Neural Abstract Reasoner

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Abstract reasoning and logic inference are difficult problems for neural networks, yet essential to their applicability in highly structured domains. In this work, the Neural Abstract Reasoner (NAR) is introduced, a memory-augmented architecture capable of learning and using abstract rules. It is shown that, when trained with spectral regularization, NAR achieves 61.13% accuracy on the Abstraction and Reasoning Corpus, while also implicitly learning a rigid domain-specific language structure. Intuition is provided for the effects of spectral regularization in the domain of abstract reasoning based on theoretical generalization bounds and Solomonoff's theory of inductive inference.

Awards Won:
Fourth Award of $500
Innopolis University : Full tuition scholarships for the Bachelor program in Computer Science
Association for the Advancement of Artificial Intelligence: Honorable Mention