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2/30/24 Simulated Annealing Algorithm

$$Prob(x) = e^{\frac{-E}{kT}}$$

where K → Boltzmann constant

Algorithm Acceptance Function

T : Temperature.
ΔE : energy variation between current candidate and new candidate.
α : cooling factor

```
if ΔE < 0 :
    return true
else :
    r ← generate random value [0,1)

    if r < exp(-ΔE/T):
        return true
    else :
        return false
```

Algorithm Simulated Annealing Function

T_max : maximum temperature
T_min : minimum temperature
E_Threshold : Threshold energy.

```
T ← T max.
x ← generate initial candidate solution
E ← E(x) computation of energy. (initial solution)
```

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while T > T_min and E > E_th:
    x_new ← generate new candidate so
    E_new ← compute new energy

    ΔE ← E_new - E
    if Accept(ΔE, T):
        x ← x_new
        E ← E_new

    T ← T / alpha
return x

Objective function
⇒ $x^2 + 2x + 1$

Swekaff
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