

Whirlwind Review of Related Topics

David Dalrymple

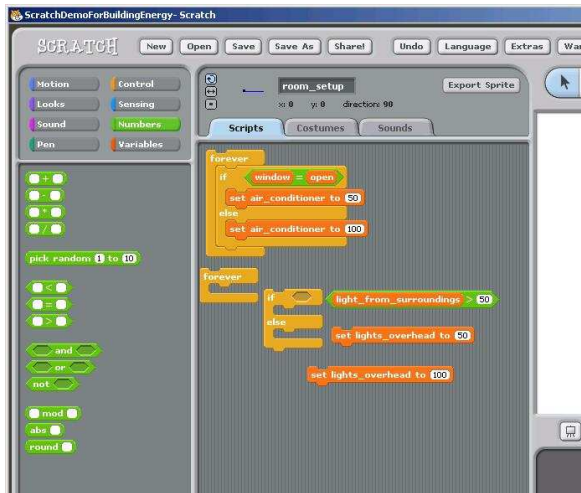
May 25, 2007

Programming Buildings with Building Blocks

Easy-to-use interface
to program the intelli-
gent infrastructure

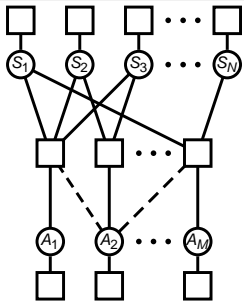
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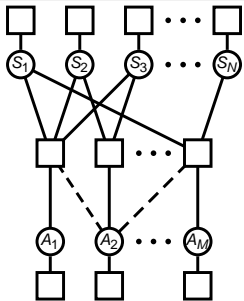
Distributed Optimization for Optimal Energy Use

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- S_1, S_2, \dots, S_N sensors
- A_1, A_2, \dots, A_M actuators

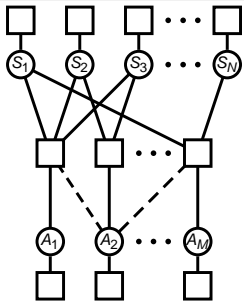
Distributed Optimization for Optimal Energy Use



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$$\mathcal{C}(s_1, \dots, s_N, a_1, \dots, a_M) = \sum_{k=1}^L \phi_k(\mathbf{a}_k, \mathbf{s}_k) + \sum_{i=1}^M u_i(s_i) + \sum_{i=1}^N u_i(a_i)$$

Distributed Optimization for Optimal Energy Use

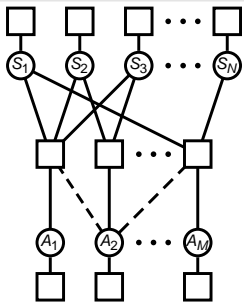


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- Cost function \longrightarrow Hamiltonian of a lattice gas \longrightarrow Statistical Mechanics

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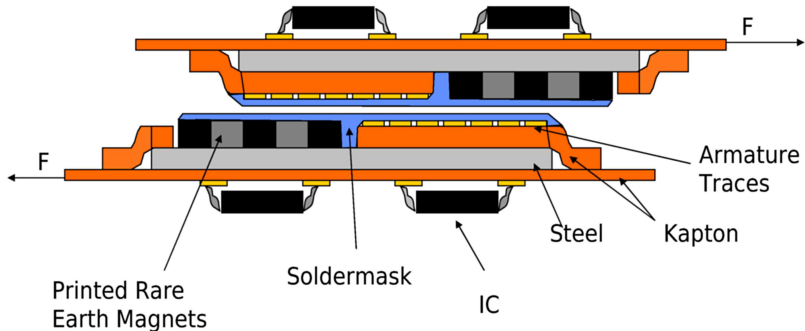
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- The problem can be solved using LOCAL rules that only involves nearest neighbors!

Distributed Actuation for Distributed Intelligence

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Scalable Encryption for Scalable Infrastructure

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