Simulated Annealing (SA) is an effective and general form of optimization. It is useful in finding global optima in the presence of large numbers of local optima. "Annealing" refers to an analogy with thermodynamics, specifically with the way that metals cool and anneal. Simulated annealing uses the objective function of an optimization problem instead of the energy of a material.

Algorithm:

- Let $S = S0$
- *For* $k = 0$ *through* k_{max} *(exclusive):*
    1. $T \leftarrow$ *temperature*(k / k_{max})
    2. *Pick a random neighbour,* $s_{new} \leftarrow$ *neighbour*(s)
    3. *If* $P(E(s), E(s_{new}), T) \geq$ *random*$(0, 1)$*:*

        $s \leftarrow s_{new}$
- *Output: the final state s*