

COMMONSENSE IN AI

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What is commonsense?

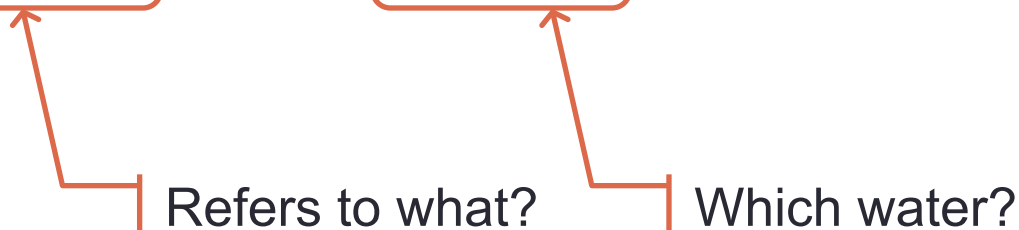
- It is often hot in summer
- When it's cold, one should wear warm clothes
- People cry when they are sad
- Smile is a sign of happiness
- People like to spend time with their friends
- People do not like to get up early in the morning
- ...

Commonsense for text interpretation

“Imagine for a moment that you run into a friend on the street after you return from a vacation in Mexico.

‘How was your vacation?’ your friend asks.

‘It was wonderful. We’re so happy with the trip,’ you reply. ‘It wasn’t too humid, though the water was a bit cold.’”



Common sense provides the missing
background knowledge

Commonsense for anaphora resolution

Joe saw his brother skiing on TV. *The fool...*

... didn't have a coat on!

... didn't recognize him!

Refers to whom?



The police watched the demonstrators...

...because *they* feared violence.

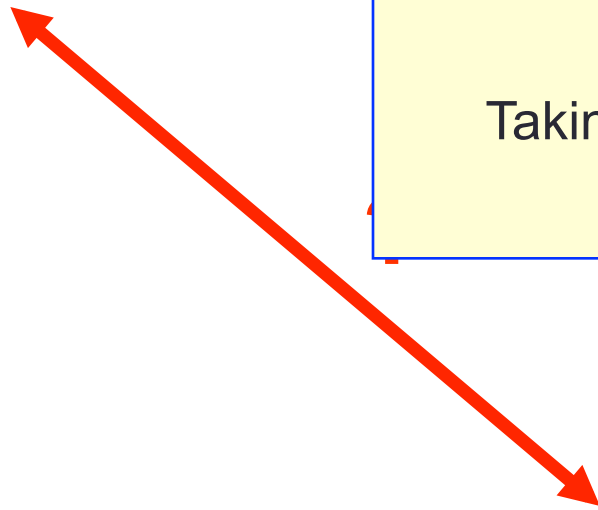
...because *they* advocated violence.

Commonsense for query answering

Query:

“Someone happy”

You become happy when someone you love accomplishes a milestone.
Taking one’s first step is a milestone.
Parents love their children.



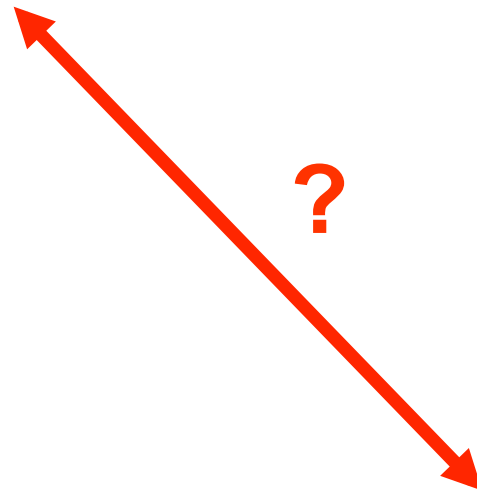
Caption:

“A woman watching her child take his first steps”



Commonsense for query answering

Query: Government buildings damaged in terrorist events in Lebanon between 1990 and 2001



Embassy is a government building
1993 is between 1990 and 2001
Pipe bombing is a kind of terrorist attack
Beirut is (a city) in Lebanon

Document (title): “1993 pipe bombing of France Embassy in Beirut”

Commonsense for affect sensing

The challenge: a lot of sentences convey affect through underlying meaning rather than affect words

“My husband just filed for divorce and he wants to take custody of my children away from me”

“Yesterday I finally managed to buy a CD that I was so longing for.”

More apps based on ConceptNet

- [A Commonsense Approach to Predictive Text Entry](#)
 - leveraging ConceptNet to understand the context of text being typed on a mobile device and suggest likely word completions
- [GloBuddy2](#): dynamic foreign language phrasebook
 - Given a specific situation, automatically identifies concepts relevant to the situation and their corresponding translations
 - For example,
 - For the situation 'I am at a restaurant'
 - generates a list of relevant concepts like 'people', 'waiter', 'chair', and 'eat' and their corresponding translations

Luminoso.com

- Founded on MIT Media Labs' research in the areas of common sense reasoning, NLP and ML
- Makes use of ConceptNet for text analysis
- Primary focus on real-time processing of textual communication on online social streams
- To learn more about the underlying technology, check: <http://www.luminoso.com/resources/>

Recommended readings

- Beating Common Sense into Interactive Applications:
<http://web.media.mit.edu/~push/Beating-Common-Sense.pdf>
- Teaching Machines about Everyday Life:
<http://web.media.mit.edu/~push/Teaching-Machines-BTTJ.pdf>
- ConceptNet - a practical commonsense reasoning tool-kit:
<http://web.media.mit.edu/~push/ConceptNet-BTTJ.pdf>
- Commonsense Reasoning and Commonsense Knowledge in Artificial Intelligence: <http://goo.gl/YQ8GU4>