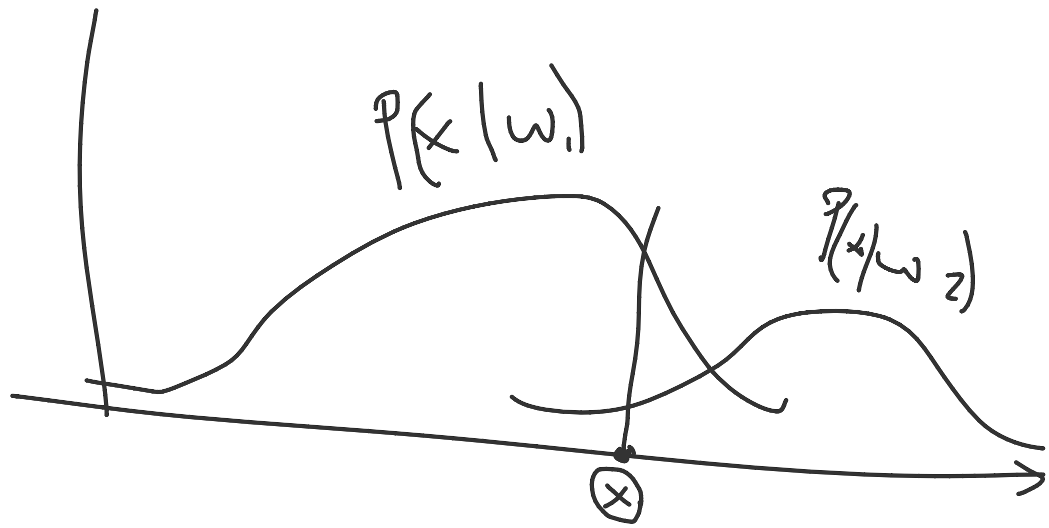
Εκτίμηση Στατιστικών Παραμέτρων

Wednesday, May 13, 2020 12:10 PM

ΕΚΤΙΜΗΣΗ ΠΑΡΑΜΕΤΡΩΝ ΣΤΟΧΑΣΤΙΚΟΥ ΜΟΝΤ.



$x \in \mathbb{R}$

ø,1

$$\boxed{P(\emptyset|x) > P(1|x) \Rightarrow x \in \emptyset}$$

$$\frac{p(x|\emptyset)\cdot p(\emptyset)}{\cancel{p(x)}} > \frac{p(x|1)\cdot p(1)}{\cancel{p(x)}} \Leftrightarrow$$

$P(\emptyset) = \frac{2}{3}$ $\quad \frac{1}{10}$

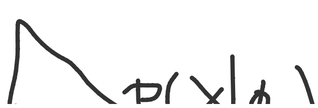
$P(1) = \frac{1}{3}$ $\quad \frac{9}{10}$

$$\frac{1}{1.5}\cdot\frac{2}{3} > \frac{1}{4.5}\cdot\frac{1}{3}$$

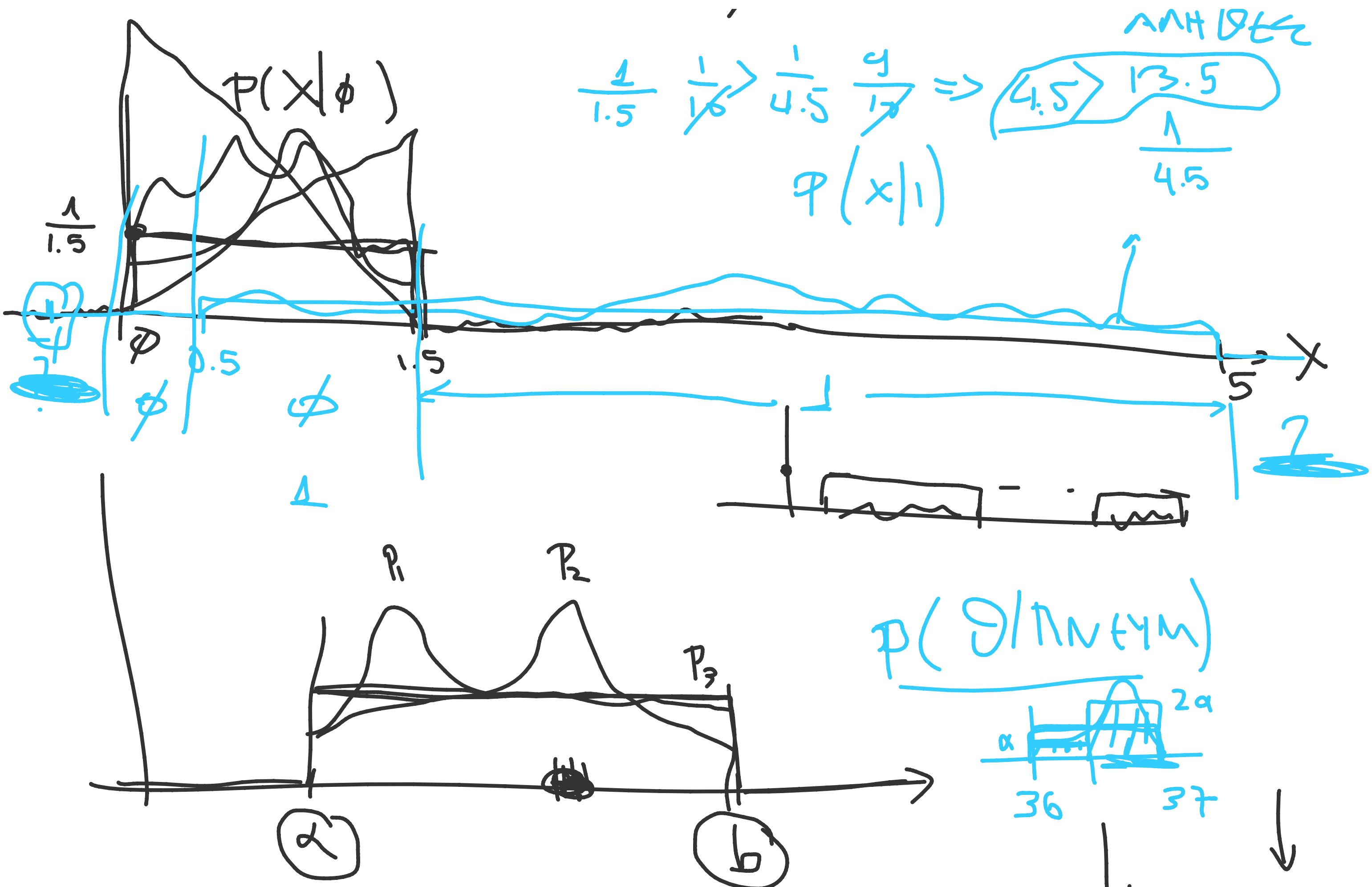
ΠΑΡΑΔ: $\emptyset \rightarrow (\emptyset, 1.5)$

$1 \rightarrow (0.5, 5)$

$9 > 1.5$ ΠΑΝΤΑ ΑΛΗΘΕΣ



$\frac{1}{\ldots}\ \frac{1}{\ldots} > \frac{1}{\ldots}\ \frac{9}{\ldots} \Rightarrow 1 > 13.5$



$$P(x) = \begin{cases} f(x), & a < x < b \\ \emptyset, & \text{αλλού} \end{cases}$$

$$\boxed{H(p_1) = H_1}$$

$$H(p_2) = H_2$$

$$H(p_3) = H_3$$

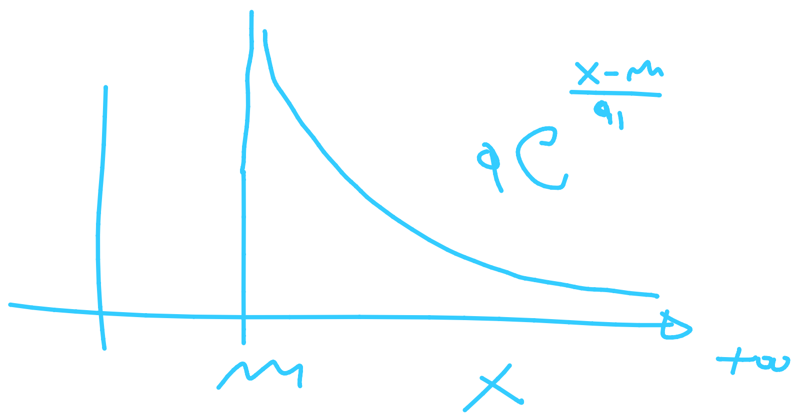
$$H(\underline{p_{best}}) = H_{max}$$

$$\boxed{\begin{array}{l} P(x) \geq \phi \qquad a < x < b \\ \int_a^b p(x)\,dx = 1 \end{array}}$$

$$\int^b x\,p(x)\,dx = \mu$$

$$\int_a x\, p(x)\, dx = \mu$$

$$\boxed{-\int p(x) \log_2 p(x)\, dx + \lambda_1 \left[\int x\, p(x)\, dx - \mu \right] + \lambda_2\, g(p) \ldots}$$



$$\int_m^{+\infty} x\, p(x)\, dx = \mu$$

$$\langle x \rangle = \mu$$

$$\langle (x-\mu)^2 \rangle = \sigma^2$$

Gaussian

$$\left[\underline{x}_1, \underline{x}_2, \ldots\ldots \underline{x}_N \right] \quad \omega_1$$

$$\left[\underline{x}_{N+1}, \underline{x}_{N+2} \ldots\ldots \underline{x}_{N+M} \right] \quad \omega_2$$

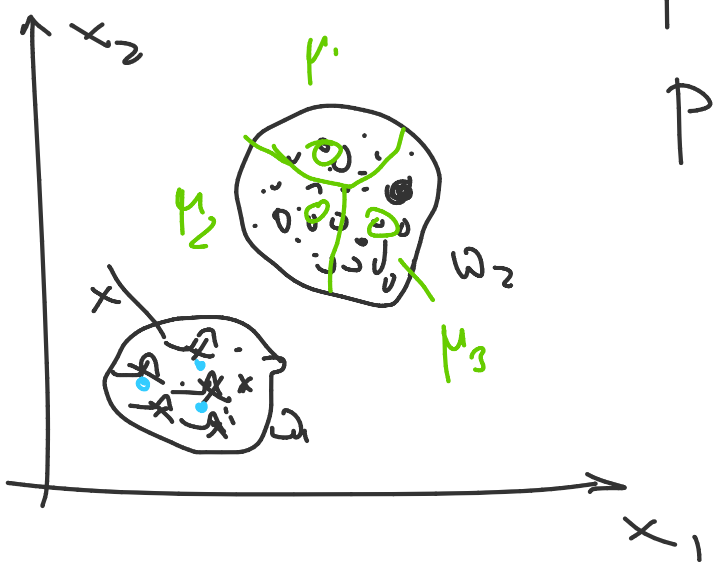
$$\vdots$$

$\boxed{p(\underline{x}/\omega_1)}$

$p(\omega_1|\underline{x})$

$p(\omega_2|\underline{x}$

$p(\underline{x} \; |\omega_2)$



$$p(\underline{x}|\omega_1) = p(\underline{x}_1, \underline{x}_2, \ldots, \underline{x}_N|\omega_1) =$$

$$\prod_{i=1}^{N} p(\underline{x}_i|\omega_1) \Rightarrow p(x) = \begin{cases} \frac{1}{N}, & x \in X_i \\ \phi, & \text{αλλού} \end{cases}$$

$$\boxed{P(x|\omega_1) = \frac{1}{N}\sum_{i=1}^{N} \delta(\underline{x} - \underline{x}_i)}$$

$$p(\underline{x}|\omega_i) = \frac{1}{N}\sum_{i=1} \delta(\underline{x} - \underline{x}_i)$$

$$p(\underline{x}|\omega_i) = \frac{1}{N}\sum_{i=1}^{N} \underline{G}(\underline{x}, \underline{x}_i, \sigma^2 I)$$

σ

x_i ∞

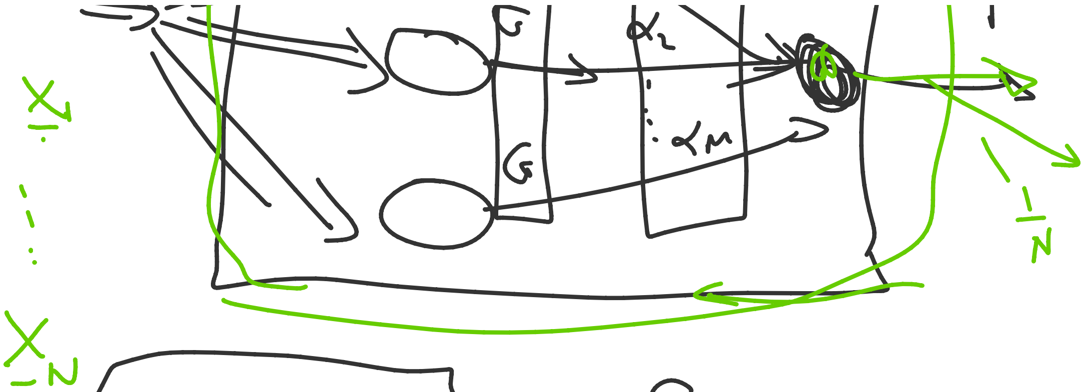
$$\text{Mixture of Gaussian}(\underline{x}) = \sum_{i=1}^{M} \underline{\alpha}_i \, \underline{G}(\underline{x}, \underline{\mu}_i, \underline{w}_i)$$

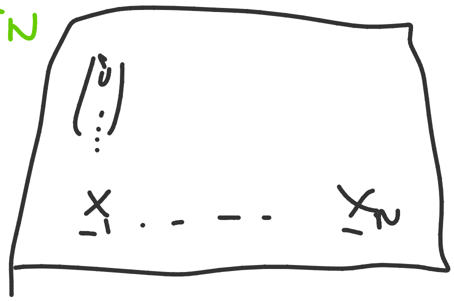
$\alpha_i > 0, \ \forall i = 1, M$

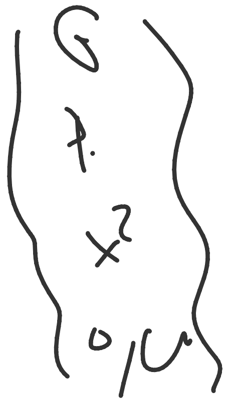
$$\sum_{i=1}^{M} \alpha_i = 1$$

$p(x) \simeq$

$p(x) = \text{MofG}(\underline{x})$


G
α2
αM
G
x1
xN
1/N


x1
xN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