Numerical Analysis - Laboratory 1

28 November, 2017

Tasks 1, 2, 3, 4 (see previous files)

Task 5

1. The main modifications to the code, using the `sim_anneal_loop.m` file as a baseline, were as follows.

The resistor values of were fed into the `R` variable using a custom `get_valuesB2` function which was modified to return calculated resistor values according to the lab script.

The power values were calculated using `calc_power(R)` wrapped in a 6-decimal-place rounding function instead of simply using `calc_power(R,V)` from before. This was done because we know `V` is 1 and is constant but more importantly because we do not want default 3 d.p. rounding to negatively impact the annealing process.

The indices were also modified to generate more random integers and to take into account a much larger number of resistors rather than the standard number from the previous exercise.

The final modification was changing the decrease rate and iterations of temperature `T`. This allowed a slightly more performant code to execute within a reasonably fast timeframe.

2. A better solution can be found by decreasing the temperature slower and by iterating more times. This drastically increased computing time, as expected, but also yielded much less fluctuation as local minima were avoided and a better minimum was found.

3. Best configuration found was:

[16 7 6 4 11 24 15 10 21 7 10 14 9 9 16 5 8 19 13 12 15 7 15 10 3 3]

This yielded a power of 0.014694W.