Computational Learning in Dynamic Logics
Extra Exercises
Day 4

Nina Gierasimczuk and Caleb Schultz Kisby

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Ex. 1. Give an example of an epistemic space that is learnable by minimal revision from positive and negative data, but not from only positive data.

Ex. 2. Recall that an epistemic space is defined as learnable if there is a learner who is able to learn the space on *any* ordering of the possible worlds. What if the condition was changed to: epistemic space is defined as learnable if there is a learner who is able to learn the space on *some* ordering of the possible worlds. Would minimal revision become universal on positive data with respect to finite epistemic spaces? What about the infinite ones (with countable S and O)?

Ex. 3. Recall the definition of belief in epistemic spaces:

$$\mathbb{B}_{\mathbb{S}} \models Bp \quad \text{iff} \quad min_{\preceq} S \subseteq p.$$

What if $\preceq$ is non-well-founded, i.e., there is no minimal element? Is it possible to define a non-well-founded notion of belief for such spaces? Hint: the definiens of such a definition should include the quantifier prefix $\exists\forall$ (i.e., you should first have an $\exists$ followed by a $\forall$).