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Title: Reasoning with Implicatives: Modular and Compositional Learning for Language Understanding

Abstract: Core to human cognition are the lifelong abilities, developed continuously and effortlessly, to learn new expressions from a small number of examples, adapt to new types of input, and generalize creatively. However, current machine learning algorithms struggle to adapt to novel inputs while retaining existing memories, often resulting in a lack of generalization. Using recent characterizations of these challenges, we discuss learning architectures that model cognitive modularity by specializing parts of their memory to different inputs. We test these architectures on the domain of implicatives -- semantic constructions containing verbs such as *manage to* and *fail to*. These constructions are unique in that they yield an entailment about the truth or falsity of the complement clause at least under one polarity. Crucially, implicative constructions have logical signatures that interact compositionally with each other and surrounding semantic operators. We show how the models can effectively leverage signatures as external information about the examples to be successful at fine-grained semantic tasks.