

Gathering empirical data to evaluate MT from English to Portuguese

Diana Santos, Belinda Maia & Luís Sarmiento

Context for this paper

- Translation teaching at FLUP
- Linguateca's evaluation contest initiative for Portuguese processing tools;
 - MT with emphasis on Portuguese

Objective in presenting CorTA here

- Rather than present a final corpus, we are more interested in the methodology used to create it

The problem we address

- Every one (laymen) judges translation quality
- But there is no consensual evaluation method
- Test-suites are artificial and examine syntactic structure with only a few lexical items
- Our approach is a small contribution to a difficult problem
- BUT it allows experimentation with a large body of judgements about (machine) translations
- In a nutshell, **we want to make use of people's judgements over translation of real text**

Our (partial) solution is to:

- Try to collect a sizeable set of judgements
- Organize them systematically
- Use real text (the source text has not been created to evaluate the systems)
- Observe real MT systems in use
- Create a parallel corpus, CorTA, using a judgement collecting tool > TrAva

CorTA (Corpus de Traduções Avaliadas)

- A parallel corpus annotated also with translation judgements
- It contains ~1000 sentences
- + 4 translations by 4 different MT systems
- Often a human translation as well
- Encoded in both IMS-CWB and XML

A screenshot of CorTA

1. Listar frases por critério(s):

Palavra POS:

Erro de Tradução:

Número de Traduções Erradas:

Problema:

Origem da Frase:

Metro de Tradução:

2. Estatísticas de Utilização:

2.1) Contribuição de POS

2.2) Contribuição de Problemas

2.3) Contribuição POS por Tipo de Problema

The internal data of CorTA

- Each source sentence is associated with
 - The observation window (ex. N N A)
 - The number of errors
 - A human translation
 - The origin of the sentence
- Each target sentence (one per translation engine) is associated with
 - The kind(s) of error(s)
 - A comment

An example

BNC: *The proposed new independent status would mean a split in the party.*
 Padrão POS Frase Original: AT0 AJ0 AJ0 AJ0 NN0
 FT: O novo estado independente proposto quereria dizeria um fende no partido.
 Sy: O status independente novo proposto significaria um split no partido.*
 ET: O novo estado independente proposto significaria uma divisão na festa.
 Am: Os estados independentes novos propostos significariam uma divisão na festa.*

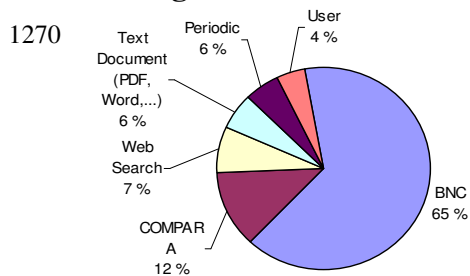
Número de traduções erradas: 2

Problemas Identificados na Tradução:
 Substantivos: Escolha Lexical (lexical choice of noun)
 Concordância: Número (agreement in number)

CorTA: a deeper characterization

- Kinds of errors
- Source sentence origin (Figure 2 in the paper)
- Sentence size
- Number of translation errors per sentence
- Kind of window
- Kind of errors per window

Distribution of the origins of English sentences

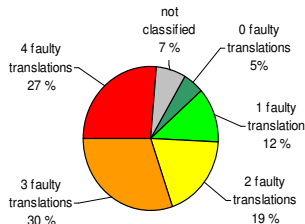


Kinds of errors

• Verbs: Lexical choice	357	
• Nouns: Lexical choice	156	
• Adjectives: Lexical choice	99	
• Prepositions: Lexical choice	96	
• Verbs: Simple tenses	78	
• Ordering: Inside the NP	72	
• Adverbs: Lexical choice	64	
• Verbs: Compound tenses	60	
• Ordering: Inside the clause	48	
• POS disambiguation	47	
• Determiners: Lexical choice	39	
• Verbs: Verbal expressions	38	
• Determiners: Articles	35	
• etc.		out of X errors in 1147 sentences

Errors per sentence

1270



Kind of source window

VBB TOO	82
VM0	30
AT0 AJ0 AJ0 AJ0 NN0	18
NN1-VVG	16
VBB	11
AJ0 AJ0 AJ0 NN0	10
AJ0-NN1	10
VM0 PNP VVI CJS	8
PNP VM0 AJC VVI	7
PRP PNI NN1	5
AT0 AJ0 <i>yet</i> AJ0 NN0	4

Problems with the source window

- **PNP VVD PNQ AJ0 AJ0**

He remembered her veiled brown gaze. (COMPARA)

- **can assure PNP AJ0 NN1**

But I can assure you appropriate action will be taken when we have found the guilty party. (Web)

- **can afford TOO VVD**

nobody can afford to get stuck in that way of thinking. (BNC)

Non-trivial search in CorTA

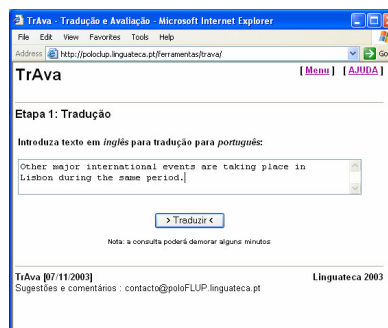
- What search engine performs best for NN?
- What kind of window displays least errors?
- Which errors were discovered for a particular kind of window?
- In which cases did all systems fail (or succeed)?
- Which windows displayed a particular error kind?

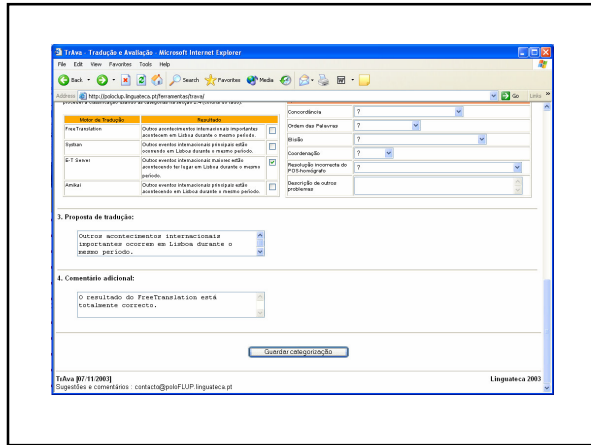
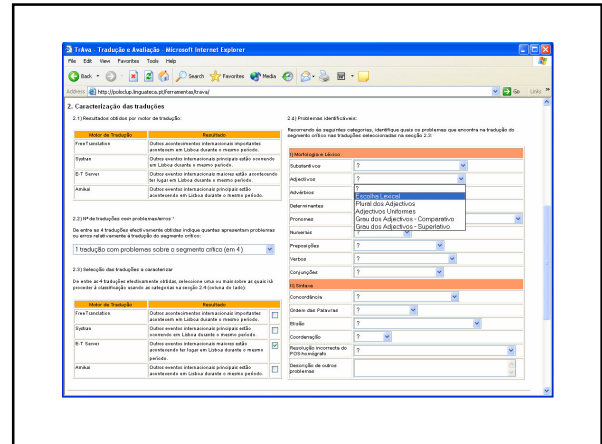
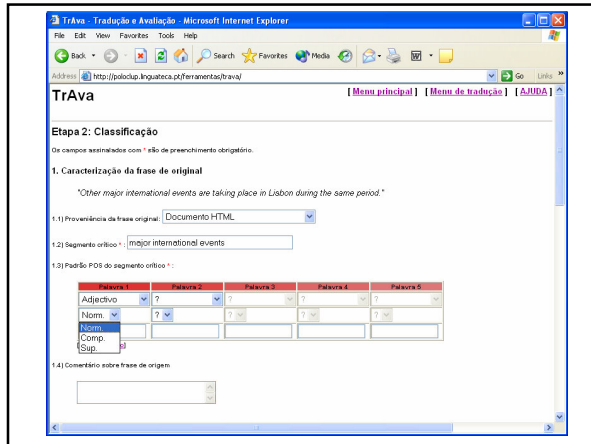
The underlying collecting tool:

TrAva: Traduz e Avalia

- This system collected the judgements
- Collective gathering by students and interested researchers
- Four step decision
 - The window
 - How many errors
 - Error classification
 - Manual translation and/or comment

TrAva screenshot





Problems in using TrAva

- The people employed had no experience, either in systematization or evaluation
- There was no off-the-shelf taxonomy for E-to-P
- People tried to compare systems instead of assess them
- Errors were very hard to classify (source of the problem?, resulting problem?,...)
- People kept assuming internal system behaviour
- Several versions of TrAva –
but it is still developing and far from perfect

Preliminary results

- CorTA allows complex searches
- The data can (and should) still be improved (reclassifying / refining / adding / removing)
- Open system (anyone can use it for this language pair)
- We were able to do considerable training
- A cooperative endeavour

Future work

- Study inter-judgment agreement, by asking several subjects to reclassify sentences
- Mark also (whenever at all possible) the corresponding windows in translation
- Store linguistic variant of the judge (Brazil, Portugal, etc.), genre of the source text, ...
- Study in which cases the judgement is variant dependent (is it an error or not?)
- Machine-assisted generation of test-suites
- Comparing with COMPARA's human translations
- Study the overlap between several machine translations

Please have a look and
experiment with...

- <http://www.linguateca.pt/CorTA/>
- <http://www.linguateca.pt/TrAva/>

and there is also METRA, an meta-MT server
which is very useful

- <http://poloclup.linguateca.pt/ferramentas/metra/>
and Boomerang! for entertainment
- <http://poloclup.linguateca.pt/ferramentas/boomerang/>