

USER-FRIENDLY REPRESENTATION OF CONTEXT DATA

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CONTEXT AWARENESS

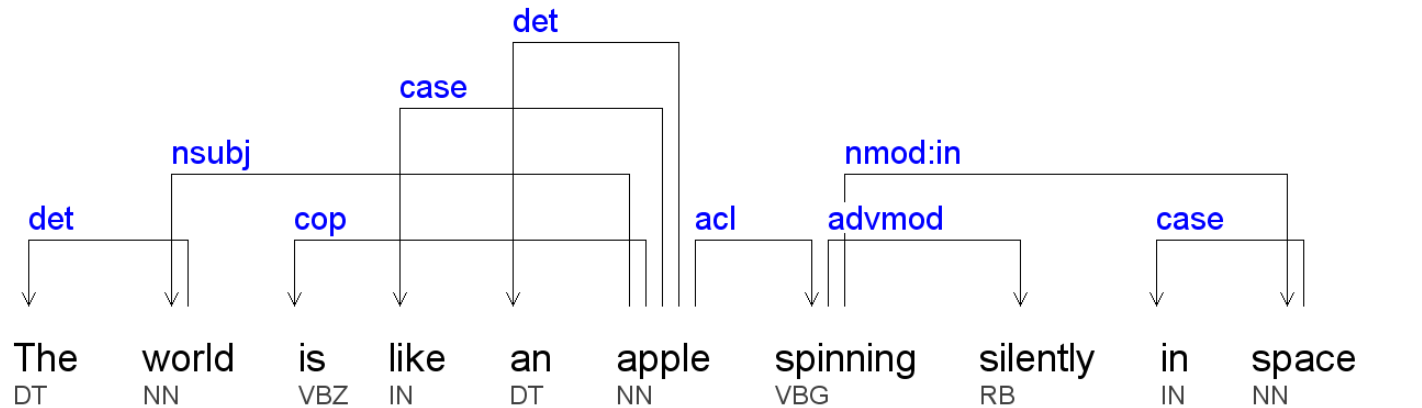
- Is the basis for self awareness and self regulating behavior
- Flexibility
- Independence from user
- Goal of this project = automated human English to sensor language translation

Context pattern

- Context= directed graph that determines relationships between concepts
- Can be generated by sensors from the data they collect
- Contains Generic Nodes: marked with ? \Leftrightarrow instances of concepts
- Matching with context graph

CoreNLP

- Stanford Dependencies : identifying Relationship(Governor, Dependent) between pairs of words in a sentence
- Results in a directed semantic graph



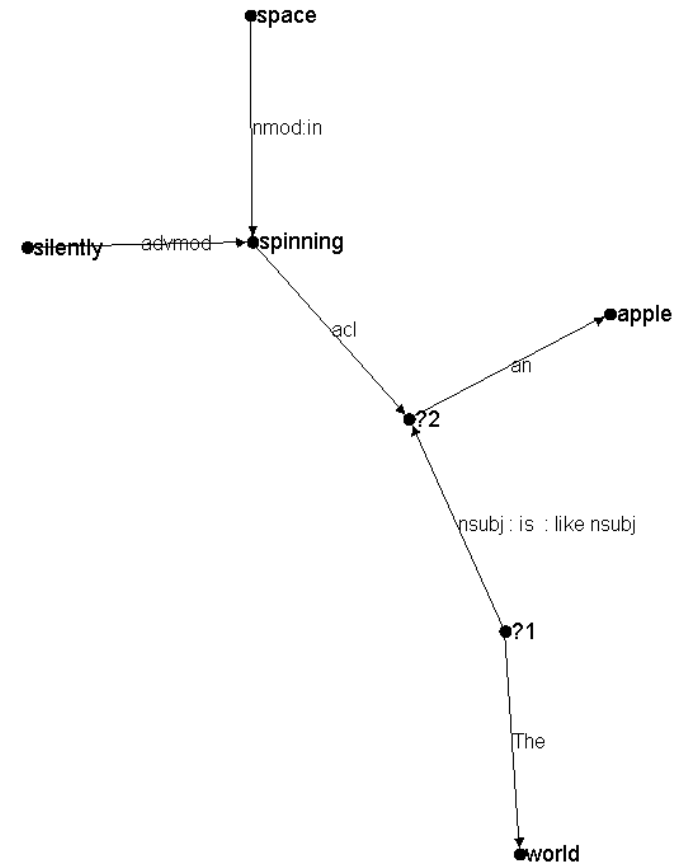
Algorithm

- dependency parsing on the string
- Identify function words (nodes such as “the”, “if”, “on”)
- Remove from graph and attach them as attributes to their governing nodes.
- Move function words to the surrounding edges of the nodes they are attached to.
- Perform coreference resolution.
- Instantiate the nodes that have determiners.
- Remove duplicate nouns.

NL Context pattern

Result of processing sentence:

“The world is like an apple
spinning silently
In space”

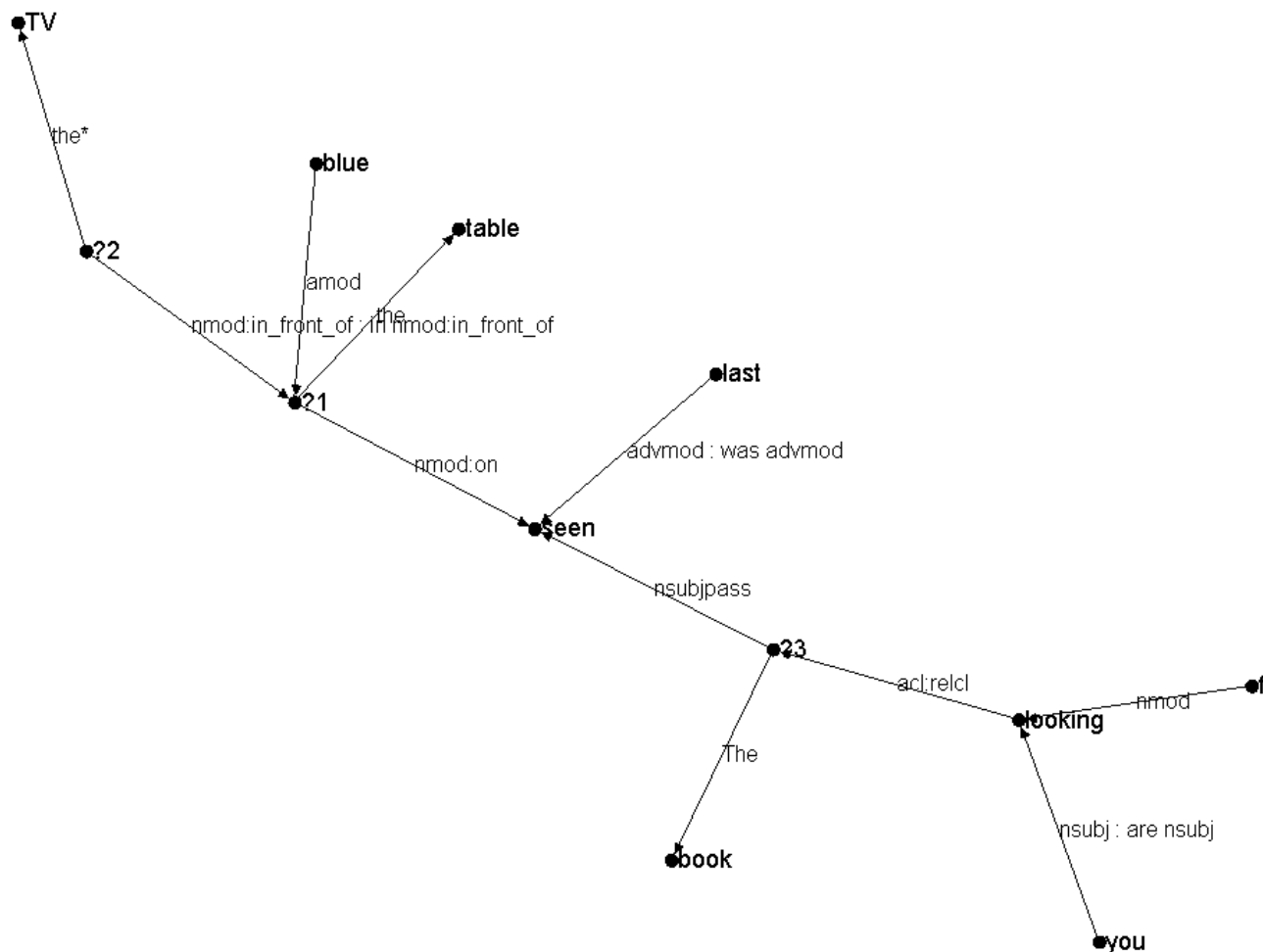


Reading context patterns

Pick a node with no outgoing edges

Follow the edges in the opposite direction of the arrow.

While on a node visit all incoming edges before following an outgoing one.



Future Work

- Make context patterns more meaningful
- Use context patterns to build a knowledge base from a dictionary
- Test matching algorithm for different sentences with same meaning
- Generating language from machine- written context patterns

Thank you!