

1.4 Ontology Analysis Project

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1. Axioms

The two ontologies in my project are:

1. https://github.com/gruninger/colore/blob/master/ontologies/tripartite_incidence/nonisolated_plane.clif
2. https://github.com/gruninger/colore/blob/master/ontologies/tripartite_incidence/strong_nonisolated_line.clif

The Prover9 translations of the ontologies are in the files *nonisolated_plane.in* and *strong_nonisolated_line.in*. The combined ontologies are found in *combined_ontologies.in*. All redundant axioms were eliminated.

2. Mutual Consistency

These two ontologies are mutually consistent, since Prover9 cannot generate a proof for an empty goal of the combined ontology, and Mace4 can generate a model of the combined ontology:

A model for the combined ontology can be found in *combined_ontologies.model*:

$$\begin{aligned} M &= \{0, 1, 2\} \\ \text{point} &= \{\langle 0 \rangle\} \\ \text{line} &= \{\langle 1 \rangle\} \\ \text{plane} &= \{\langle 2 \rangle\} \\ \text{in} &= \{\langle 0, 0 \rangle, \langle 0, 1 \rangle, \langle 0, 2 \rangle, \langle 1, 0 \rangle, \langle 1, 1 \rangle, \langle 1, 2 \rangle, \langle 2, 0 \rangle, \langle 2, 1 \rangle, \langle 2, 2 \rangle\} \end{aligned}$$

3. Complete Listing of Files

1. *nonisolated_plane.in*
2. *strong_nonisolated_line.in*
3. *combined_ontologies.in*
4. *combined_ontologies.model*