

Hierarchical concept learning using TRACA

M W Mitchell

ABSTRACT

This paper introduces a new learning system called TRACA (Temporal Reinforcement Learning and Classification Architecture). TRACA is an incremental reinforcement learning architecture. It is intended for use in environments which require generalisation capabilities and the ability to represent hidden-state. Like many learning systems, TRACA uses a hierarchical structure. However, TRACA differs from other systems by its use of message passing mechanisms to allow the representation of NOT or XOR using only AND structures. This significantly reduces the size of the search space. This paper describes TRACA's generalised representation and demonstrates its performance on several concept learning problems. In some cases, TRACA's predictive performance is better than that of other, well-known, algorithms.