

A knowledge base for welding

Presentation outline

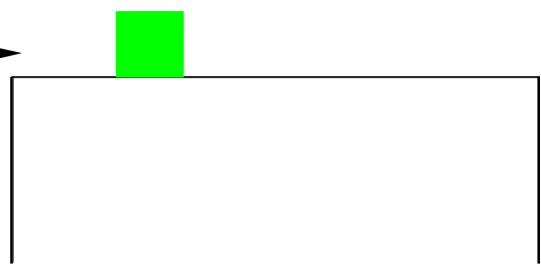
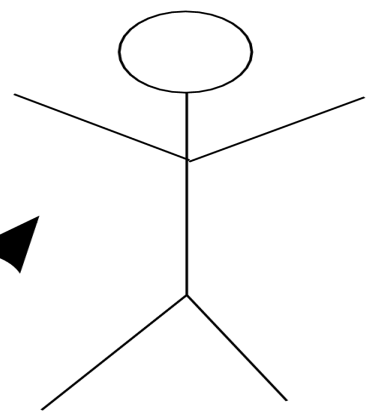
- Problem formulation
- Knowledge base
- My knowledge base
- Problem solution
- Future work
- Summary

Problem formulation

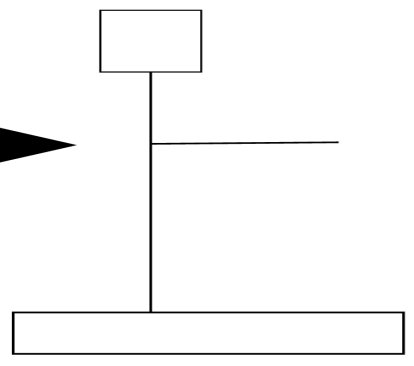
- Robots are very good at doing one thing
- Learning a robot a new task is very time consuming

How can the time to learn a robot a new task be reduced?

Human



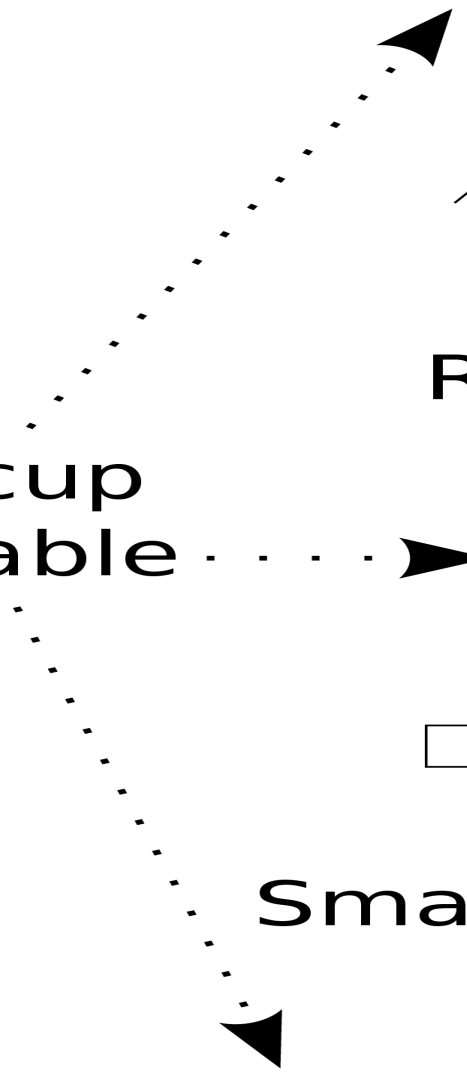
Robot



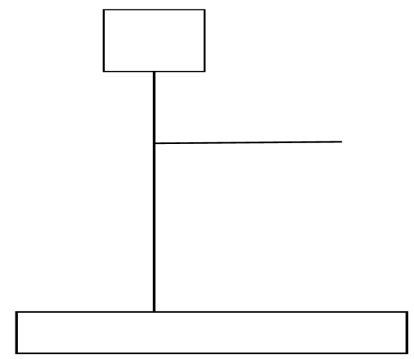
???



Put cup on table



Smart Robot



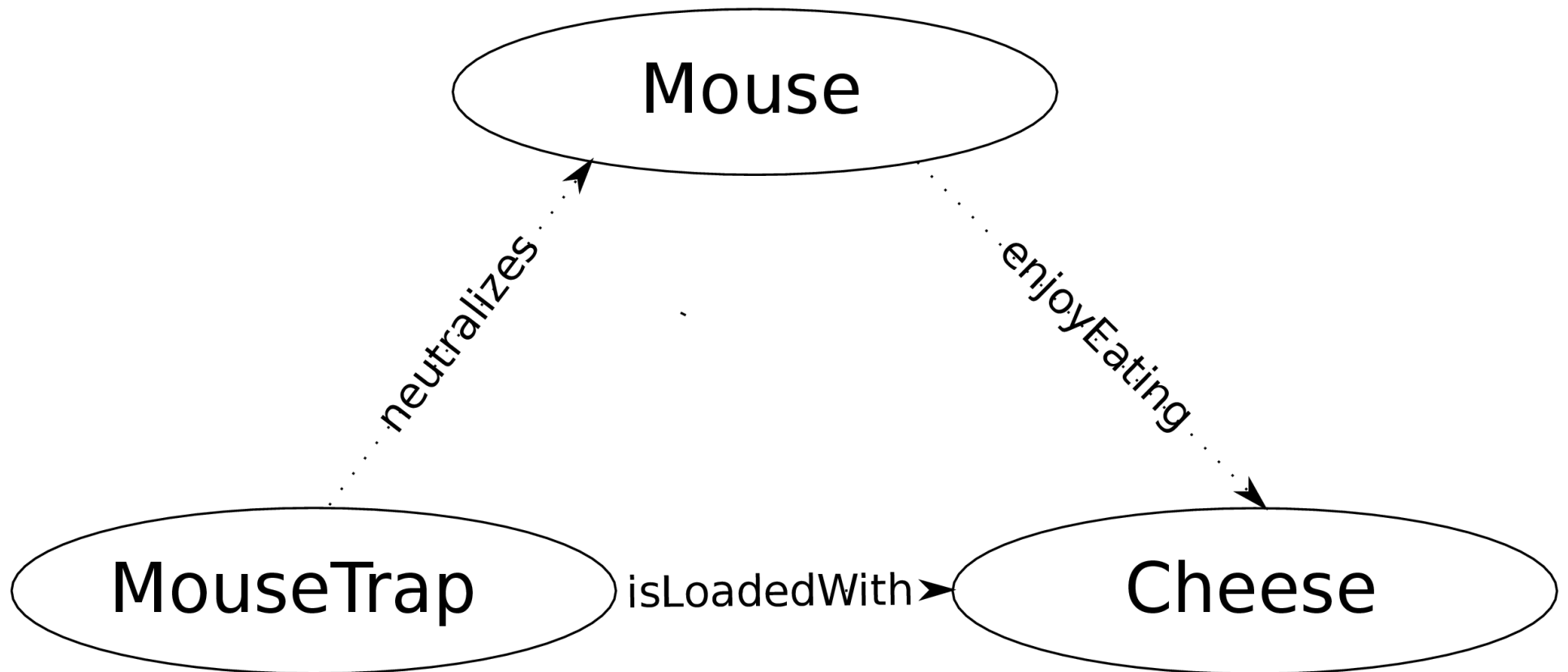
Knowledge base

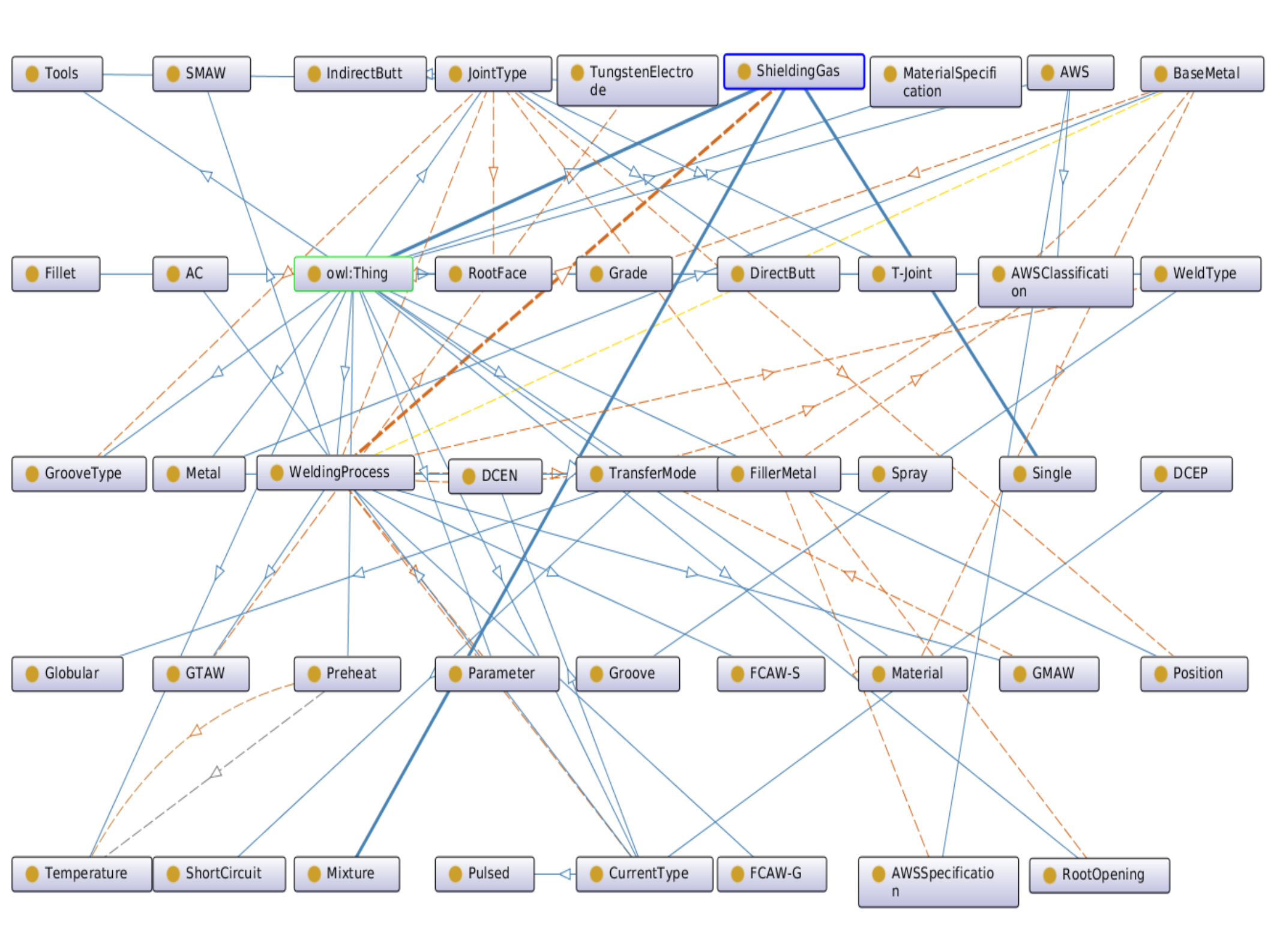
- Subject, thing which acts or is
- Predicate, relation between subject and object
- Object, thing acted upon

Bob	isEating	Carl
Subject	Predicate	Object

Knowledge base

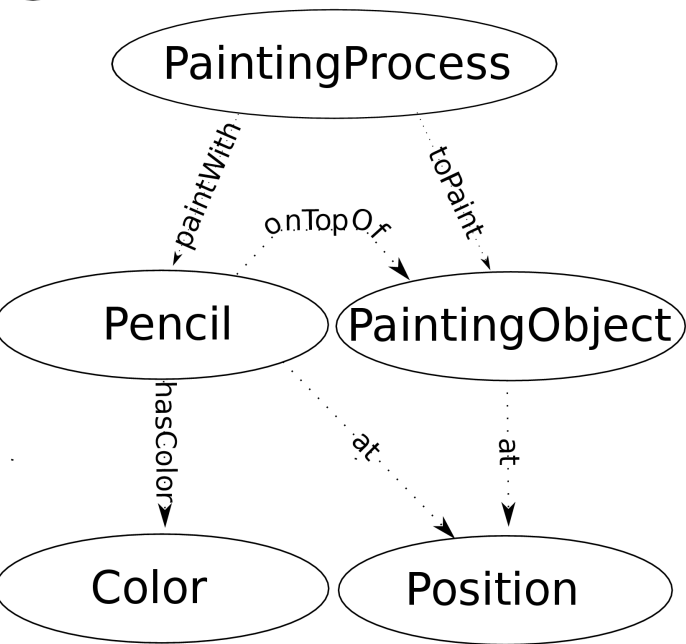
Is basically a graph with with many kind of edges



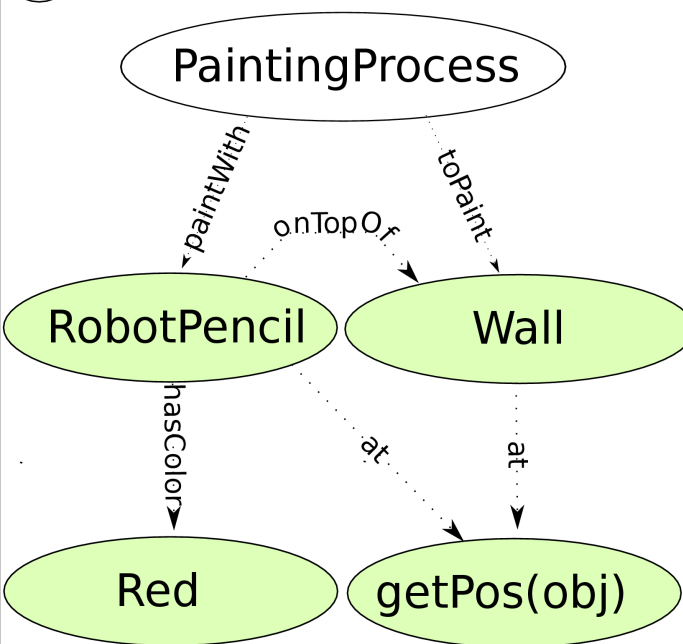


Problem solution

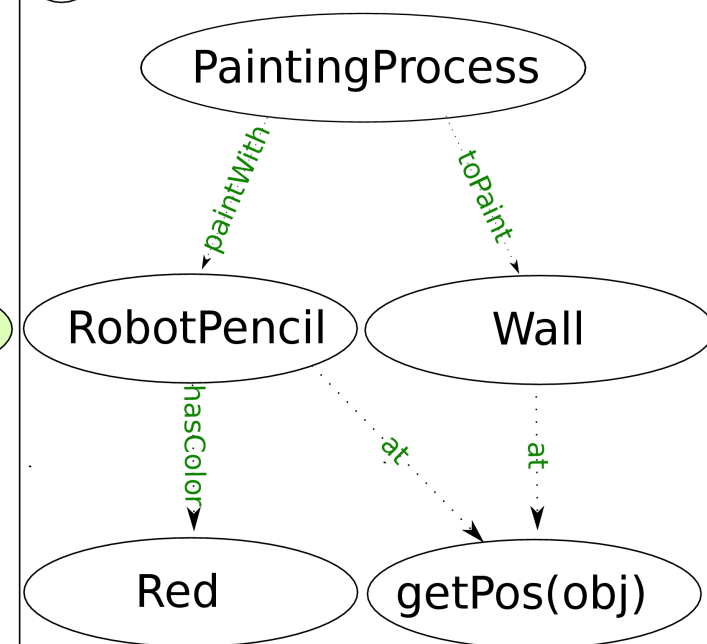
1 Query KB: PaintingProcess



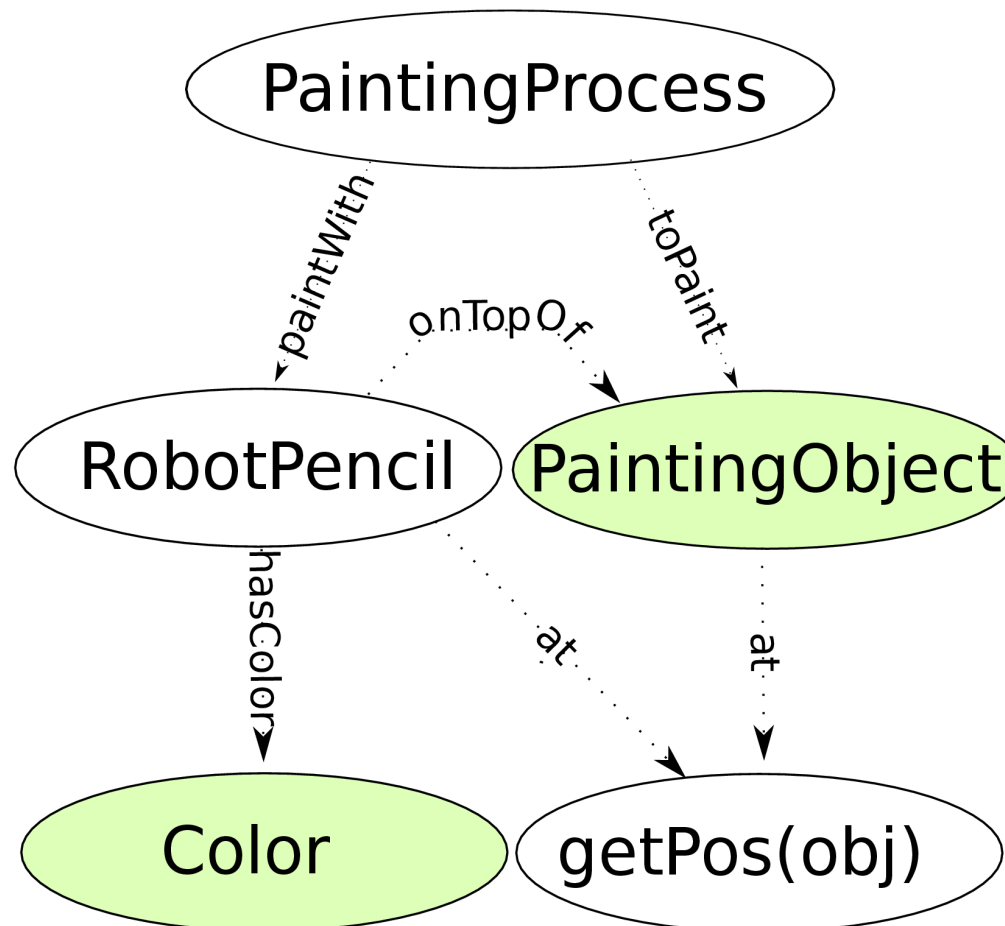
2 Define vertexes



3 Infer predicates



Problem solution



Future work

- Extend with more welding knowledge
- Create module to parse information from welding procedure specification documents to perform a weld
- Add support for translating the knowledge base to a mid-level robot language

Summary

- A knowledge base is a graph with more than one kind of edge
- With a knowledge base the time to learn a robot a new task can be reduced
- More work is needed to finish the welding knowledge base and make it useful in practice