An Adaptive Network That Learns Sequences of Transitions

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Abstract: We describe an adaptive network, TIN2, that learns the transition function of a sequential system from observations of its behavior. It integrates two subnets, TIN-I (Winter, Ryan and Turner, 1987) and TIN-2. TIN-2 constructs state representations from examples of system behavior, and its dynamics are the main topics of the paper. TIN-I abstracts transition functions from noisy state representations and environmental data during training, while in operation it produces sequences of transitions in response to variations in input. Dynamics of both nets are based on the Adaptive Resonance Theory of Carpenter and Grossberg (1987). We give results from an experiment in which TIN2 learned the behavior of a system that recognizes strings with an even number of I's .