The Hurst exponent can be calculated by rescaled range analysis (R/S analysis). For a time series, $X = X_1, X_2, \ldots X_n$, R/S analysis method is as follows:

(1) Calculate mean value m.

$$m = \frac{1}{n} \sum_{i=1}^{n} X_i$$

(2) Calculate mean adjusted series Y

$$Y_t = X_t - m, \quad t = 1, 2, \ldots, n$$

(3) Calculate cumulative deviate series Z

$$Z_t = \sum_{i=1}^{t} Y_i, \quad t = 1, 2, \ldots, n$$

(4) Calculate range series R

$$R_t = max(Z_1, Z_2, \ldots, Z_t) - min(Z_1, Z_2, \ldots, Z_t)$$
$$t = 1, 2, \ldots, n$$

(5) Calculate standard deviation series S

$$S_t = \sqrt{\frac{1}{t} \sum_{i=1}^{t} (X_i - u)^2} \quad t = 1, 2, \ldots, n$$

Here u is the mean value from X_1 to X_t.

(6) Calculate rescaled range series (R/S)

$$(R/S)_t = R_t/S_t \quad t = 1, 2, \ldots, n$$

Note $(R/S)_t$ is averaged over the regions $[X_1, X_t]$, $[X_{t+1}, X_{2t}]$ until $[X_{(m-1)t+1}, X_{mt}]$ where m=floor(n/t). In practice, to use all data for calculation, a value of t is chosen that is divisible by n.