Transfer Learning by Mapping and Revising Relational Knowledge

Raymond J. Mooney
University of Texas at Austin

ABSTRACT:

Transfer Learning (TL) attempts to leverage knowledge previously acquired in a source domain to improve the accuracy and speed of learning in a related target domain. Statistical Relational Learning (SRL) concerns methods that combine the strengths of predicate logic and probabilistic graphical models in order to effectively and robustly learn and reason about complex relational data. Our recent work uses TL to improve SRL, specifically transfering learned Markov Logic Networks (MLNs), an expressive SRL formalism, to new domains. We present a complete MLN transfer system that first autonomously maps the predicates in the source MLN to the target domain and then revises the mapped knowledge to further improve its accuracy. Experimental results in several real-world domains demonstrate that our approach successfully reduces the amount of time and training data needed to learn an accurate model of a target domain over learning from scratch.