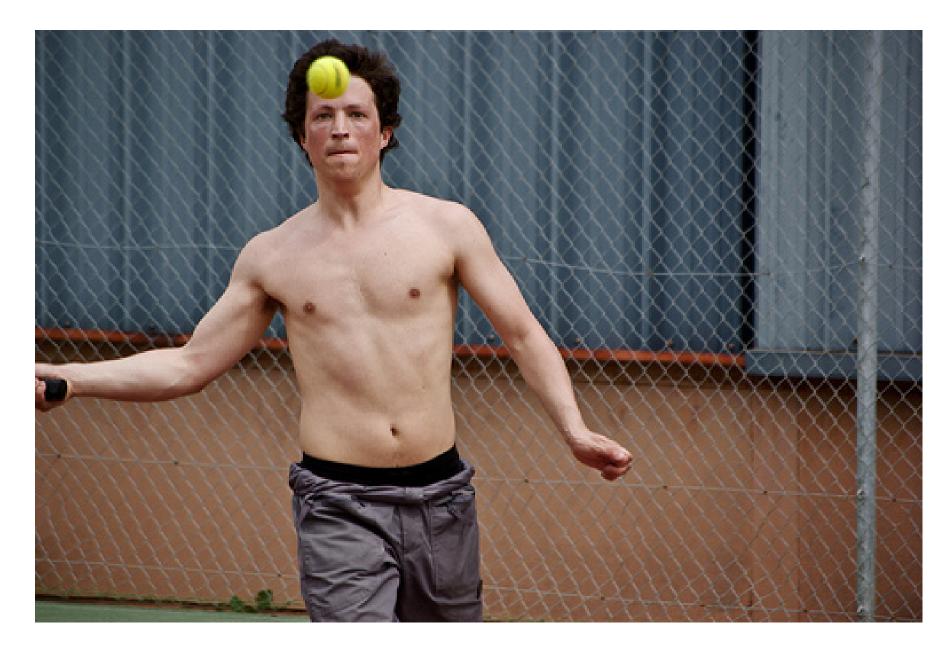
Pragmatic factors in image description The case of negations

Emiel van Miltenburg¹ Roser Morante¹ Desmond Elliott²

¹ Vrije Universiteit Amsterdam ² ILLC, University of Amsterdam

Salient Absence



A man without a shirt playing tennis.

Negation of action/behavior



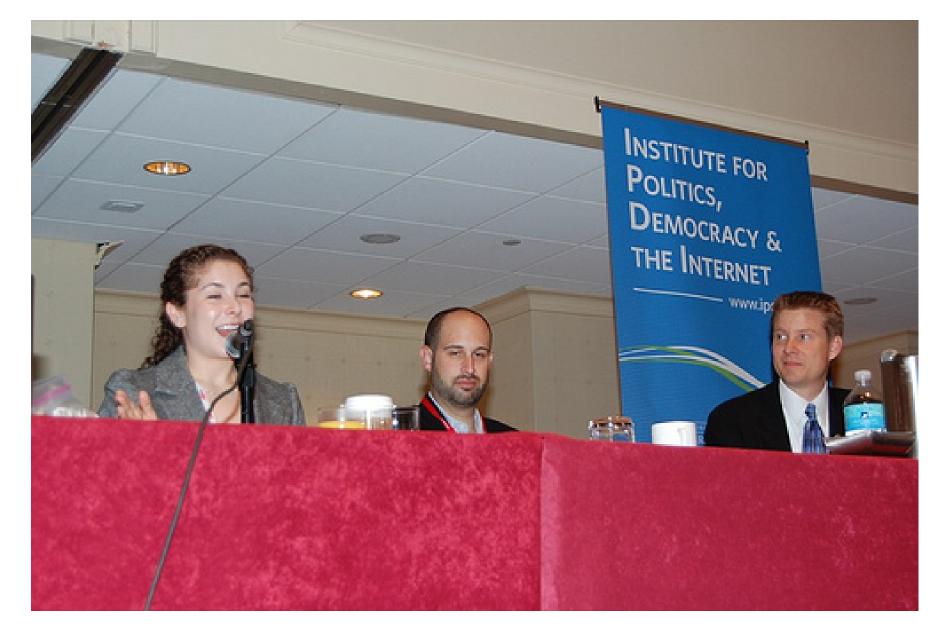
A kid eating out of a plate without using his hands.

Negation of property



A man wearing a hard hat stands in front of buildings **not** yet finished being built.

Negation of attitude



A man sitting on a panel **not** enjoying the speech.

Outline

- ▶ Negations are words communicating that something is **not** the case.
- ▶ Why describe an image by saying what's not there? \Rightarrow Expectations.
- ▶ What can negations tell us about the image description process?
- ▶ We categorized negations in Flickr30K.

General statistics

▶ Negation use is subjective; usually just 1/5 descriptions with a negation.

Dataset	1	2	3	4	5
Flickr30K	659	85	16	1	3
MS COCO	2406	277	78	30	5

Table 1: Number of descriptions with negations

- ▶ Used in **0.56**% of Flickr30K descriptions.
- Our selection of negations could be extended to other implicit negations and affixal negations.

no	371	nothing	16	neither 2
not	198	lack	9	sans 1
without	141	fail	9	none 1
miss	69	never	5	nobody 1
n't	68	nowhere	3	

Table 2: Frequency counts for each negation term.

Results

- Our corpus highlights richness of the data.
- ► Large amount of reasoning involved!
- ▶ One out of many reasoning-heavy phenomena.

Category	Count
Salient absence	488
Negation of action/behavior	90
Quotes and idioms	71
Not a description/Meta	40
Negation of attitude	36
False positive	31
Outside the frame	26
Negation of property	25
(Preventing) future events	21
Other	66

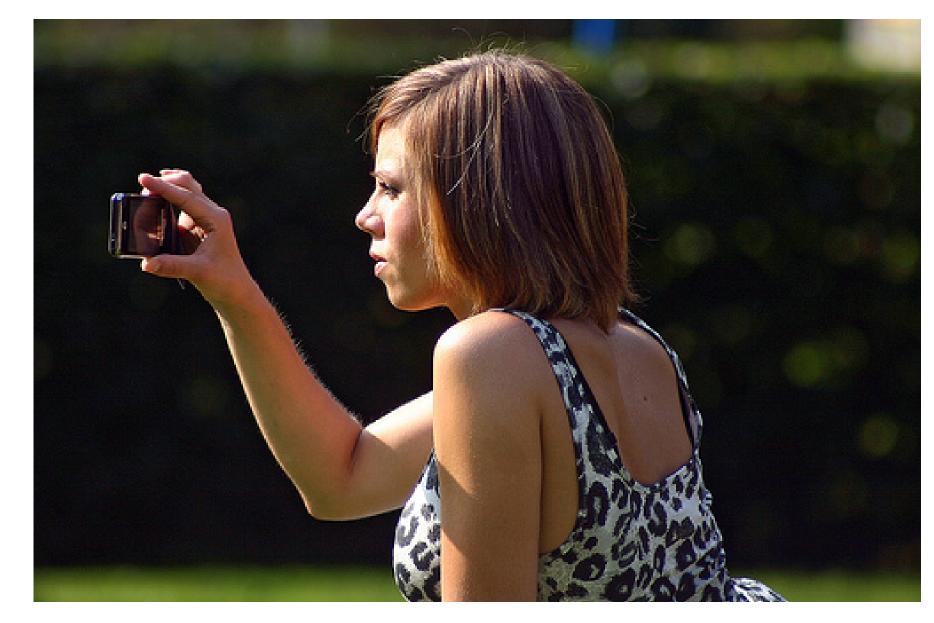
Table 3: Frequency count of each category.

► GitHub: evanmiltenburg/annotating-negations

Acknowledgments

EM and RM are supported by the Netherlands Organization for Scientific Research (NWO) via the Spinoza-prize awarded to Piek Vossen (SPI 30-673, 2014-2019). DE is supported by NWO Vici grant nr. 277-89-002 awarded to Khalil Sima'an. EM thanks COST Action IC1307 for a travel grant to present this work.

Outside the frame



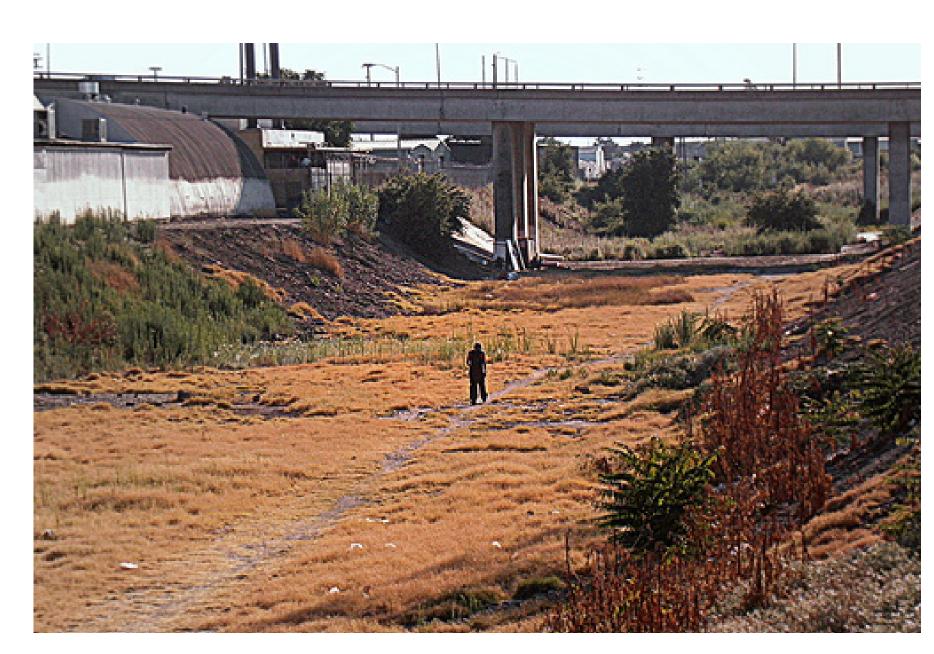
A woman is taking a picture of something **not** in the shot with her phone.

(Preventing) future events



A man is riding a bucking horse trying to hold on and **not** get thrown off.

Quotes and idioms



Strolling down the path to nowhere.

Other



The little boy [...] is smiling under the blue umbrella even though it is **not** raining.