

Annotation guideline supplementary to

## DT-Neg: Tutorial Dialogues Annotated for Negation Scope and Focus

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### Background:

This document provides a guideline for annotating negation cues, scope and focus in the Deeptutor dialogue. It's quite difficult to precisely tell how many of them are actual negations because detecting negation is itself one of the tasks in negation handling and for now, we have filtered out based on some tokens called cue words (see below for the list). The presence of cue word doesn't necessarily mean that it negates something but mostly it does. Also, we are not considering affixal negations (such as im- in impossible, un- in unmanaged).

This annotation guideline is adapted from Morante, Walter (2011) and Konstantinova and Sousa (2012).

### Negation cues:

favor over, rule out, instead of, with the exception of, no longer, except, exclude, fail, failure, nothing, Nothing, impossible, lack, loss, miss, neither, Neither, never, Never, no ,No , none, None, not , Not , n't , unable, without, Without, absence, absent, rather, nowhere, contrary, except, neglect, nobody,

Reference	Cues
BioScope Corpus	Absence, Absent, Cannot, could not, Either, Except, Exclude, Fail, Failure, Favor over, Impossible, Instead of, lack, loss, Miss, Negative, Neither.. nor, Neither, Never, No, No longer, None, Not, Rather than, Rule out, Unable, With the exception of, Without
SEM 2012 corpus (training and testing)	<b>Single word cues:</b> absence, dis, except, fail, im, in, ir, less, n't, neglected, neither, never, no, nobody, none, nor, not, nothing, nowhere, prevent, refused, save, un, without  <b>Multiword cues:</b> no more, rather than, by no means, nothing at all, on the contrary, not for the world  Discontinuous: neither nor, no nor, not not

### The main tasks on handling negation:

1. Negation cue detection – identify the word or phrase that is actually negating the meaning.  
*He has **no** chance to continue.*  
*He will continue, **no** doubt!*  
In the above examples, no is acting as negation cue in the first case whereas it is not in the second.
2. Scope identification – part of the sentence affected by the negation cue, excluding cue word.  
*Because [there is] **no** [gravitational force].*  
The words in the square brackets are affected by the negation cue ‘no’ (i.e. they are in scope of negation).
3. Focus identification – part of the scope which is most prominently affected by negation.  
*[He does]**n’t** [**go** to Mississippi].*  
The word (event) ‘go’ is most prominently affected by the negation cue n’t.
4. Interpretation  
Everyone didn’t show up today.  
None showed up today.  
It looks like the above two sentences are just opposite of each other but they are not.

### Categories of Negation cues:

Single word – not, no, without

Multiple contiguous words – rather than

Multiple discontinuous words – neither .. nor

Affix – jobless, carelessness (ness adds morphological variation, it doesn’t change the semantic),  
uncertain

## Annotation guideline:

### What is there?

An example of a negation instance

ID:	FEB15788A
METAINFO:	Corpus: FebMarch2013HighSchool AnswerId: 15788 Strand: VM VM_LV01_PR01
QUESTION:	How does the decomposition principle apply to this situation?
ANSWER:	it does not matter that the quarter is gaining a

	vertical direction, because the horizontal direction is independent
CUE:	not
ANNOTATEDANSWER:	it does <<not>> matter that the quarter is gaining a vertical direction , because the horizontal direction is independent
TAG:	-
COMMENTS:	-

### Field description

ID:	Unique ID of negation instance. Starts with FEB for February 2013 high school data, and APR for April 2013 dataset (experimented with college students)
METAINFO:	Contains additional information about the record, such as source dataset, task, strand etc.
QUESTION:	Question
ANSWER:	Answer given by the student. It may contain multiple sentences. However, for negation handling we deal at sentence level. So, if answer has sentence(s) with negation, each sentence is annotated separately.
CUE:	Negation cue. Please note that multiple negations are considered multiple instances. So, only one cue is taken at a time. If an answer has multiple negations, the ID contains B, C or so at the end.
ANNOTATEDANSWER:	A negation sentence (it may not be the full answer), where the negation cue has been put in the double angle bracket.
TAG:	Assign any number between -3 to +3. Please see the following sections for more details.
COMMENTS:	Put any annotation comments (in a single line).
TUTORRESPONSE: (for internal use)	Response of the tutor. It is to see how the tutor is handling negation in the student answer and responding to the students.

### What we do?

#### 1. Symbols

<<>> - include negation cue word(s) inside it. If the cue is discontinuous, do it for each part.

For example: The block will <<not>> move from its position because the force is insufficient.

[] – Include block of words in the scope in []. Scope doesn't include the negation cue.

[Ice cube will] <<not>> [move from its position] because the force is insufficient.

{ } – focus word(s). For example,

[Ice cube will] <<not>> [{move}] from its position] because the force is insufficient.

#### 2. Set the tag value and put comments (if any).

Conditions	Tag value
<p>If something has been annotated incorrectly as cue word (i.e. that can't be a negation cue word in any condition). For example, 'no' in the example text is not a negation cue. It is part of the Piano but mistakenly considered as negation cue. For example: He is a Pia&lt;&lt;no&gt;&gt; player.</p>	-3
<p>If the cue word is valid negation cue but not serving as a negation cue <u>in that context</u>. For example: Being help<u>less</u>, he strayed around the city for a few months. <b>No</b> matter who you are, you have to go through the process. These two sentences contain the negation cue words but they are not negating anything. Their purpose in the context is different.</p>	-2
<p>If the word(s) in &lt;&lt;&gt;&gt; is valid negation cue (please see intro part for the list of cues we have recognized) and that cue is appearing in the context of negating something.</p> <p>OR</p> <p>If the cue is multi word but only one (or two) words have been annotated, please annotate the remaining cue words as well and still treat that as valid instance. For example: ... &lt;&lt;neither&gt;&gt; .... nor .... Software might have annotated &lt;neither&gt; only. Please annotate &lt;nor&gt; as well.</p> <p>I believe that these two cases are virtually not present in the newly generated subsets.</p> <p>AND</p> <p>The scope and focus are in the answer text itself. Put the tag value 1 if the scope is in the context, such as the scope in question (please see below).</p>	0
<p>If the answer negates the meaning in context. For example, <b>Tutor:</b> What would be the net force acting on the ice cube? <b>Student:</b> none The student answer is negating something in the context (infer from the question).</p> <p>There is no good reference in literature for this kind of situation. Let's do the following:</p> <p>Annotate the question. For example:</p> <p>QUESTION: What [<b>would be the {net force} acting on the ice cube</b>]? ANNOTATEDANSWER: &lt;none&gt; Q: [<b>{Who} will hit the water</b>]? A: &lt;none&gt;</p>	1

Anything else, please write comments. For example: The answer might be completely ungrammatical or contains meta-communicative.  No no no no.	2
If the answer contains affixal negation cue, such as un- in <u>undo</u> , im- in impossible), Put that in the comment and mention it as affixal.	

### 3. Identify the scope and tag them

The cue word(s) are in double angle bracket. For example: <<not>>, <<neither>> ... <<nor>>. Surround the words in the scope with square brackets. Please see the example given below. Surround the focus in curly bracket.

Some guideline for scope annotation, please see below.

- a. Exclude the cue from the scope.
- b. Do not include the punctuation (such as line terminator) at the beginning/end of the scope section.
- c. Select the larger phrase (i.e. be greedy).
- d. If the scope is not explicit in the sentence, only mark the negation cue.
- e. The scope can be discontinuous.
- f. Discourse level modifiers are not included. For example, however, yet etc.
- g. In the case of coordinate clause, stay within the clause. Negation cue scopes only over their clause.
- h. If the subject is negated, the negation scopes over the entire clause.
- i. If the object is negated, the negation scopes over the entire clause.
- j. For more rules, please have a look at the supplementary material (reference provided at the end of this document).

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FEB123A
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QUESTION: why is newton's first law relevant to this problem?
METAINFO: Corpus Feb-march experiment data
ANSWER: because this object is not in motion.
CUE: not
ANNOTATEDANSWER: because [this object is] <<not>> [in {motion}].
TAG: 0
COMMENTS: -
TUTORRESPONSE: let me try again. the first law is relevant because the
problem asks about forces when an object, the puck, is at _____.
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### Scope in the context (i.e. in the tutor text/question)

FEB456A

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QUESTION: What [would be the {net force} acting on the ice cube]?  
METAINFO: Corpus Feb-march experiment data  
ANSWER: none.  
CUE: none  
ANNOTATEDANSWER: <<none>>.  
TAG: 1  
COMMENTS: Annotated the scope and focus in the question.  
TUTORRESPONSE: let me try again. the first law is relevant because the problem asks about forces when an object, the puck, is at \_\_\_\_\_.

### **For scope, should we be greedy or stingy?**

For example, which is correct for the following sentence?

[The puck moves along a straight line at a constant velocity] <without> [acceleration].

or

[The puck moves] along a straight line at a constant velocity <without> [acceleration].

Let's be greedy.

In the latter case, the meaning of the text in scope is that the puck moves without acceleration.

But, the student may be just talking about the motion in the straight line. So, the path seems also important.

#### **4. Identify the focus.**

Surround the focus by the curly brackets {} as shown below. "in motion" is the focus in the following example.

because [this object] <not> [{in motion}].

#### **Does focus contains multiple words?**

Whenever it makes sense select just one word. Otherwise, select multiple words as focus words.

Be stingy in selecting the focus words.

For example, there is no net force acting on the puck. The word "net" is very important here. So, both words are selected.

Apparently there is no clear guideline for focus annotation. Follow your intuition.

#### **5. Comments**

If you have found some issues, please write down the comments in a single line. (Make it concise).

## 6. Anything else?

Please make a note and send that with the annotated text.

## References

- Konstantinova, N., de Sousa, S. C., Díaz, N. P. C., López, M. J. M., Taboada, M., & Mitkov, R. (2012, May). A review corpus annotated for negation, speculation and their scope. In *LREC* (pp. 3190-3195).
- Morante, R., Schrauwen, S., & Daelemans, W. (2011). *Annotation of negation cues and their scope: Guidelines v1.0*. Technical report, University of Antwerp. CLIPS: Computational Linguistics & Psycholinguistics technical report series.
- Morante, R., & Blanco, E. (2012, June). \* SEM 2012 shared task: Resolving the scope and focus of negation. In *Proceedings of the First Joint Conference on Lexical and Computational Semantics-Volume 1: Proceedings of the main conference and the shared task, and Volume 2: Proceedings of the Sixth International Workshop on Semantic Evaluation* (pp. 265-274). Association for Computational Linguistics.
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- Vincze, V., Szarvas, G., Farkas, R., Móra, G., & Csirik, J. (2008). The BioScope corpus: biomedical texts annotated for uncertainty, negation and their scopes. *BMC bioinformatics*, 9 (Suppl 11), S9.