Algo 2 matching, graphs, clustering : project

NICOLAS LE HIR
nicolaslehir@gmail.com

1 DISTANCES

L2 in two dimensions.

$$\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} \tag{1}$$

L2 in three dimensions.

$$\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2} \tag{2}$$

L1

$$|x_1 - x_2| + |y_1 - y_2| \tag{3}$$

L∞

$$\max(|x_1 - x_2|, |y_1 - y_2|) \tag{4}$$

weighted L1

$$\alpha_1 |x_1 - x_2| + \alpha_2 |y_1 - y_2| \tag{5}$$

2 LIKELIHOOD

$$L(\theta) = p(x_1, \ldots, x_n | \theta) \tag{6}$$

2.1 Exercise 5

$$L(p) = p \times (1 - p) \tag{7}$$

$$L(p) = p - p^2 \tag{8}$$

$$L'(p) = 1 - 2p \tag{9}$$

$L'(p) = 0$ si et seulement si $p = \frac{1}{2}$
Donc max atteint pour $\frac{1}{2}$.

3   DÉRIVÉE

$f : x \to f(x)$

$$f'(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h} \tag{10}$$

$g : x \to 3x$
$\forall \in \mathbb{R}, x, g'(x) = 3$
$h : x \to x^2$
$h' = 2x$

4   ESPÉRANCE

X constant random variable : $E(X) = \alpha$

$$\sum_{i=1}^{n} p_i x_i = \sum_{i=1}^{n} p_i \alpha = \alpha \sum_{i=1}^{n} p_i \tag{11}$$

5   KMEANS

Inertia :

$$I = \sum_{i=1}^{n} d(x_i, c_i)^2 \tag{12}$$