

# 1 Higuchi method

Let us have the time serie  $X(i)$  ( $i = 1, \dots, N$ ). Then, the value  $L_m(k)$  can be calculated for  $m = 1, \dots, k$ :

$$L_m(k) = \frac{1}{k} \left\{ \left( \sum_{i=1}^{\lfloor \frac{N-m}{k} \rfloor} |X(m+ik) - X(m+(i-1)k)| \right) \frac{N-1}{k^{\lfloor \frac{N-m}{k} \rfloor}} \right\}$$

The averaging of  $L_m(k)$  will give:

$$L(k) = \frac{1}{k} \sum_{m=1}^k L_m(k).$$

If the curve has a fractal properties:

$$L(k) \sim k^{-D}$$

where  $D$  is a fractal dimension of the curve.