

Melody Approximation

Enrique Alba and Andrés Camero

Musical piece: Ave Verum Corpus (K.618)

Author: W.A. Mozart

Melody Approximation

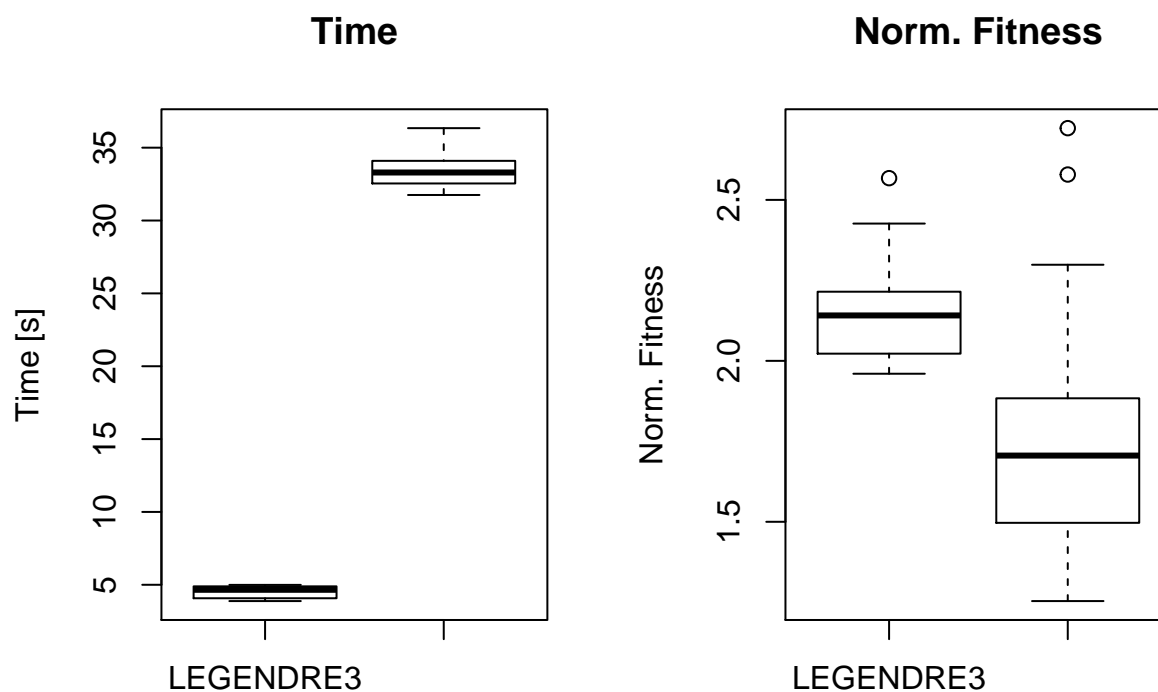
The musical piece was approximated 30 independent times using Legendre and Trigonometric-polynomial approaches, further described in the papers available at <http://neo.lcc.uma.es/staff/acamero/>.

The mean normalized fitness for each approximation function is:

| Algorithm | Norm. Fitness |
|-----------------|---------------|
| LEGENDRE3 | 2.155545 |
| POLYTRI_2020128 | 1.745481 |

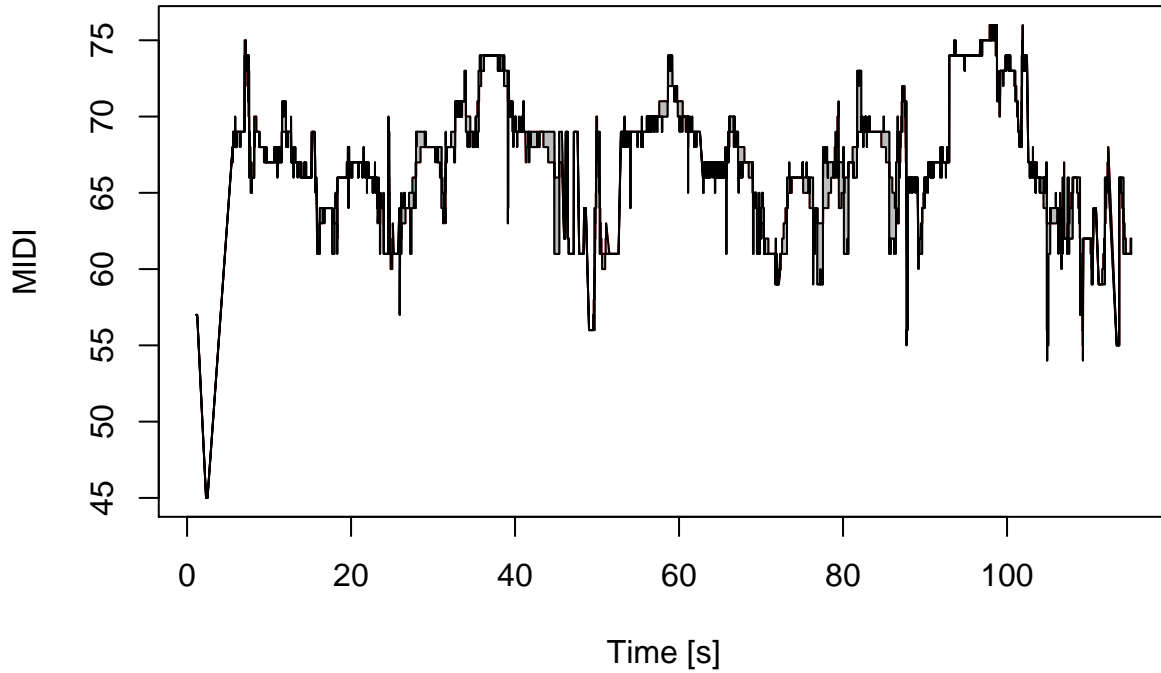
And the mean time for each approximation variant is:

| Algorithm | Time [s] |
|-----------------|----------|
| LEGENDRE3 | 4.50290 |
| POLYTRI_2020128 | 33.52553 |



Legendre 3

The next figure shows the reconstruction of the original melody by Legendre polynomials up to order 3. The differences between the original melody and the approximated one are highlighted in gray.



Trigonometric-polynomials

The next figure shows the reconstruction of the original melody by Trigonometric-polynomial approach, using 20 sin, 20 cosine and a frequency of interpolation equal to 128. The differences between the original melody and the approximated one are highlighted in gray.

