

DISTINCTION NETWORK RELATIONS TO CONNECTIONISM

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Objective

Provide a model of control and deduction for massive parallelism

Characteristics of a Connectionist Model

Processing units

active objects, rule based, knows neighborhood
unit types: dnode, variable, ground, relation

vs: receive input and compute output

State of Activation

self-process always on, action based on messages,
connectivity, boredom
off = non-existent, not connected

vs: global activation state

Output

rulebased and self-initiated
activation = 1

vs: function of input strength

Connectivity

sparce, functional

vs: dense, arbitrary

Propagation

rulebased and self-initiated
logical and functional

vs: weighted sum of inputs, threshold

Activation

rulebased and self-initiated

vs: sum of inputs

Learning

create and erase (fills a gap in connectionist theory)

vs: modify weights

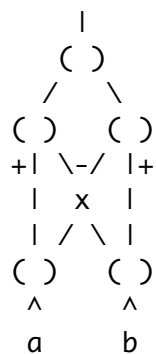
Environment

composed functional nesting

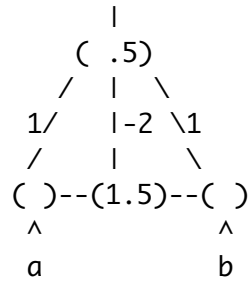
vs: probability of inputs

XOR EXAMPLE

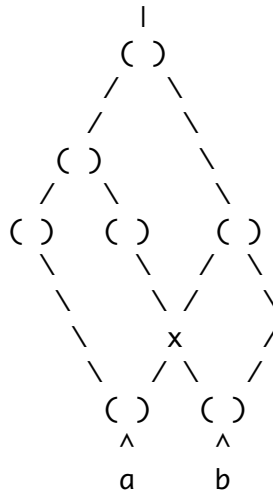
Weighted unit connections:



Weighted non-unit with threshold:



In the distinction network model, all nodes and connections are identical. This model permits a structural algebra.



The distinction network model with two way connections, all nodes are identical:

