# Benchmarking hungaR

*JBvR*

*21 juli 2019*

This is an R Markdown Notebook.

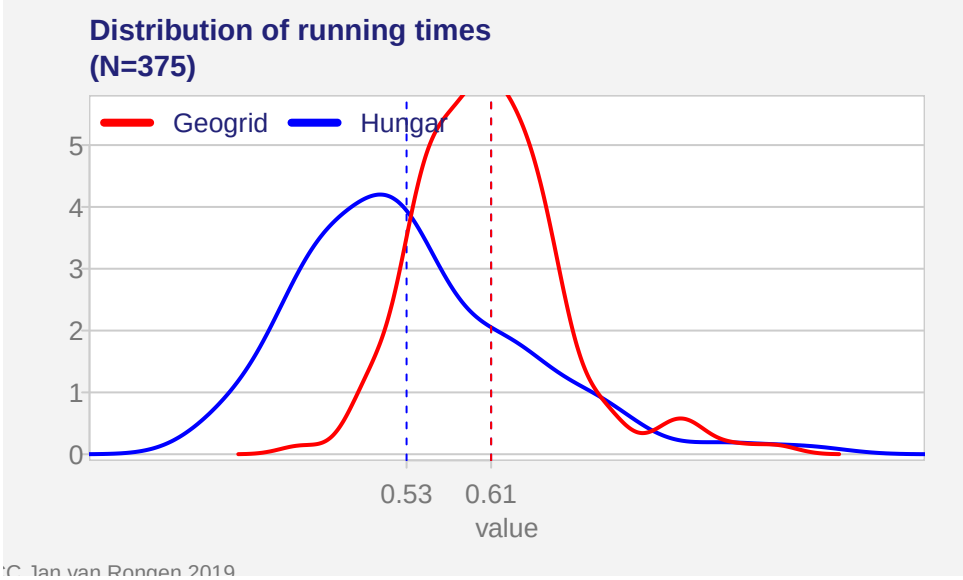
The purpose is to perform speedtests where we compare two implementations of the hungarian method ('hungar' and 'geogrid').

The tests will take more than an hour on average hardware. We use random (square) costmatrices with many different entries - they seem to be the most difficult cases for the method. If you want to reproduce these tests, you need to rewrite the plot parts, because they use private library.

## Distribution of running times for identical N

Here we run the algorithms against each other, each time on the same randomly generated cost matrix. The sizes of the shapes indicate that the two algorithms differ in important details.

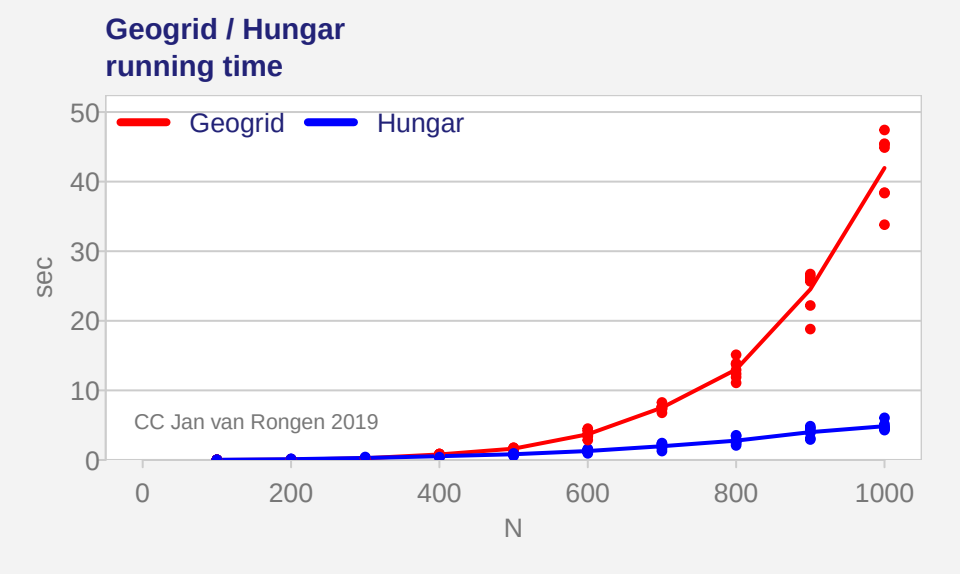
Also checks whether found minima are the same value.




```
##
##
## Elapsed: 188.37 secs
```

## Response times curves for varying N

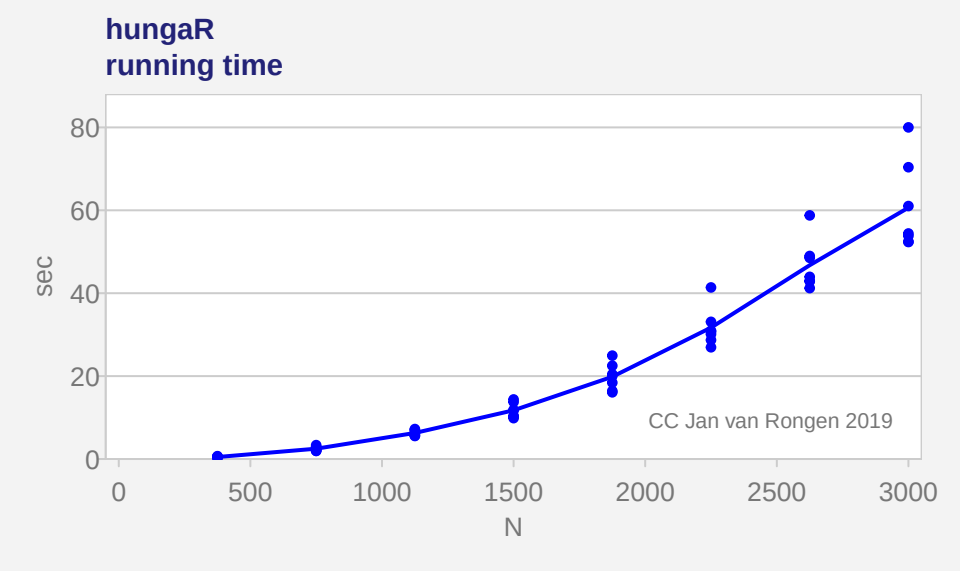
The algorithm is O(N^3), but that does not say a lot in practice. Let's see what the shape of the curves is with varying N.




```
##
##
## Elapsed: 779.25 secs
```

## Another look at the curve for Hungar

Just curious to see how far better `hungar` is compared to `geogrid`.



```
##
##
## Elapsed: 1268.36 secs
```