

january janeiro

$x_1, x_2, x_3 \sim \text{iid uniform in } [-1, 1]$ ENERO

$$X = (x_1, x_2, x_3)$$

Jueves
thursday quinta-feira

8-357

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$$f(x) = f_0 + f_1(x_1) + f_2(x_2) + f_3(x_3)$$

$$+ f_{12}(x_1, x_2) + f_{13}(x_1, x_3) + f_{23}(x_2, x_3)$$

$$+ f_{123}(\underbrace{x_1, x_2, x_3}_X).$$

where:

$$f_0 = \int_{-1}^1 \int_{-1}^1 \int_{-1}^1 f(x) \cdot \left(\frac{1}{2}\right)^3 dx_1 dx_2 dx_3 = \text{const} \downarrow \text{mean of } f.$$

$$f_1(x_1) = \int_{-1}^1 \int_{-1}^1 f(x) \cdot \left(\frac{1}{2}\right)^2 dx_2 dx_3 - f_0$$

$$f_2(x_2) = \int_{-1}^1 \int_{-1}^1 f(x) \cdot \left(\frac{1}{2}\right)^2 dx_1 dx_3 - f_0$$

$$f_3(x_3) = \int_{-1}^1 \int_{-1}^1 f(x) \cdot \left(\frac{1}{2}\right)^2 dx_1 dx_2 - f_0$$

L	M	M	J	V	S	D	FEB
						1	
2	3	4	5	6	7	8	
9	10	11	12	13	14	15	
16	17	18	19	20	21	22	
23	24	25	26	27	28		
M	T	W	T	F	S	S	

Sábado
saturday sábado

10-355

10

$$f_{12}(x_1, x_2) = \int_{-1}^1 f(x) \cdot \left(\frac{1}{2}\right)' dx_3 - f_1(x_1) - f_2(x_2) - f_0$$

$$f_{13}(x_1, x_3) = \int_{-1}^1 f(x) \cdot \left(\frac{1}{2}\right)' dx_2 - f_1(x_1) - f_3(x_3) - f_0$$

$$f_{23}(x_2, x_3) = \int_{-1}^1 f(x) \cdot \left(\frac{1}{2}\right)' dx_1 - f_2(x_2) - f_3(x_3) - f_0$$

Domingo
sunday domingo

11-354

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$$\begin{aligned} f_{123}(x_1, x_2, x_3) &= f(x) - f_0 - f_1(x_1) - f_2(x_2) \\ &\quad - f_3(x_3) - f_{12}(x_1, x_2) \\ &\quad - f_{13}(x_1, x_3) - f_{23}(x_2, x_3) \end{aligned}$$

L	M	M	J	V	S	D	FEB
						1	
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M	T	W	T	F	S	S	

Martes
tuesday terça-Feira

13-352

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07 we can show that:

$$\begin{aligned} \text{Var}[f] &= \int_{-1}^1 f_1^2 \left(\frac{1}{2}\right) dx_1 + \int_{-1}^1 f_2^2 \left(\frac{1}{2}\right) dx_2 \\ &+ \int_{-1}^1 f_3^2 \left(\frac{1}{2}\right) dx_3 + \int_{-1}^1 \int_{-1}^1 f_{12}^2 \left(\frac{1}{2}\right)^2 dx_1 dx_2 \\ &+ \int_{-1}^1 \int_{-1}^1 f_{13}^2 \left(\frac{1}{2}\right)^2 dx_1 dx_3 \\ &+ \int_{-1}^1 \int_{-1}^1 f_{23}^2 \left(\frac{1}{2}\right)^2 dx_2 dx_3 \\ &+ \int_{-1}^1 \int_{-1}^1 \int_{-1}^1 f_{123}^2 \left(\frac{1}{2}\right)^3 dx_1 dx_2 dx_3. \end{aligned}$$

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FEB

M T W T F S S

Jueves
thursday quinta-feira

15-350

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07 orthogonality check:

08 $\int_{-1}^1 f_1(x_1) \cdot \left(\frac{1}{2}\right)' dx_1 \equiv 0$

09

10 $\int_{-1}^1 f_2(x_2) \cdot \left(\frac{1}{2}\right)' dx_2 \equiv 0$

11

12 $\int_{-1}^1 f_3(x_3) \cdot \left(\frac{1}{2}\right)' dx_3 \equiv 0$

01

02 $\int_{-1}^1 \int_{-1}^1 f_{12}(x_1, x_2) \cdot \left(\frac{1}{2}\right)^2 dx_1 dx_2 \equiv 0$

03

04 $\int_{-1}^1 \int_{-1}^1 f_{13}(x_1, x_3) \cdot \left(\frac{1}{2}\right)^2 dx_1 dx_3 \equiv 0$

05

06 $\int_{-1}^1 \int_{-1}^1 f_{23}(x_2, x_3) \cdot \left(\frac{1}{2}\right)^2 dx_2 dx_3 \equiv 0$

07

$\int_{-1}^1 \int_{-1}^1 \int_{-1}^1 f_{123}(x_1, x_2, x_3) \left(\frac{1}{2}\right)^3 dx_1 dx_2 dx_3 \equiv 0$

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