Rdocumentation

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`AUC_Lagrange_Cjp_coefficients` *Time Dependent Coefficients Cjp for AUC Lagrange Interpolation Method*

Description

This function calculate the time-dependent coefficients Cjp involved in the calculation of the are under the curve when the Lagrange interpolation method is used.

Usage

```
AUC_Lagrange_Cjp_coefficients(ind_j,ind_p,t)
```

Arguments

`ind_j`	a numerical scalar indicating the value of the index j.
`ind_p`	a numerical scalar indicating the value of the index p
`t`	a numerical vector of time points (x-axis coordinates) to consider for the AUC calculation.

Details

The coefficients C_{jp} involved in the calculation of the AUC are defined as

$$C_{2p} = (t_2 - t_1) \prod_{l=0;\ l \neq p}^{P=2} t_{1+l} - \frac{(t_2^2 - t_1^2)}{2} \sum_{l=0;\ l \neq p}^{P=2} t_{1+l} + \frac{(t_2^3 - t_1^3)}{3}$$

$$C_{mp} = (t_m - t_{m-1}) \prod_{l=0;\ l \neq p}^{P=2} t_{m-2+l} - \frac{(t_m^2 - t_{m-1}^2)}{2} \sum_{l=0;\ l \neq p}^{P=2} t_{m-2+l} + \frac{(t_m^3 - t_{m-1}^3)}{3}$$

$$C_{jp} = -(t_j - t_{j-1}) \prod_{l=0;\ l \neq p}^{P=3} t_{j-2+l} + \frac{(t_j^2 - t_{j-1}^2)}{2} \sum_{l_1=0;\ l_1 \neq p}^{P-1=2} \sum_{l_2=l_1+1;\ l_2 \neq p}^{P=3} t_{j-2+l_1} \cdot t_{j-2+l_2} -$$
$$\frac{(t_j^3 - t_{j-1}^3)}{3} \sum_{l=0;\ l \neq p}^{P=3} t_{j-2+l} + \frac{(t_j^4 - t_{j-1}^4)}{4}$$

where m is the number of time points in the vector `t`.

Value

a numerical scalar corresponding to the coefficient C_{jp} evaluated for `j = ind_j` and `p = ind_p`.

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