CS761: Second Assignment

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Legend of Zelda

0.1 Constructing a knowledge base, set of static axioms

Recall; a propositional knowledge base is a set of **clauses**.

Ganon must be at one location

$$\neg G_{i',j'} \leftarrow G_{i,j} \text{ and } G_{i,j} \leftarrow \bigwedge_{i',j'} \neg G_{i',j'}$$

for all $i, i' \in \{1,2,3\}$ and $j, j' \in \{1,2,3,4\}$ but $i \neq i', j \neq j'$.

To commentate; the first group of clauses restrict the number of Ganons to *at most* one. While the second group of clauses restrict the number of Ganons to be *at least* one.

Ganon and master sword are not at the same location

$$\neg G_{i,j} \leftarrow S_{i,j} \text{ and } \neg S_{i,j} \leftarrow G_{i,j}$$

for all $i \in \{1,2,3\}$ and $j \in \{1,2,3,4\}$

Calamity cannot be sensed at two adjacent locations at the same time

$$\neg C_{i,j} \leftarrow C_{i,j'} \text{ and } \neg C_{i,j} \leftarrow C_{i',j}$$

for all $i, i' \in \{1,2,3\}$ and $j, j' \in \{1,2,3,4\}$
such that $i - i' = 1$ and $j - j' = 1$
moreover $j > j'$ and $i > i'$

0.2 The dynamic knowledge axiom $OK_{i,j}$

The following group of clauses in tandem build the $OK_{i,j}$ axiom.

- $OK_{i,j} \leftarrow C_{i,j}$
- $OK_{i,j} \leftarrow HoldingSword$
- $OK_{i,j} \leftarrow (\neg HoldingSword \wedge \neg G_{i,j})$