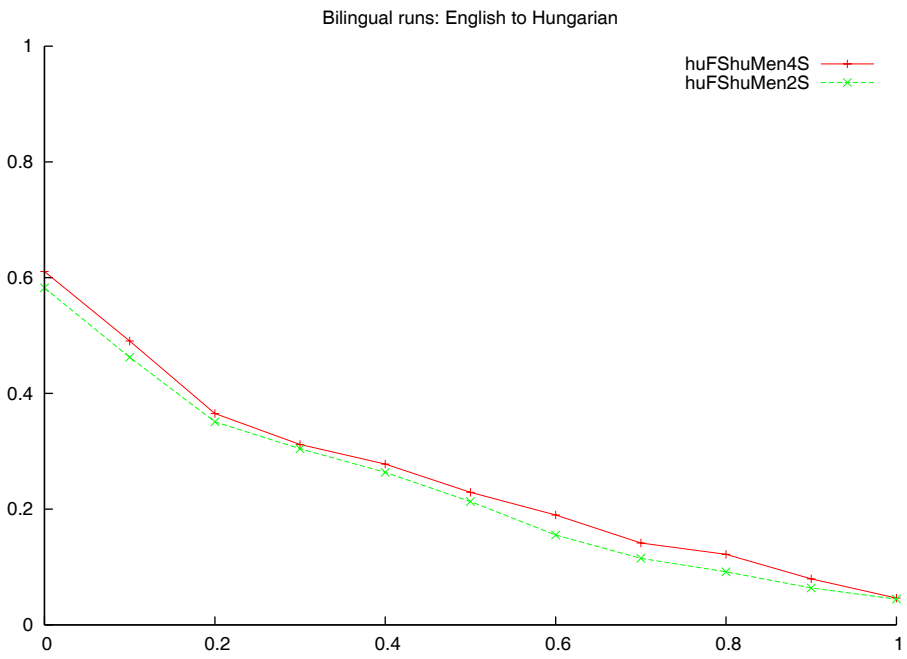
Bilingual to Bulgarian



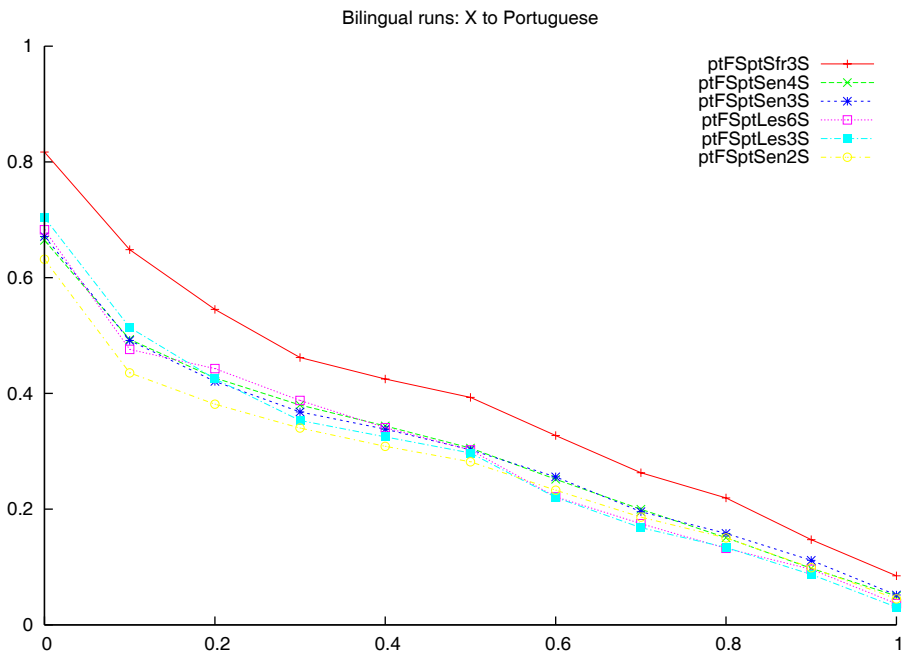
at0	at1	avgp	%	run	x
0.3082	0.0343	0.1151	-45.71%	bgFWbgWen2W	
0.3139	0.0358	0.1316	-37.92%	bgFWbgWen4W	
0.3644	0.0292	0.1428	-32.64%	bgFWbgWen3W	
0.4821	0.0460	0.1739	-17.97%	bgFSbgWen2S	2
0.4895	0.0510	0.1859	-12.31%	bgFSbgWen5S	
0.5192	0.0524*	0.1929	-9.01%	bgFSbgWen4S	
0.5468	0.0507	0.1966	-7.26%	bgFSbgWen6S	
0.5662*	0.0475	0.2120*	-0.00%	bgFSbgWen3S	1



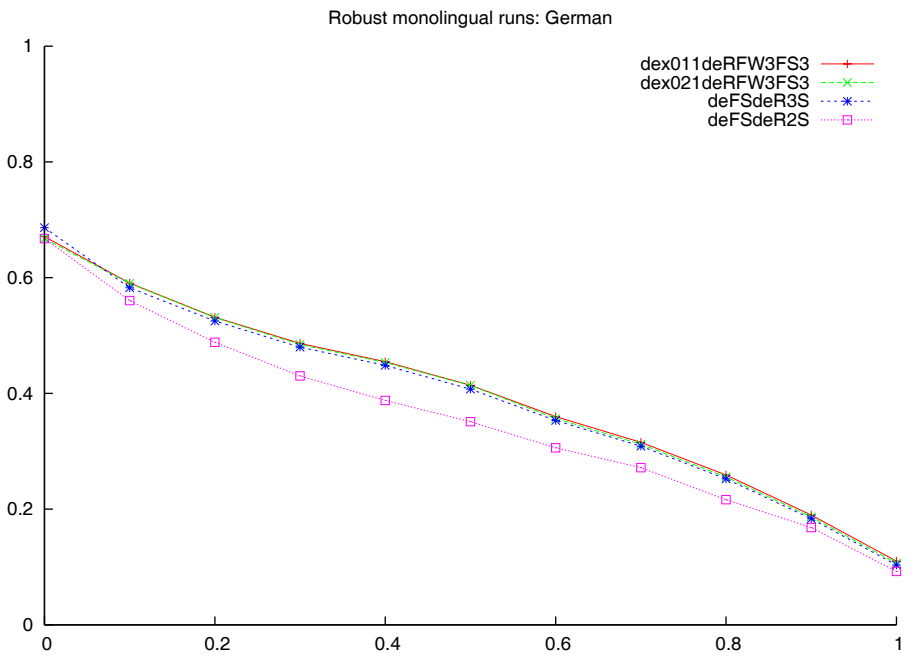
at0	at1	avgp	%	run	x
0.6453	0.0483	0.2649	-31.51%	frFWfrAes2W	
0.5469	0.0630	0.2658	-31.28%	frFWfrSen2W	
0.6595	0.0482	0.2725	-29.55%	frFWfrSes2W	
0.5914	0.0555	0.2794	-27.77%	frFWfrSpt2W	
0.6508	0.0532	0.2814	-27.25%	frFWfrAes4W	
0.6608	0.0553	0.2885	-25.41%	frFWfrSes4W	
0.5810	0.0677	0.2902	-24.97%	frFWfrVen2W	
0.6717	0.0553	0.2922	-24.46%	frFWfrAes3W	
0.6192	0.0716	0.2930	-24.25%	frFWfrSpt3W	
0.6304	0.0676	0.2934	-24.15%	frFWfrSpt4W	
0.5856	0.0891	0.2948	-23.78%	frFWfrSen4W	
0.6747	0.0611	0.2983	-22.88%	frFWfrSes3W	
0.6225	0.0744	0.3058	-20.94%	frFWfrVde2W	
0.6783	0.0611	0.3115	-19.47%	frFSfrAes2S	
0.6502	0.0883	0.3158	-18.36%	frFWfrSen3W	
0.6897	0.0629	0.3179	-17.81%	frFSfrSes2S	
0.6421	0.0963	0.3239	-16.26%	frFWfrVen4W	
0.6860	0.0688	0.3239	-16.26%	frFSfrSpt2S	
0.6877	0.0765	0.3312	-14.37%	frFSfrAes6S	
0.6765	0.0723	0.3320	-14.17%	frFSfrSen2S	4
0.6605	0.0752	0.3335	-13.78%	frFWfrVde4W	
0.6974	0.0822	0.3353	-13.31%	frFSfrSpt5S	
0.7124	0.0795	0.3371	-12.85%	frFSfrAes5S	
0.6730	0.0743	0.3380	-12.62%	frFSfrVde2S	
0.6626	0.0842	0.3381	-12.59%	frFWfrVde3W	
0.6910	0.0792	0.3382	-12.56%	frFSfrSes6S	
0.6944	0.0806	0.3385	-12.49%	frFSfrSpt6S	
0.6905	0.0828	0.3394	-12.25%	frFSfrVen2S	
0.6821	0.0887	0.3409	-11.87%	frFSfrSen5S	
0.7005	0.0878	0.3416	-11.69%	frFSfrSpt4S	
0.7088	0.0834	0.3425	-11.45%	frFSfrAes4S	
0.7095	0.1086	0.3438	-11.12%	frFWfrVen3W	
0.6781	0.0906	0.3441	-11.04%	frFSfrAes3S	
0.7157	0.0821	0.3443	-10.99%	frFSfrSes5S	
0.7157	0.0923	0.3470	-10.29%	frFSfrSpt3S	
0.7121	0.0864	0.3503	-9.44%	frFSfrSes4S	3
0.6721	0.0973	0.3505	-9.38%	frFSfrXes3S	2
0.6781	0.0979	0.3511	-9.23%	frFSfrSes3S	
0.6906	0.0993	0.3533	-8.66%	frFSfrSen4S	1
0.6890	0.1002	0.3543	-8.40%	frFSfrSen6S	
0.6972	0.0879	0.3590	-7.19%	frFSfrVde5S	
0.7051	0.0838	0.3602	-6.88%	frFSfrVde6S	
0.7629	0.1182	0.3677	-4.94%	frFSfrVen5S	
0.7080	0.1067	0.3713	-4.01%	frFSfrSen3S	
0.7619	0.1292	0.3750	-3.05%	frFSfrVen4S	
0.7524	0.1303	0.3772	-2.48%	frFSfrVen6S	
0.7274	0.1027	0.3776	-2.38%	frFSfrVde4S	
0.7473	0.1089	0.3805	-1.63%	frFSfrVde3S	
0.7797*	0.1360*	0.3868*	-0.00%	frFSfrVen3S	



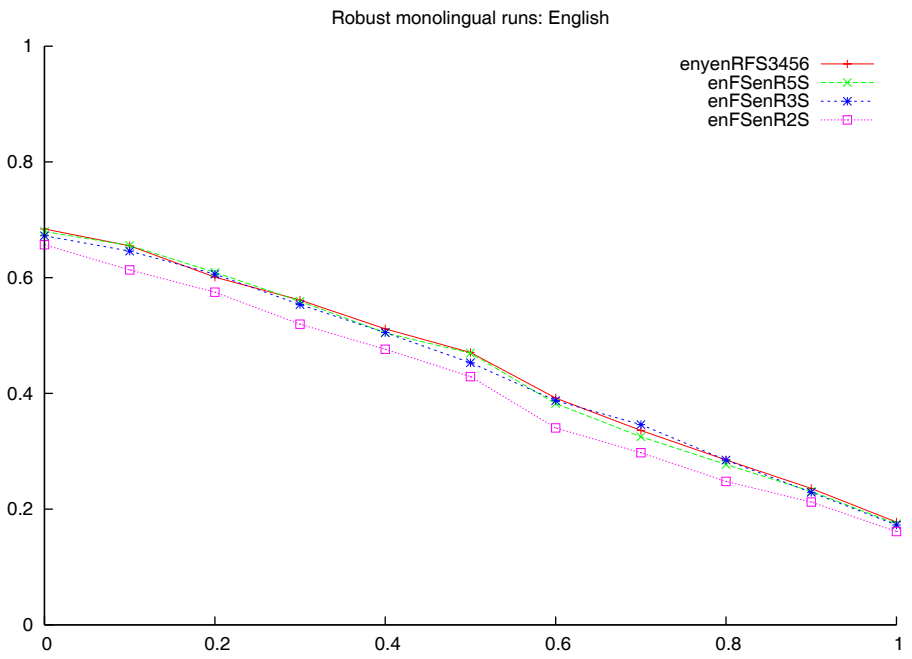
at0	at1	avgp	%	run	x
0.4605	0.0222	0.1518	-37.27%	huFWhuMen2W	
0.5529	0.0191	0.1638	-32.31%	huFWhuMen3W	
0.5021	0.0205	0.1774	-26.69%	huFWhuMen4W	
0.5825	0.0445	0.2196	-9.26%	huFShuMen2S	2
0.6275*	0.0472*	0.2277	-5.91%	huFShuMen3S	
0.5855	0.0465	0.2366	-2.23%	huFShuMen5S	
0.5962	0.0455	0.2417	-0.12%	huFShuMen6S	
0.6105	0.0463	0.2420*	-0.00%	huFShuMen4S	1



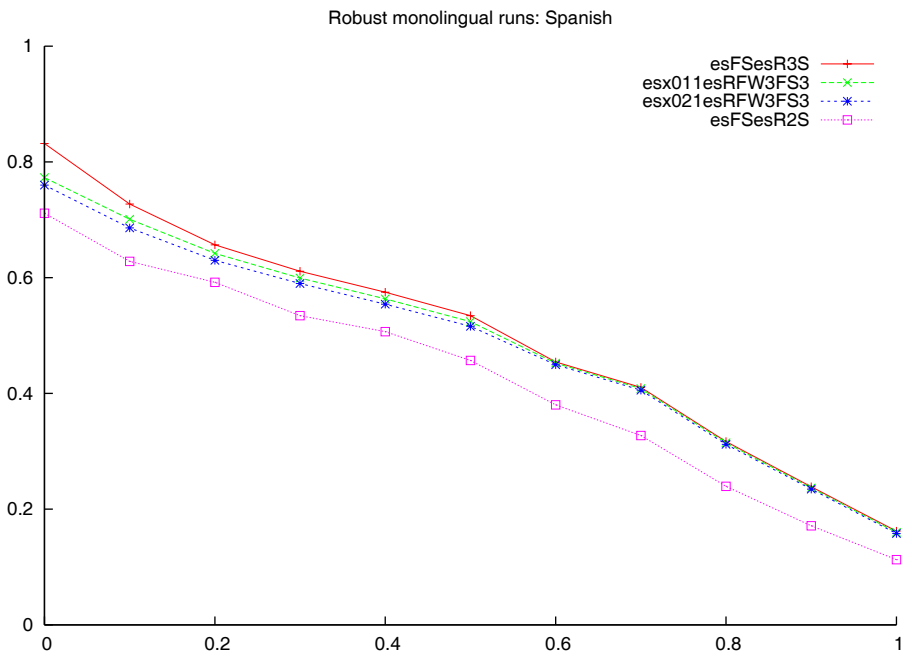
at0	at1	avgp	%	run	x
0.5779	0.0418	0.2356	-37.17%	ptFWptSen2W	
0.6175	0.0280	0.2451	-34.64%	ptFWptLes2W	
0.6709	0.0257	0.2507	-33.15%	ptFWptLes3W	
0.6435	0.0283	0.2538	-32.32%	ptFWptLes4W	
0.5846	0.0442	0.2550	-32.00%	ptFWptSen4W	
0.6023	0.0437	0.2556	-31.84%	ptFWptSen3W	
0.6318	0.0449	0.2650	-29.33%	ptFSptSen2S	4
0.6462	0.0325	0.2788	-25.65%	ptFSptLes2S	
0.7038	0.0307	0.2799	-25.36%	ptFSptLes3S	1
0.6389	0.0343	0.2803	-25.25%	ptFSptLes5S	
0.6759	0.0341	0.2829	-24.56%	ptFSptLes4S	
0.6827	0.0367	0.2838	-24.32%	ptFSptLes6S	
0.6768	0.0501	0.2887	-23.01%	ptFSptSen5S	
0.6572	0.0522	0.2896	-22.77%	ptFSptSen6S	
0.6712	0.0517	0.2898	-22.72%	ptFSptSen3S	3
0.6646	0.0501	0.2926	-21.97%	ptFSptSen4S	
0.7054	0.0567	0.3190	-14.93%	ptFWptSfr2W	
0.7145	0.0708	0.3352	-10.61%	ptFWptSfr4W	
0.7365	0.0654	0.3430	-8.53%	ptFWptSfr3W	
0.7514	0.0693	0.3501	-6.64%	ptFSptSfr2S	
0.7875	0.0771	0.3693	-1.52%	ptFSptSfr5S	
0.7695	0.0801	0.3712	-1.01%	ptFSptSfr6S	
0.7993	0.0798	0.3743	-0.19%	ptFSptSfr4S	
0.8171*	0.0847*	0.3750*	-0.00%	ptFSptSfr3S	2



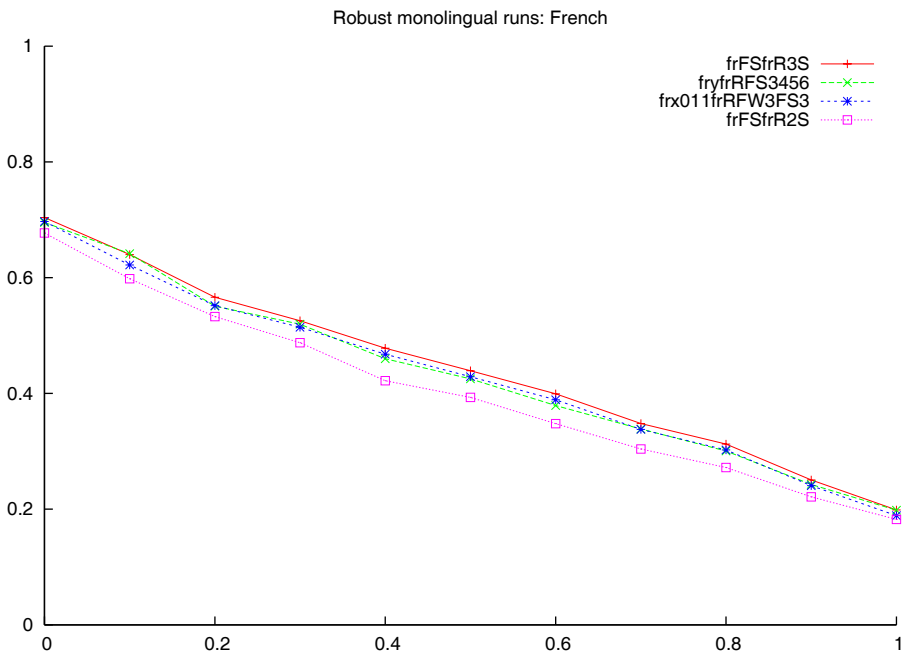
at0	at1	avgp	gmap	%	run	x
0.6190	0.0691	0.3005	0.0747	-22.21%	deFWdeR2W	
0.6276	0.0706	0.3266	0.0896	-15.45%	deFWdeR4W	
0.6427	0.0858	0.3479	0.0896	-9.94%	deFWdeR3W	
0.6674	0.0924	0.3406	0.1061	-11.83%	deFSdeR2S	4
0.6525	0.0844	0.3600	0.1095	-6.81%	dex021deRFW4FS5	
0.6565	0.0844	0.3624	0.1112	-6.19%	dex011deRFW4FS5	
0.6719	0.0844	0.3647	0.1129	-5.59%	deFSdeR5S	
0.6559	0.0900	0.3655	0.1143	-5.38%	dex021deRFW4FS4	
0.6676	0.1067	0.3831	0.1149	-0.83%	dex021deRFW3FS3	2
0.6602	0.0900	0.3678	0.1155	-4.79%	dex011deRFW4FS4	
0.6865*	0.1034	0.3803	0.1155	-1.55%	deFSdeR3S	3
0.6709	0.1101*	0.3863*	0.1159	-0.00%	dex011deRFW3FS3	1
0.6548	0.0934	0.3639	0.1163	-5.80%	dex021deRFW4FS6	
0.6611	0.0951	0.3672	0.1178	-4.94%	dex011deRFW4FS6	
0.6782	0.0950	0.3745	0.1178	-3.05%	deydeRFS3456	
0.6810	0.0900	0.3726	0.1178	-3.55%	deFSdeR4S	
0.6729	0.0984	0.3729	0.1198	-3.47%	deFSdeR6S	



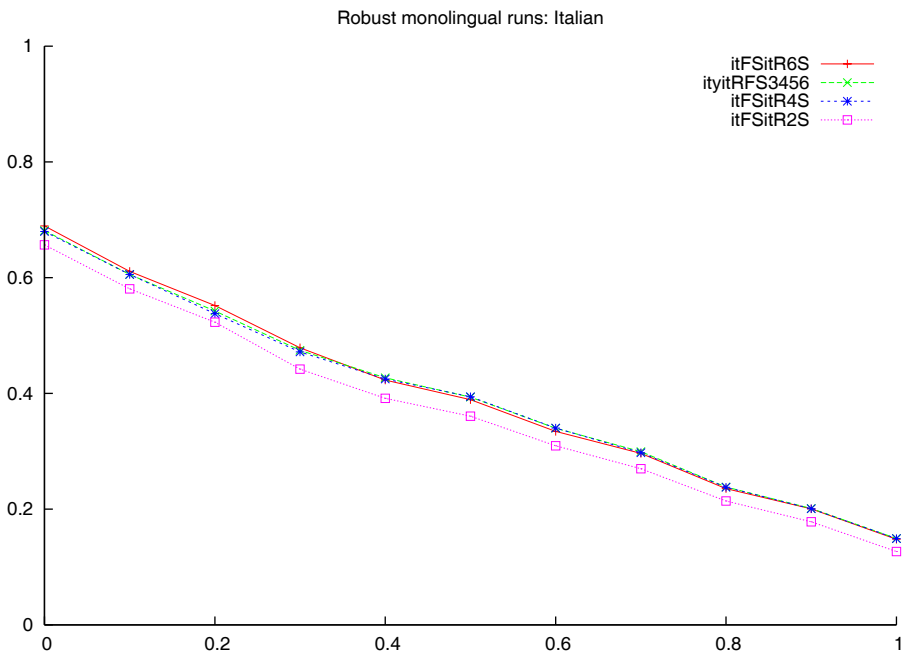
at0	at1	avgp	gmap	%	run	x
0.6284	0.1457	0.3657	0.0738	-15.70%	enFWenR2W	
0.6462	0.1587	0.3961	0.0833	-8.69%	enFWenR4W	
0.6570	0.1614	0.3969	0.0893	-8.51%	enFSenR2S	4
0.6582	0.1623	0.4019	0.0901	-7.35%	enFWenR3W	
0.6604	0.1680	0.4158	0.0937	-4.15%	enx021enRFW4FS5	
0.6583	0.1712	0.4152	0.0951	-4.29%	enx021enRFW4FS6	
0.6664	0.1697	0.4214	0.0952	-2.86%	enx011enRFW4FS5	
0.6597	0.1698	0.4168	0.0954	-3.92%	enx021enRFW4FS4	
0.6684	0.1721	0.4200	0.0966	-3.18%	enx011enRFW4FS6	
0.6665	0.1715	0.4208	0.0967	-3.00%	enx011enRFW4FS4	
0.6798	0.1747	0.4302	0.0968	-0.83%	enFSenR5S	2
0.6704	0.1765	0.4275	0.0974	-1.45%	enFSenR4S	
0.6791	0.1737	0.4248	0.0976	-2.07%	enFSenR6S	
0.6842*	0.1777*	0.4338*	0.0999	-0.00%	enyenRFS3456	1
0.6652	0.1716	0.4236	0.1006	-2.35%	enx011enRFW3FS3	
0.6686	0.1711	0.4211	0.1007	-2.93%	enx021enRFW3FS3	
0.6723	0.1725	0.4289	0.1016	-1.13%	enFSenR3S	3



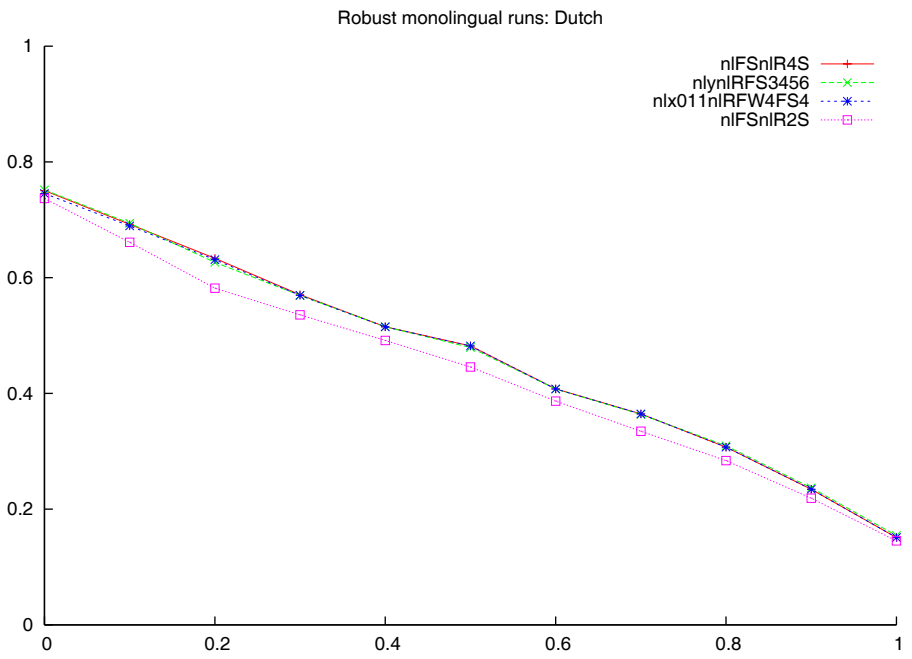
at0	at1	avgp	gmap	%	run	z
0.6928	0.0769	0.3523	0.1486	-23.15%	esFWesR2W	
0.7068	0.1027	0.3865	0.1742	-15.68%	esFWesR4W	
0.7246	0.1140	0.3980	0.1874	-13.18%	esFWesR3W	
0.7332	0.0976	0.4040	0.1964	-11.87%	esFSesR2S	4
0.7334	0.1139	0.4194	0.2113	-8.51%	esx021esRFW4FS5	
0.7386	0.1149	0.4210	0.2125	-8.16%	esx011esRFW4FS5	
0.7351	0.1145	0.4243	0.2148	-7.44%	esx021esRFW4FS6	
0.7423	0.1155	0.4261	0.2163	-7.05%	esx011esRFW4FS6	
0.7718	0.1161	0.4283	0.2168	-6.57%	esFSesR5S	
0.7315	0.1185	0.4235	0.2186	-7.61%	esx021esRFW4FS4	
0.7377	0.1195	0.4255	0.2200	-7.18%	esx011esRFW4FS4	
0.7791	0.1167	0.4338	0.2208	-5.37%	esFSesR6S	
0.7751	0.1207	0.4329	0.2245	-5.56%	esFSesR4S	
0.7730	0.1209	0.4384	0.2252	-4.36%	esyesRFS3456	
0.7825	0.1295	0.4350	0.2407	-5.10%	esFSesRJ4S	
0.7810	0.1286	0.4412	0.2491	-3.75%	esFSesRJ5S	
0.7988	0.1296*	0.4448	0.2548	-2.97%	esFSesRJ6S	
0.7539	0.1255	0.4446	0.2561	-3.01%	esx021esRFW3FS3	3
0.8034	0.1296*	0.4469	0.2565	-2.51%	esFSesRJ7S	
0.8041	0.1293	0.4473	0.2567	-2.42%	esFSesRJ9S	
0.8069	0.1293	0.4474	0.2567	-2.40%	esFSesRJ8S	
0.8119	0.1262	0.4524	0.2582	-1.31%	esFSesRJ2S	
0.7650	0.1268	0.4509	0.2605	-1.64%	esx011esRFW3FS3	2
0.8104	0.1274	0.4562	0.2606	-0.48%	esFSesRJ33S	
0.8186*	0.1274	0.4569	0.2638	-0.33%	esFSesRJ1S	
0.8180	0.1281	0.4583	0.2646	-0.02%	esFSesRJ3S	
0.8186*	0.1281	0.4584*	0.2650	-0.00%	esFSesR3S	1



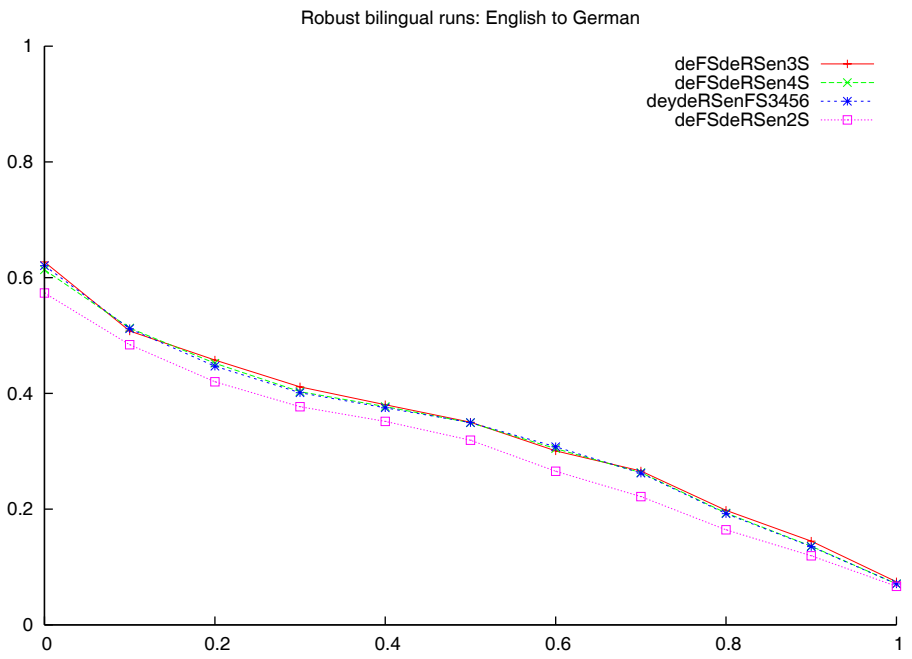
at0	at1	avgp	gmap	%	run	x
0.6191	0.1397	0.3184	0.0808	-25.15%	frFWfrR2W	
0.6376	0.1618	0.3519	0.0976	-17.28%	frFWfrR4W	
0.6633	0.1734	0.3740	0.1046	-12.08%	frFWfrR3W	
0.6772	0.1822	0.3849	0.1187	-9.52%	frFSfrR2S	4
0.6656	0.1809	0.3876	0.1238	-8.89%	frx021frRFW4FS5	
0.6730	0.1842	0.3907	0.1251	-8.16%	frx011frRFW4FS5	
0.6653	0.1827	0.3926	0.1266	-7.71%	frx021frRFW4FS6	
0.6649	0.1847	0.3940	0.1271	-7.38%	frx021frRFW4FS4	
0.6742	0.1861	0.3973	0.1286	-6.61%	frx011frRFW4FS6	
0.7029	0.1942	0.4063	0.1288	-4.49%	frFSfrR5S	
0.6731	0.1880	0.3984	0.1290	-6.35%	frx011frRFW4FS4	
0.6930	0.1961	0.4120	0.1321	-3.15%	frFSfrR6S	
0.6956	0.1980	0.4133	0.1325	-2.84%	frFSfrR4S	
0.6954	0.1981	0.4154	0.1336	-2.35%	fryfrRFS3456	2
0.6910	0.1869	0.4102	0.1337	-3.57%	frx021frRFW3FS3	
0.6969	0.1886	0.4141	0.1350	-2.66%	frx011frRFW3FS3	3
0.7039*	0.1986*	0.4254*	0.1369	-0.00%	frFSfrR3S	1



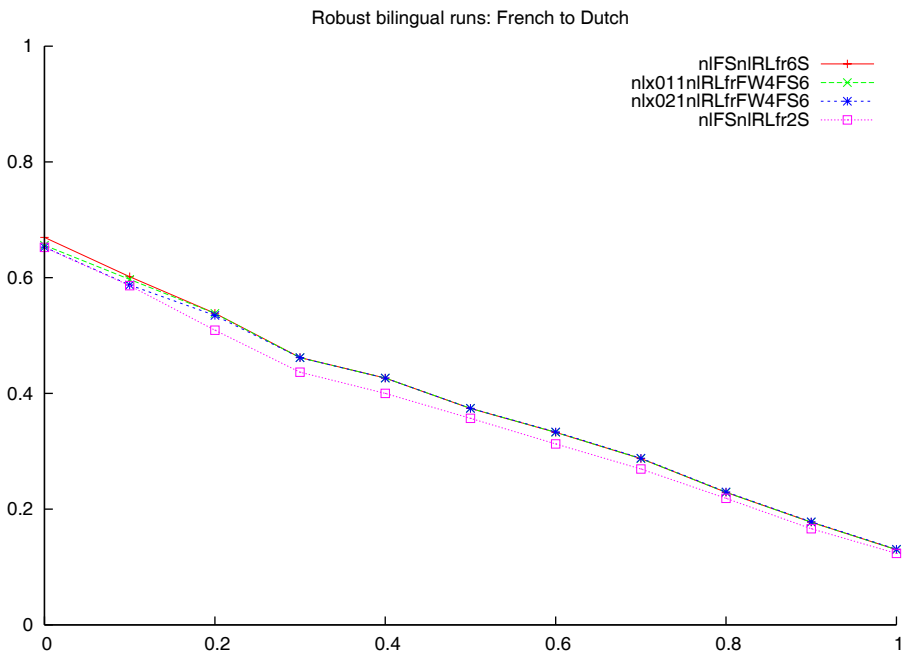
at0	at1	avgp	gmap	%	run	x
0.6004	0.1061	0.3107	0.0773	-17.85%	itFWitR2W	
0.6486	0.1245	0.3406	0.0854	-9.94%	itFWitR3W	
0.6460	0.1245	0.3367	0.0870	-10.97%	itFWitR4W	
0.6566	0.1268	0.3511	0.1050	-7.17%	itFSitR2S	4
0.6594	0.1422	0.3616	0.1082	-4.39%	itx021itRFW4FS5	
0.6680	0.1322	0.3626	0.1092	-4.12%	itx021itRFW3FS3	
0.6644	0.1439	0.3644	0.1095	-3.65%	itx011itRFW4FS5	
0.6603	0.1424	0.3657	0.1099	-3.31%	itx021itRFW4FS4	
0.6608	0.1413	0.3652	0.1108	-3.44%	itx021itRFW4FS6	
0.6779	0.1338	0.3689	0.1112	-2.46%	itx011itRFW3FS3	
0.6682	0.1385	0.3718	0.1113	-1.69%	itFSitR3S	
0.6701	0.1440	0.3684	0.1113	-2.59%	itx011itRFW4FS4	
0.6713	0.1489	0.3726	0.1118	-1.48%	itFSitR5S	
0.6696	0.1430	0.3681	0.1123	-2.67%	itx011itRFW4FS6	
0.6798	0.1490	0.3761	0.1135	-0.56%	itFSitR4S	3
0.6813	0.1492*	0.3780	0.1146	-0.05%	ityitRFS3456	2
0.6895*	0.1480	0.3782*	0.1153	-0.00%	itFSitR6S	1



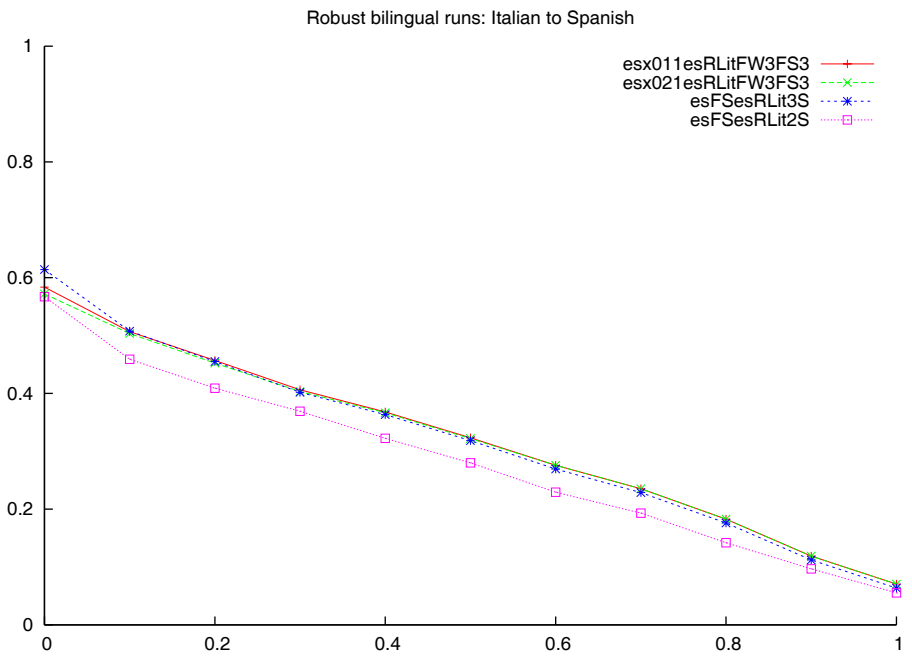
at0	at1	avgp	gmap	%	run	x
0.7105	0.1420	0.3960	0.1413	-12.04%	nlFWnlR2W	
0.7181	0.1388	0.4113	0.1720	-8.64%	nlFWnlR3W	
0.7212	0.1467	0.4189	0.1722	-6.95%	nlFWnlR4W	
0.7368	0.1451	0.4237	0.1731	-5.89%	nlFSnlR2S	4
0.7343	0.1476	0.4370	0.1954	-2.93%	nlx021nlRFW3FS3	
0.7372	0.1476	0.4380	0.1963	-2.71%	nlx011nlRFW3FS3	
0.7476	0.1476	0.4393	0.1969	-2.42%	nlFSnlR3S	
0.7413	0.1501	0.4437	0.2025	-1.44%	nlx021nlRFW4FS5	
0.7371	0.1552	0.4446	0.2035	-1.24%	nlx021nlRFW4FS6	
0.7459	0.1491	0.4463	0.2042	-0.87%	nlx011nlRFW4FS5	
0.7520*	0.1491	0.4474	0.2045	-0.62%	nlFSnlR5S	
0.7408	0.1562*	0.4472	0.2049	-0.67%	nlx011nlRFW4FS6	
0.7449	0.1562*	0.4478	0.2050	-0.53%	nlFSnlR6S	
0.7432	0.1504	0.4459	0.2051	-0.96%	nlx021nlRFW4FS4	
0.7454	0.1510	0.4488	0.2067	-0.31%	nlx011nlRFW4FS4	3
0.7515	0.1544	0.4499	0.2068	-0.07%	nlynlRFS3456	2
0.7504	0.1510	0.4502*	0.2073	-0.00%	nlFSnlR4S	1



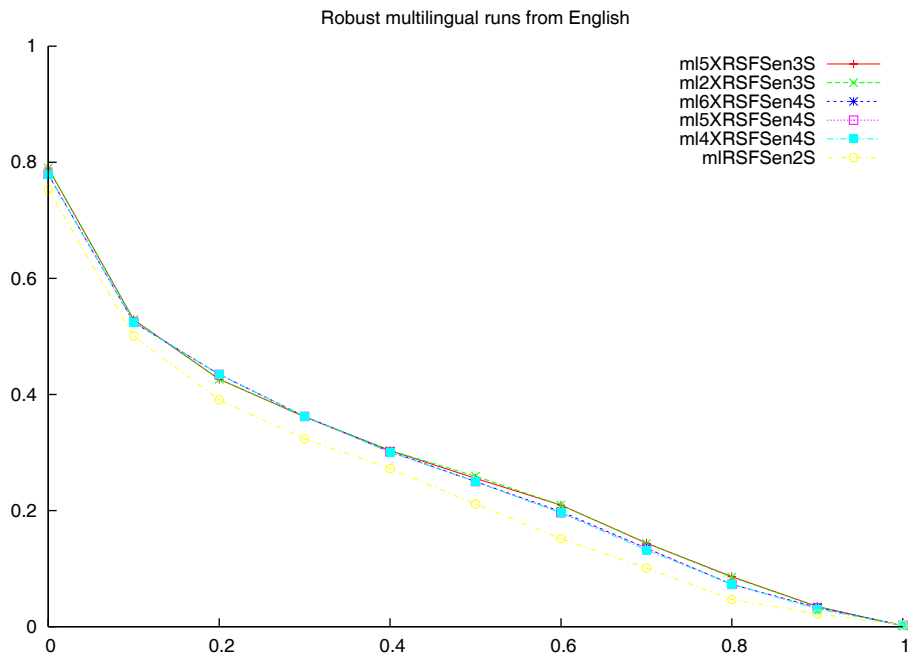
at0	at1	avgp	gmap	%	run	x
0.5251	0.0409	0.2458	0.0303	-24.21%	deFWdeRSen2W	
0.5548	0.0484	0.2688	0.0378	-17.11%	deFWdeRSen4W	
0.5673	0.0496	0.2809	0.0448	-13.38%	deFWdeRSen3W	
0.5735	0.0667	0.2912	0.0507	-10.21%	deFSdeRSen2S	4
0.5757	0.0585	0.2997	0.0530	-7.59%	dex021deRSenFW4FS5	
0.5902	0.0610	0.3043	0.0540	-6.17%	dex011deRSenFW4FS5	
0.6054	0.0669	0.3135	0.0549	-3.33%	deFSdeRSen5S	
0.5776	0.0598	0.3023	0.0555	-6.78%	dex021deRSenFW4FS6	
0.5923	0.0629	0.3075	0.0566	-5.18%	dex011deRSenFW4FS6	
0.5789	0.0618	0.3070	0.0575	-5.33%	dex021deRSenFW4FS4	
0.6085	0.0706	0.3185	0.0577	-1.79%	deFSdeRSen6S	
0.5935	0.0644	0.3115	0.0587	-3.95%	dex011deRSenFW4FS4	
0.6208	0.0707	0.3213	0.0598	-0.93%	deydeRSenFS3456	3
0.6137	0.0709	0.3220	0.0600	-0.71%	deFSdeRSen4S	2
0.6008	0.0687	0.3164	0.0647	-2.44%	dex011deRSenFW3FS3	
0.6271*	0.0745*	0.3243*	0.0659	-0.00%	deFSdeRSen3S	1
0.5983	0.0663	0.3133	0.0662	-3.39%	dex021deRSenFW3FS3	



at0	at1	avgp	gmap	%	run	x
0.6158	0.1164	0.3309	0.0738	-11.05%	nlFWnlRLfr2W	
0.6338	0.1140	0.3507	0.0886	-5.73%	nlFWnlRLfr4W	
0.6523	0.1236	0.3537	0.0975	-4.92%	nlFSnlRLfr2S	4
0.6632	0.1219	0.3664	0.1025	-1.51%	nlFSnlRLfr5S	
0.6503	0.1237	0.3653	0.1029	-1.80%	nlx021nlRLfrFW4FS5	
0.6506	0.1219	0.3644	0.1029	-2.04%	nlx011nlRLfrFW4FS5	
0.6340	0.1072	0.3536	0.1032	-4.95%	nlFWnlRLfr3W	
0.6528	0.1307*	0.3692	0.1075	-0.75%	nlx021nlRLfrFW4FS6	3
0.6536	0.1256	0.3682	0.1078	-1.02%	nlx021nlRLfrFW4FS4	
0.6696*	0.1300	0.3720*	0.1078	--0.00%	nlFSnlRLfr6S	1
0.6544	0.1245	0.3677	0.1080	-1.16%	nlx011nlRLfrFW4FS4	
0.6560	0.1300	0.3699	0.1080	-0.56%	nlx011nlRLfrFW4FS6	2
0.6657	0.1245	0.3680	0.1085	-1.08%	nlFSnlRLfr4S	
0.6684	0.1246	0.3687	0.1092	-0.89%	nlynlRLfrFS3456	
0.6421	0.1207	0.3621	0.1234	-2.66%	nlx021nlRLfrFW3FS3	
0.6457	0.1207	0.3614	0.1238	-2.85%	nlx011nlRLfrFW3FS3	
0.6658	0.1207	0.3634	0.1253	-2.31%	nlFSnlRLfr3S	



at0	at1	avgp	gmap	%	run	x
0.4699	0.0384	0.2113	0.0361	-31.13%	esFWesRLit2W	
0.5072	0.0479	0.2511	0.0448	-18.16%	esFWesRLit4W	
0.5331	0.0548	0.2663	0.0554	-13.20%	esFWesRLit3W	
0.5671	0.0553	0.2689	0.0620	-12.35%	esFSesRLit2S	4
0.5448	0.0663	0.2804	0.0643	-8.60%	esx021esRLitFW4FS5	
0.5524	0.0663	0.2818	0.0646	-8.15%	esx011esRLitFW4FS5	
0.5461	0.0686	0.2884	0.0668	-6.00%	esFSesRLit5S	
0.5933	0.0663	0.2884	0.0698	-6.00%	esx021esRLitFW4FS4	
0.5568	0.0686	0.2910	0.0709	-5.15%	esx011esRLitFW4FS4	
0.5463	0.0653	0.2881	0.0713	-6.10%	esx021esRLitFW4FS6	
0.5562	0.0653	0.2902	0.0723	-5.41%	esx011esRLitFW4FS6	
0.6019	0.0686	0.2963	0.0730	-3.42%	esFSesRLit4S	
0.6054	0.0691	0.2995	0.0740	-2.38%	esyesRLitFS3456	
0.5903	0.0653	0.2953	0.0743	-3.75%	esFSesRLit6S	
0.5719	0.0704*	0.3042	0.0812	-0.85%	esx021esRLitFW3FS3	2
0.5836	0.0704*	0.3068*	0.0826	-0.00%	esx011esRLitFW3FS3	1
0.6140*	0.0637	0.3037	0.0833	-1.01%	esFSesRLit3S	3



at0	at1	avgp	gmap	%	run	x
0.7026	0.0000	0.2079	0.1047	-21.13%	mlRSFSen2Sl	
0.7246	0.0028	0.2245	0.1072	-14.83%	mlRSFSen5S	
0.7533	0.0031*	0.2267	0.1104	-14.00%	mlRSFSen2S	4
0.7561	0.0000	0.2219	0.1117	-15.82%	mlRSFSen5Sl	
0.7027	0.0008	0.2113	0.1125	-19.84%	ml6YRSFSen2Sl	
0.7040	0.0005	0.2141	0.1142	-18.78%	mlRSFSen2Sn	
0.7232	0.0028	0.2278	0.1142	-13.58%	mlRSFSen6S	
0.7308	0.0029	0.2300	0.1156	-12.75%	mlRSFSen4S	
0.7027	0.0009	0.2140	0.1158	-18.82%	ml5YRSFSen2Sl	
0.7028	0.0010	0.2146	0.1165	-18.59%	ml4YRSFSen2Sl	
0.7559	0.0000	0.2266	0.1198	-14.04%	mlRSFSen4Sl	
0.7028	0.0011	0.2151	0.1201	-18.40%	ml3YRSFSen2Sl	
0.7040	0.0009	0.2155	0.1208	-18.25%	ml1YRSFSen2Sn	
0.7040	0.0009	0.2161	0.1210	-18.02%	ml6YRSFSen2Sn	
0.7028	0.0011	0.2156	0.1212	-18.21%	ml1YRSFSen2Sl	
0.7040	0.0009	0.2159	0.1213	-18.10%	ml3YRSFSen2Sn	
0.7040	0.0009	0.2160	0.1213	-18.06%	ml3XRSFSen2Sn	
0.7040	0.0009	0.2161	0.1213	-18.02%	ml4XRSFSen2Sn	
0.7040	0.0009	0.2157	0.1214	-18.17%	ml2YRSFSen2Sn	
0.7040	0.0010	0.2155	0.1214	-18.25%	ml1XRSFSen2Sn	
0.7040	0.0009	0.2163	0.1217	-17.94%	ml5XRSFSen2Sn	
0.7040	0.0009	0.2156	0.1219	-18.21%	ml2XRSFSen2Sn	
0.7040	0.0009	0.2161	0.1220	-18.02%	ml5YRSFSen2Sn	
0.7040	0.0009	0.2163	0.1220	-17.94%	ml6XRSFSen2Sn	
0.7040	0.0009	0.2160	0.1221	-18.06%	ml4YRSFSen2Sn	
0.7028	0.0011	0.2155	0.1222	-18.25%	ml2YRSFSen2Sl	
0.7430	0.0000	0.2255	0.1257	-14.45%	mlRSFSen6Sl	
0.7037	0.0019	0.2285	0.1293	-13.32%	ml2XRSFSen2Sl	
0.7041	0.0021	0.2287	0.1293	-13.24%	ml1XRSFSen2Sl	
0.7038	0.0019	0.2286	0.1294	-13.28%	ml3XRSFSen2Sl	
0.7561	0.0027	0.2303	0.1295	-12.63%	ml1XRSFSen2S	
0.7041	0.0018	0.2287	0.1296	-13.24%	ml4XRSFSen2Sl	
0.7561	0.0027	0.2306	0.1296	-12.52%	ml2XRSFSen2S	

0.7040	0.0019	0.2293	0.1297	-13.01%	ml5XRSFSen2Sl	
0.7560	0.0027	0.2314	0.1299	-12.22%	ml5XRSFSen2S	
0.7044	0.0019	0.2298	0.1300	-12.82%	ml6XRSFSen2Sl	
0.7547	0.0017	0.2300	0.1300	-12.75%	mlRSFSen5Sn	
0.7559	0.0027	0.2314	0.1300	-12.22%	ml6XRSFSen2S	
0.7560	0.0027	0.2312	0.1300	-12.29%	ml4XRSFSen2S	
0.7561	0.0027	0.2311	0.1300	-12.33%	ml3XRSFSen2S	
0.7669	0.0020	0.2403	0.1320	-8.84%	mlRSFSen3S	
0.7629	0.0010	0.2316	0.1329	-12.14%	ml6YRSFSen5Sl	
0.7428	0.0013	0.2338	0.1365	-11.31%	mlRSFSen6Sn	
0.7629	0.0012	0.2344	0.1372	-11.08%	ml5YRSFSen5Sl	
0.7464	0.0000	0.2299	0.1380	-12.78%	mlRSFSen3Sl	
0.7546	0.0018	0.2352	0.1380	-10.77%	mlRSFSen4Sn	
0.7629	0.0013	0.2349	0.1380	-10.89%	ml4YRSFSen5Sl	
0.7629	0.0015	0.2350	0.1383	-10.85%	ml3YRSFSen5Sl	
0.7607	0.0015	0.2370	0.1384	-10.09%	ml6YRSFSen5Sn	
0.7606	0.0017	0.2359	0.1388	-10.51%	ml1XRSFSen5Sn	
0.7607	0.0015	0.2371	0.1388	-10.05%	ml5YRSFSen5Sn	
0.7607	0.0016	0.2369	0.1388	-10.13%	ml4XRSFSen5Sn	
0.7607	0.0017	0.2364	0.1388	-10.32%	ml3XRSFSen5Sn	
0.7607	0.0015	0.2368	0.1389	-10.17%	ml3YRSFSen5Sn	
0.7513	0.0009	0.2358	0.1391	-10.55%	ml6YRSFSen6Sl	
0.7607	0.0015	0.2366	0.1391	-10.24%	ml2YRSFSen5Sn	
0.7629	0.0015	0.2353	0.1391	-10.74%	ml2YRSFSen5Sl	
0.7607	0.0015	0.2364	0.1392	-10.32%	ml1YRSFSen5Sn	
0.7607	0.0015	0.2369	0.1392	-10.13%	ml4YRSFSen5Sn	
0.7607	0.0017	0.2362	0.1394	-10.39%	ml2XRSFSen5Sn	
0.7607	0.0016	0.2373	0.1396	-9.98%	ml6XRSFSen5Sn	
0.7607	0.0016	0.2372	0.1398	-10.02%	ml5XRSFSen5Sn	
0.7629	0.0016	0.2354	0.1398	-10.70%	ml1YRSFSen5Sl	
0.7617	0.0010	0.2362	0.1402	-10.39%	ml6YRSFSen4Sl	
0.7513	0.0012	0.2386	0.1430	-9.48%	ml5YRSFSen6Sl	
0.7513	0.0013	0.2391	0.1438	-9.29%	ml4YRSFSen6Sl	
0.7617	0.0012	0.2390	0.1438	-9.33%	ml5YRSFSen4Sl	
0.7491	0.0013	0.2405	0.1439	-8.76%	ml3YRSFSen6Sn	
0.7491	0.0013	0.2401	0.1440	-8.92%	ml2YRSFSen6Sn	
0.7511	0.0000	0.2406	0.1440	-8.73%	ml6YRSFSen3Sl	
0.7491	0.0012	0.2405	0.1441	-8.76%	ml6YRSFSen6Sn	
0.7491	0.0012	0.2407	0.1441	-8.69%	ml5YRSFSen6Sn	
0.7513	0.0015	0.2393	0.1442	-9.22%	ml3YRSFSen6Sl	
0.7617	0.0015	0.2399	0.1443	-8.99%	ml3YRSFSen4Sl	
0.7617	0.0014	0.2396	0.1445	-9.10%	ml4YRSFSen4Sl	
0.7491	0.0014	0.2395	0.1446	-9.14%	ml1XRSFSen6Sn	
0.7491	0.0013	0.2399	0.1450	-8.99%	ml1YRSFSen6Sn	
0.7513	0.0015	0.2397	0.1450	-9.07%	ml2YRSFSen6Sl	
0.7491	0.0013	0.2406	0.1451	-8.73%	ml5XRSFSen6Sn	
0.7491	0.0014	0.2398	0.1451	-9.03%	ml2XRSFSen6Sn	
0.7491	0.0014	0.2404	0.1452	-8.80%	ml3XRSFSen6Sn	
0.7491	0.0014	0.2407	0.1452	-8.69%	ml4XRSFSen6Sn	
0.7491	0.0013	0.2408	0.1453	-8.65%	ml6XRSFSen6Sn	
0.7827	0.0024	0.2539	0.1453	-3.68%	ml6XRSFSen5S	
0.7514	0.0016	0.2398	0.1456	-9.03%	ml1YRSFSen6Sl	
0.7603	0.0016	0.2423	0.1458	-8.08%	ml6YRSFSen4Sn	
0.7617	0.0016	0.2402	0.1459	-8.88%	ml2YRSFSen4Sl	
0.7830	0.0024	0.2520	0.1459	-4.40%	ml1XRSFSen5S	
0.7601	0.0023	0.2534	0.1463	-3.87%	ml4XRSFSen4Sl	
0.7603	0.0016	0.2425	0.1463	-8.00%	ml5YRSFSen4Sn	

0.7830	0.0024	0.2529	0.1463	-4.06%	ml3XRSFSen5S	
0.7603	0.0016	0.2420	0.1464	-8.19%	ml2YRSFSen4Sn	
0.7603	0.0016	0.2422	0.1464	-8.12%	ml3YRSFSen4Sn	
0.7603	0.0016	0.2424	0.1464	-8.04%	ml4YRSFSen4Sn	
0.7830	0.0024	0.2525	0.1464	-4.21%	ml2XRSFSen5S	
0.7603	0.0016	0.2418	0.1467	-8.27%	ml1YRSFSen4Sn	
0.7603	0.0017	0.2412	0.1468	-8.50%	ml1XRSFSen4Sn	
0.7828	0.0024	0.2537	0.1468	-3.76%	ml5XRSFSen5S	
0.7603	0.0016	0.2426	0.1470	-7.97%	ml6XRSFSen4Sn	
0.7617	0.0016	0.2404	0.1470	-8.80%	ml1YRSFSen4Sl	
0.7603	0.0016	0.2415	0.1471	-8.38%	ml2XRSFSen4Sn	
0.7624	0.0023	0.2471	0.1471	-6.26%	ml1XRSFSen5Sl	
0.7603	0.0017	0.2420	0.1472	-8.19%	ml3XRSFSen4Sn	
0.7463	0.0010	0.2473	0.1473	-6.18%	ml5YRSFSen3Sn	
0.7464	0.0010	0.2470	0.1473	-6.30%	ml4XRSFSen3Sn	
0.7603	0.0016	0.2425	0.1473	-8.00%	ml4XRSFSen4Sn	
0.7603	0.0016	0.2426	0.1473	-7.97%	ml5XRSFSen4Sn	
0.7628	0.0023	0.2480	0.1475	-5.92%	ml4XRSFSen5Sl	
0.7491	0.0013	0.2406	0.1477	-8.73%	ml4YRSFSen6Sn	
0.7628	0.0023	0.2487	0.1484	-5.65%	ml5XRSFSen5Sl	
0.7628	0.0023	0.2494	0.1487	-5.39%	ml6XRSFSen5Sl	
0.7418	0.0005	0.2385	0.1498	-9.52%	mlRSFSen3Sn	
0.7794	0.0024	0.2549	0.1507	-3.30%	ml1XRSFSen4S	
0.7793	0.0024	0.2561	0.1510	-2.85%	ml3XRSFSen4S	
0.7792	0.0024	0.2567	0.1512	-2.62%	ml5XRSFSen4S	2
0.7793	0.0024	0.2554	0.1512	-3.11%	ml2XRSFSen4S	
0.7767	0.0027	0.2561	0.1514	-2.85%	ml1XRSFSen6S	
0.7792	0.0024	0.2565	0.1516	-2.69%	ml4XRSFSen4S	3
0.7767	0.0027	0.2566	0.1517	-2.66%	ml2XRSFSen6S	
0.7791	0.0024	0.2567	0.1517	-2.62%	ml6XRSFSen4S	1
0.7766	0.0027	0.2573	0.1521	-2.39%	ml3XRSFSen6S	
0.7765	0.0027	0.2576	0.1522	-2.28%	ml4XRSFSen6S	
0.7765	0.0027	0.2576	0.1523	-2.28%	ml5XRSFSen6S	
0.7511	0.0009	0.2442	0.1524	-7.36%	ml5YRSFSen3Sl	
0.7764	0.0027	0.2578	0.1528	-2.20%	ml6XRSFSen6S	
0.7511	0.0010	0.2449	0.1532	-7.09%	ml4YRSFSen3Sl	
0.7487	0.0024	0.2511	0.1533	-4.74%	ml1XRSFSen6Sl	
0.7487	0.0025	0.2512	0.1539	-4.70%	ml2XRSFSen6Sl	
0.7491	0.0025	0.2518	0.1542	-4.48%	ml3XRSFSen6Sl	
0.7511	0.0011	0.2453	0.1544	-6.94%	ml3YRSFSen3Sl	
0.7495	0.0025	0.2523	0.1546	-4.29%	ml4XRSFSen6Sl	
0.7599	0.0023	0.2528	0.1550	-4.10%	ml3XRSFSen4Sl	
0.7600	0.0023	0.2523	0.1550	-4.29%	ml2XRSFSen4Sl	
0.7605	0.0022	0.2523	0.1551	-4.29%	ml1XRSFSen4Sl	
0.7496	0.0025	0.2528	0.1552	-4.10%	ml5XRSFSen6Sl	
0.7511	0.0011	0.2456	0.1553	-6.83%	ml2YRSFSen3Sl	
0.7500	0.0025	0.2535	0.1556	-3.83%	ml6XRSFSen6Sl	
0.7829	0.0024	0.2534	0.1556	-3.87%	ml4XRSFSen5S	
0.7511	0.0011	0.2457	0.1560	-6.79%	ml1YRSFSen3Sl	
0.7597	0.0023	0.2546	0.1560	-3.41%	ml6XRSFSen4Sl	
0.7600	0.0023	0.2539	0.1560	-3.68%	ml5XRSFSen4Sl	
0.7464	0.0010	0.2462	0.1561	-6.60%	ml1YRSFSen3Sn	
0.7464	0.0010	0.2469	0.1565	-6.34%	ml6XRSFSen3Sn	
0.7463	0.0010	0.2470	0.1567	-6.30%	ml3YRSFSen3Sn	
0.7463	0.0010	0.2471	0.1567	-6.26%	ml4YRSFSen3Sn	
0.7464	0.0010	0.2467	0.1567	-6.41%	ml2YRSFSen3Sn	
0.7464	0.0010	0.2471	0.1567	-6.26%	ml5XRSFSen3Sn	

0.7463	0.0010	0.2471	0.1568	-6.26%	ml6YRSFSen3Sn	
0.7465	0.0010	0.2468	0.1568	-6.37%	ml3XRSFSen3Sn	
0.7626	0.0024	0.2473	0.1568	-6.18%	ml3XRSFSen5Sl	
0.7627	0.0024	0.2470	0.1568	-6.30%	ml2XRSFSen5Sl	
0.7465	0.0010	0.2466	0.1570	-6.45%	ml2XRSFSen3Sn	
0.7466	0.0011	0.2463	0.1571	-6.56%	ml1XRSFSen3Sn	
0.7903	0.0013	0.2620	0.1636	-0.61%	ml1XRSFSen3S	
0.7904*	0.0013	0.2626	0.1640	-0.38%	ml2XRSFSen3S	
0.7903	0.0013	0.2631	0.1642	-0.19%	ml3XRSFSen3S	
0.7901	0.0013	0.2636*	0.1644	-0.00%	ml6XRSFSen3S	
0.7902	0.0013	0.2636*	0.1644	-0.00%	ml5XRSFSen3S	
0.7903	0.0013	0.2635	0.1644	-0.04%	ml4XRSFSen3S	
0.7504	0.0010	0.2611	0.1672	-0.95%	ml3XRSFSen3Sl	
0.7505	0.0009	0.2608	0.1672	-1.06%	ml2XRSFSen3Sl	
0.7506	0.0009	0.2608	0.1673	-1.06%	ml1XRSFSen3Sl	
0.7503	0.0010	0.2614	0.1674	-0.83%	ml4XRSFSen3Sl	
0.7497	0.0009	0.2618	0.1676	-0.68%	ml6XRSFSen3Sl	
0.7498	0.0009	0.2617	0.1677	-0.72%	ml5XRSFSen3Sl	

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