

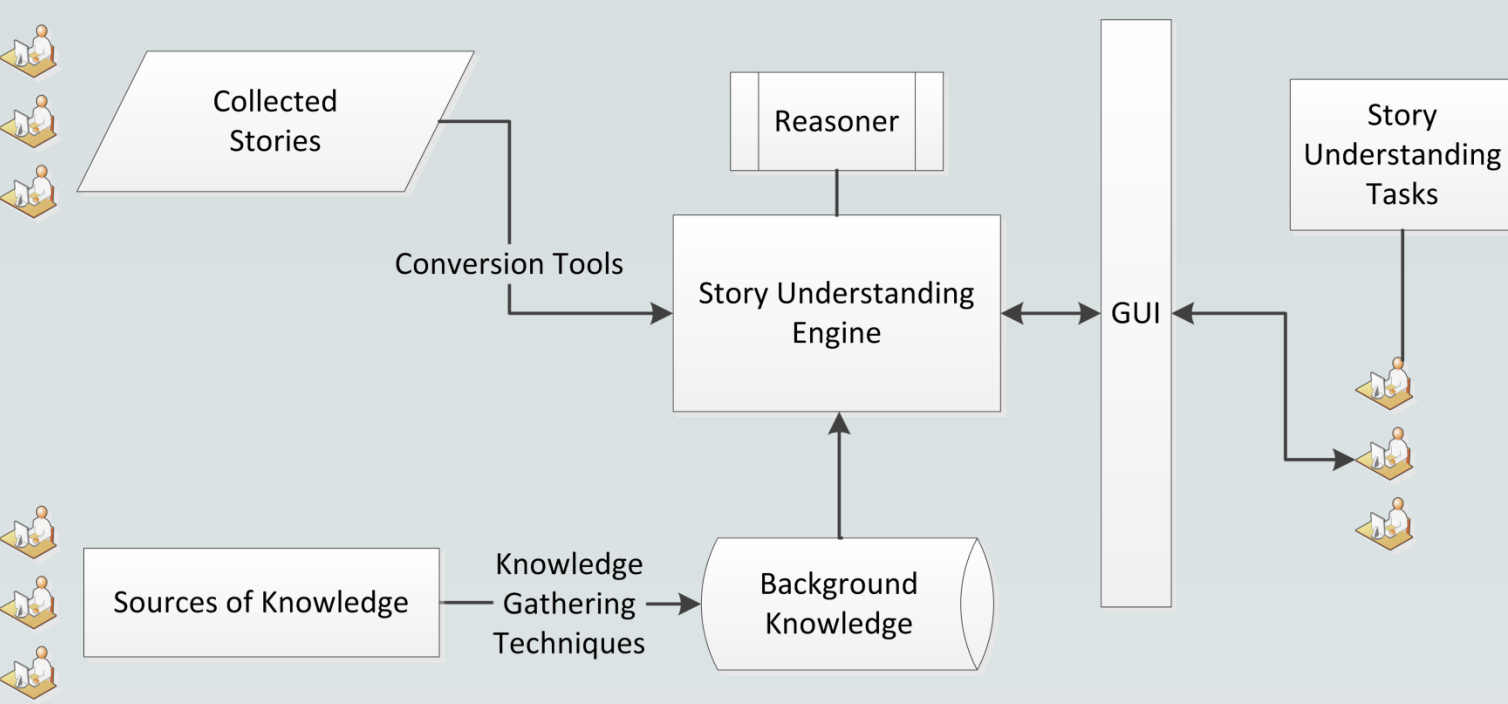
Steps Towards Building a Story Understanding Engine

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Objective

Develop an engine that can understand stories like Humans do.

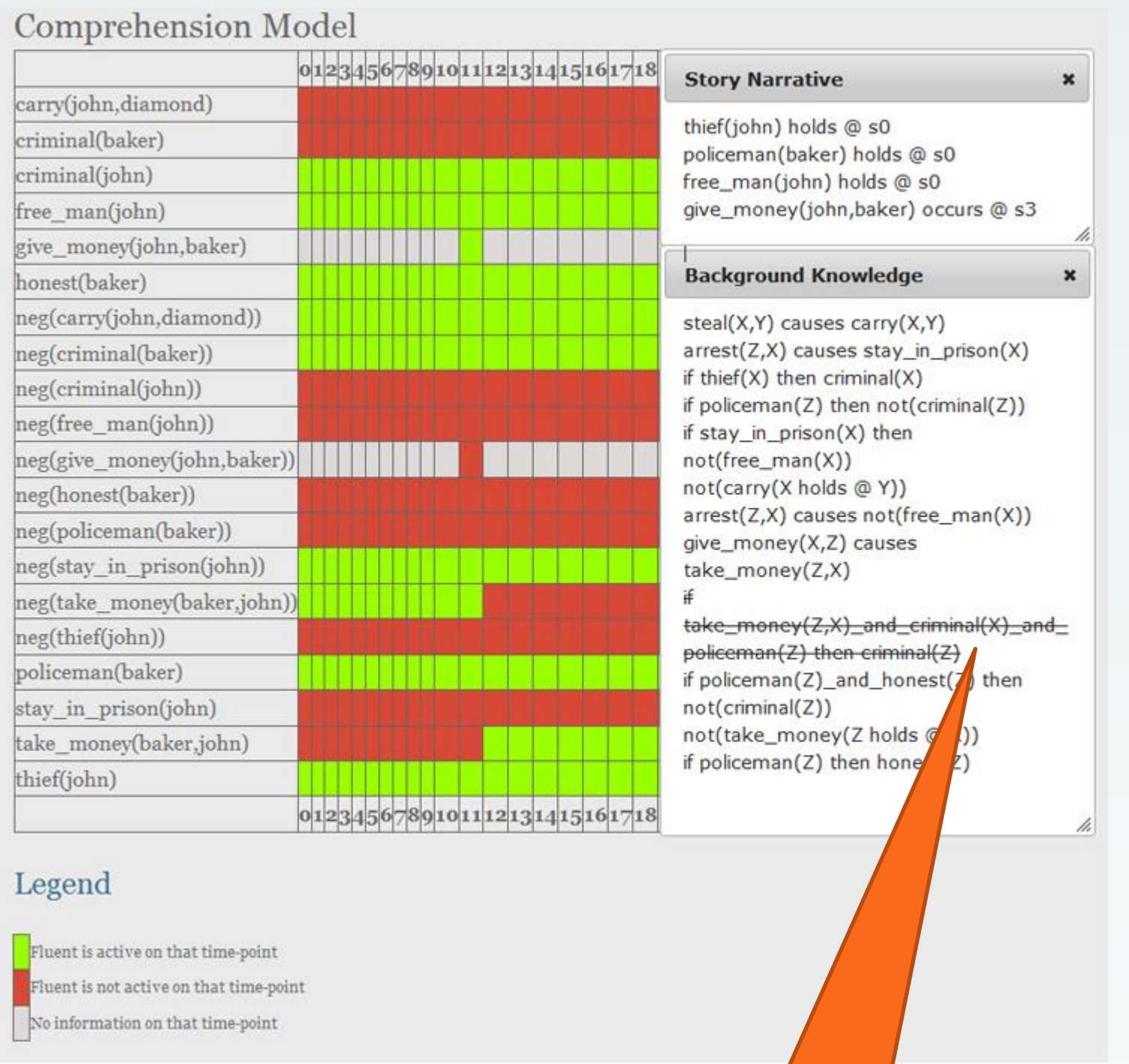
- Methodology and Tools for knowledge acquisition, representation, reasoning and question answering.
- Convert stories to formal representation
- Reason by integrating story information with background knowledge
- Gather background knowledge and represent it formally



Knowledge Representation

High-level version of the Event Calculus [2].

- Φ implies L
e.g., person(X) implies can(X,think)
- Φ causes L
e.g., attack(X,Y) causes war(X,Y)
- Rule preference for conflict resolution.
- Tool for reasoning and visualizing a comprehension model.

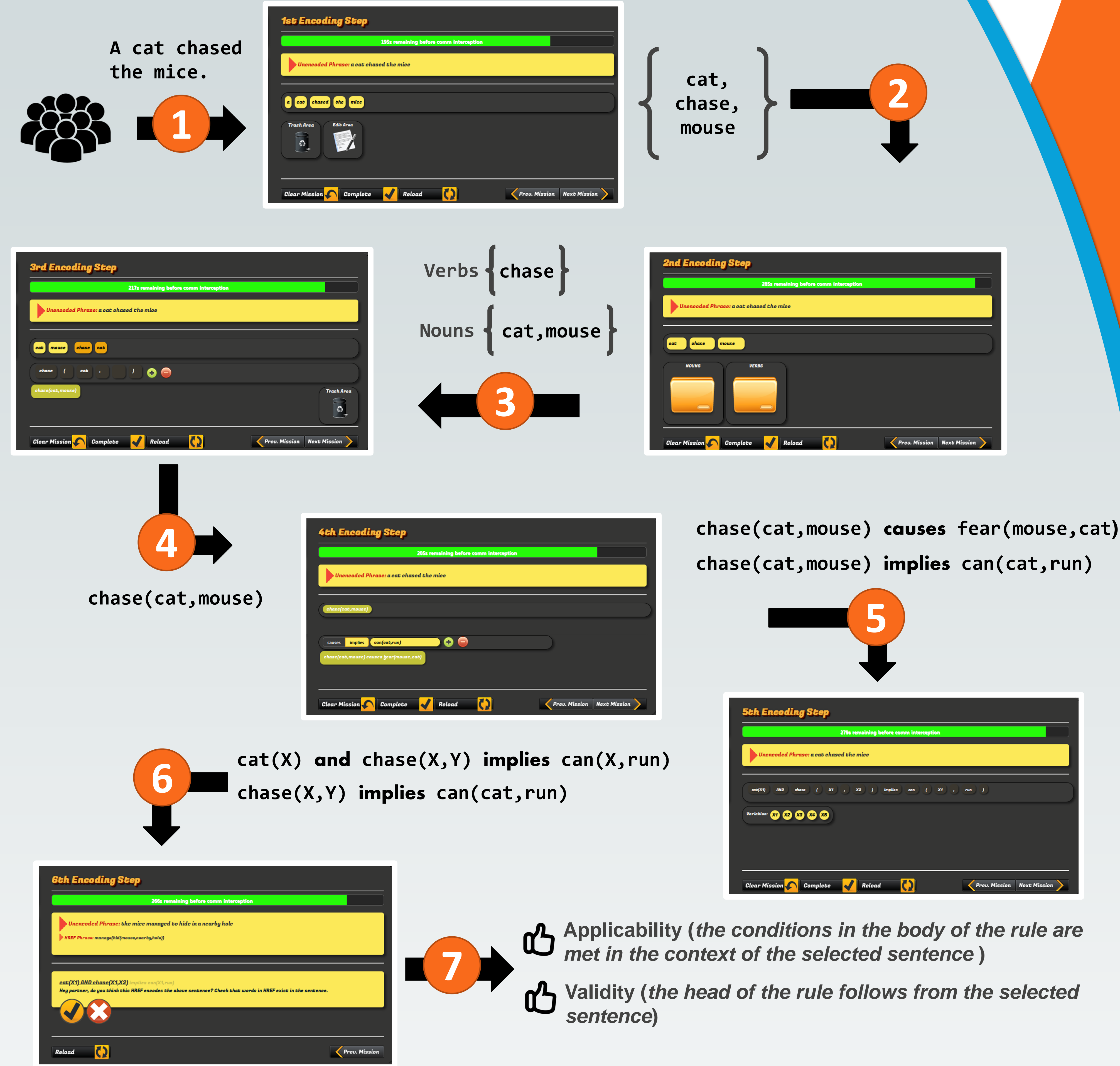


Applying preferred rule.

“Knowledge Coder” – GWAP

We adopt the use of Games with A Purpose (GWAPs) for the crowdsourcing of knowledge acquisition as a way of motivating people to participate. “Knowledge Coder” game was developed.

Story snippet: A cat chased the mice. The mice managed to hide in a nearby hole.



Knowledge Gathering Experimental Results

Experimental Setup		Experimental Output	
Number of participants	5	Number of rules generated	93
Number of Aesop's Fables	2	Number of causality rules	15
		Number of implication rules	78

- Rule 1: beast(X) and throw(Y,mouth,X) implies kill(X,Y)
Rule 2: beast(X) and man(Y) and doe(Z) and exclame(Z) and escape(Z,Y) and throw(Z,X) implies kill(X,Z)

Background knowledge gathered from our developed game offers some initial encouraging results in terms of the feasibility of our methodology. More experiments are needed though.

Ongoing and Future Work

- Extend “Knowledge Coder” with new “mission” for rule preference selection.
- Integrate “Knowledge Coder” with reasoning module.
- Move towards a more psychologically oriented comprehension reasoning module [1].
- Develop a module for converting stories to formal representations.

Contact

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References

- [1] Irene-Anna Diakidoy, Antonis Kakas, Loizos Michael, and Rob Miller. Story Comprehension through Argumentation. In *Proceedings of the 5th International Conference on Computational Models of Argument (COMMA'14)*, Scottish highlands, UK, 2014.
- [2] Loizos Michael. Computability of Narrative. In *Proceedings of the 2nd Symposium on Computational Models of Narrative (CMN'10)*, Arlington, Virginia, USA, 2010.

Join our efforts to acquire background knowledge

Join the Earth resistance forces by registering on the “Knowledge Coder” game. The game is accessible online using any modern web browser at:
<https://cognition.ouc.ac.cy/narrative/>

Typo are common in GWAPs. Solutions?