

Hi

A Machine With Semantic and Episodic Memory

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Semantic and episodic human memory systems

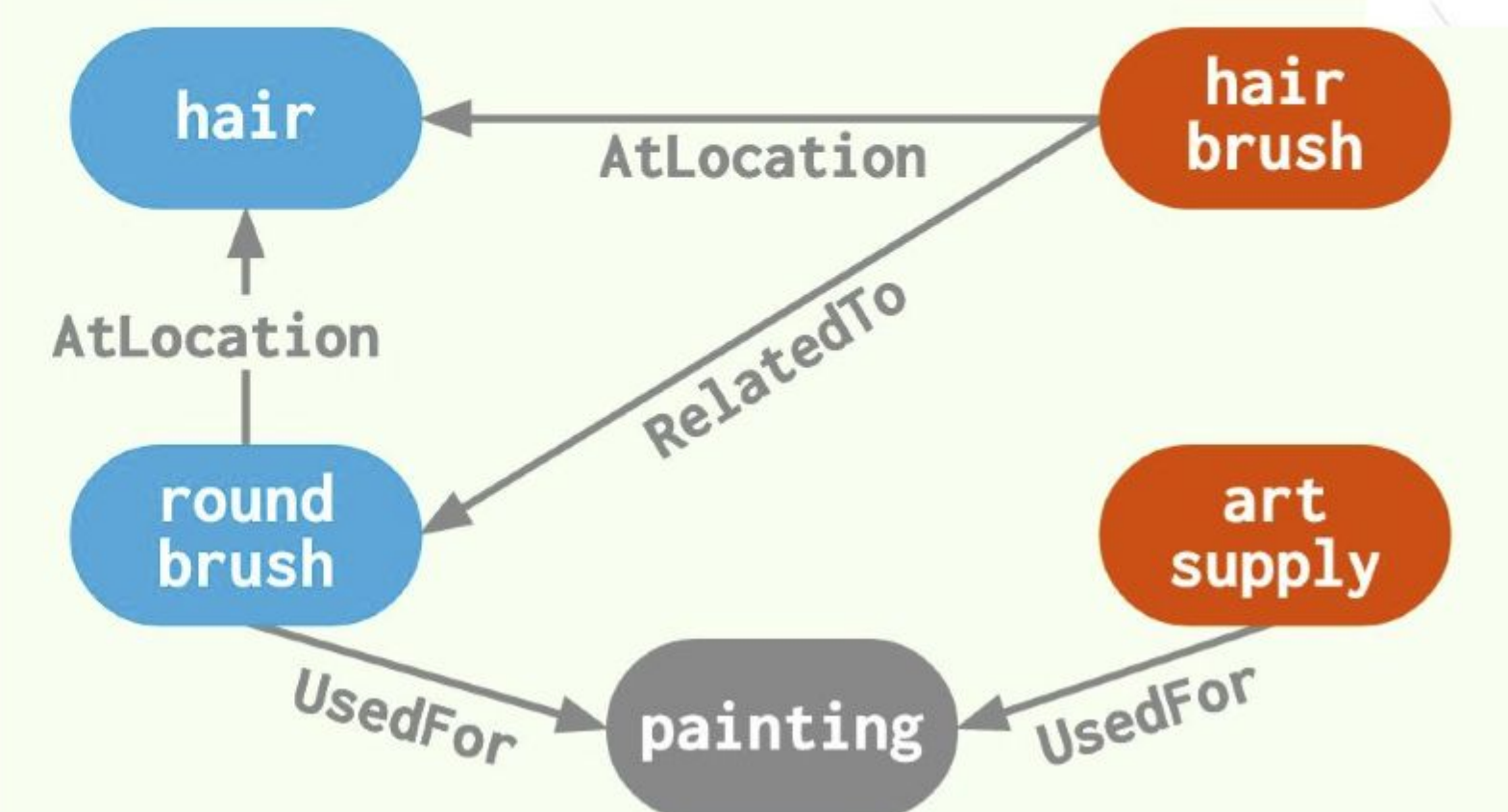
- In cognitive science, it's thought that humans use different memory systems to perform different tasks.
- In our research, we are interested in semantic and episodic memory,
- Semantic memory has to do with factual information while episodic memory has to do with one's personal memory.



Machines and semantic memory

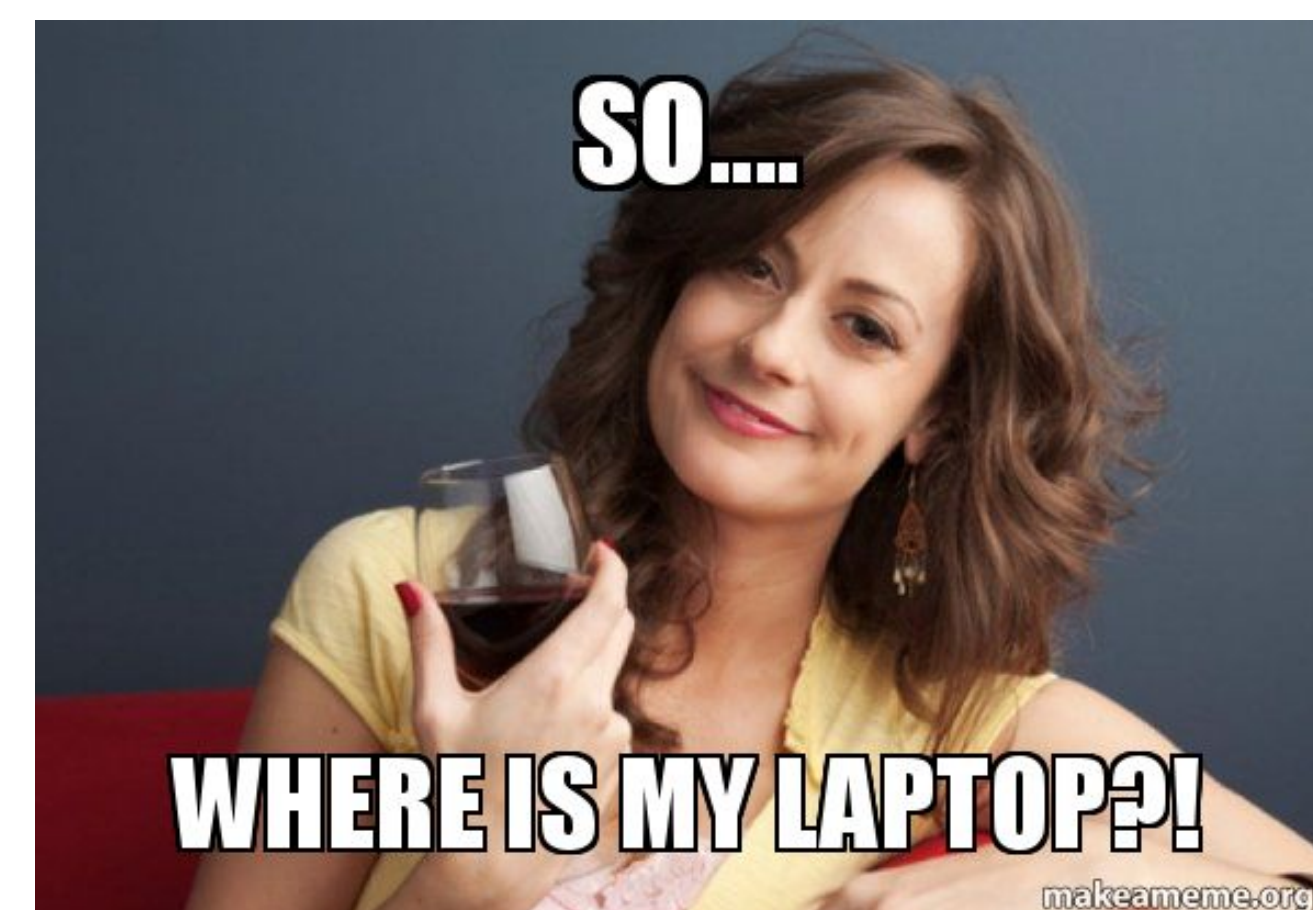
- In our research, we consider semantic memory as commonsense knowledge.

Knowledge Graph (KG)



Machines and episodic memory

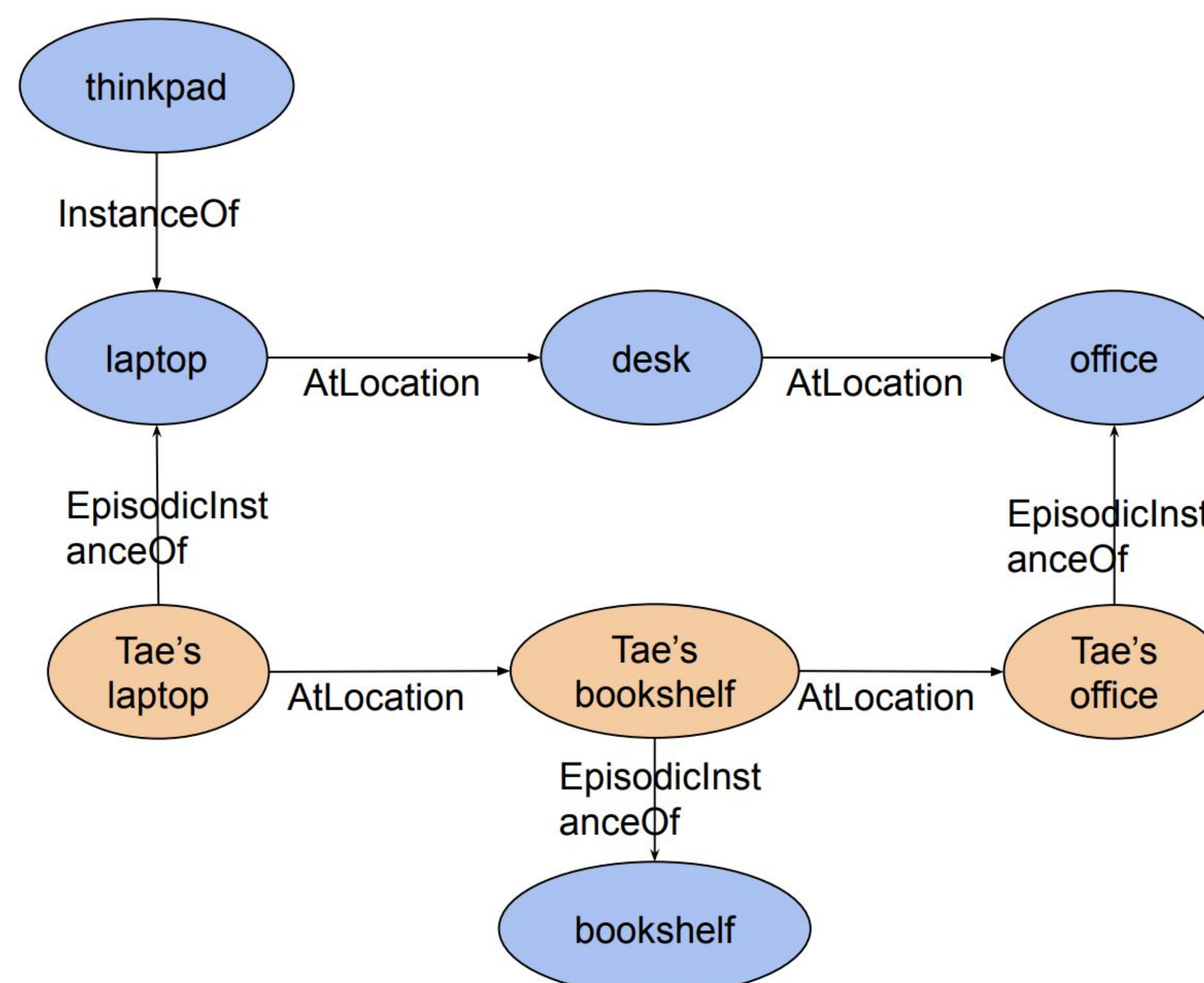
- This is relatively less studied, but we think this is very important.



Modelling semantic and episodic memory

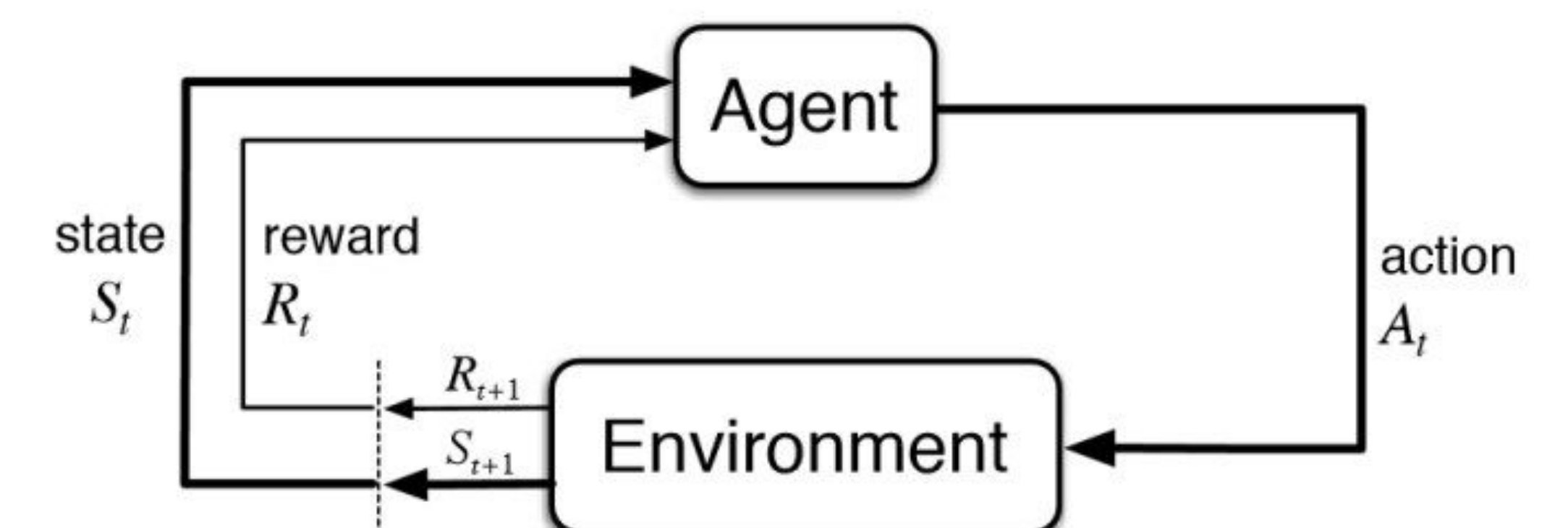
- We want to start from an existing semantic knowledge such as ConceptNet. Below is an example.

Blue is semantic and orange is episodic.



Evaluation

- In our experiment, we want our agent to interact with an MDP (Markov decision process) environment.
- As it continues to interact with the environment, it will have to encode its experience as memory in a good manner so that it can answer questions (e.g., Where is Tae's laptop?) correctly.



Future work

- Go multimodal.
- Include a human in loop and a dialogue system for the feedback.
- Include emotion for encoding, storage, and retrieval of episodic memory.

References

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