Automatic Local Annealing

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Abstract: This research involves a method for finding global maxima in constraint satisfaction networks. It is an annealing process butt unlike most otherst requires no annealing schedule. Temperature is instead determined locally by units at each updatet and thus all processing is done at the unit level. There are two major practical benefits to processing this way: 1) processing can continue in 'bad t areas of the networkt while 'good t areas remain stablet and 2) processing continues in the 'bad t areast as long as the constraints remain poorly satisfied (i.e. it does not stop after some predetermined number of cycles). As a resultt this method not only avoids the kludge of requiring an externally determined annealing schedulet but it also finds global maxima more quickly and consistently than externally scheduled systems the to Boltzmann machine (Ackley et alt 1985) is made). FinallYt implementation of this method is computationally trivial.