

Modelo . Prior

$$\pi(\mu, \sigma^2 | z_1, \dots, z_n) \propto \prod_{i=1}^n N(z_i | \mu, \sigma^2) \cdot \left(\frac{1}{\sigma}\right)$$

$$\propto \prod_{i=1}^n (2\pi\sigma^2)^{-1/2} \cdot \exp\left\{-\frac{1}{2\sigma^2}(z_i - \mu)^2\right\} \cdot \left(\frac{1}{\sigma}\right)$$

$$\propto (\sigma^2)^{-(\frac{n}{2} + \frac{1}{2})} \cdot \exp\left\{-\frac{1}{2\sigma^2} \sum_{i=1}^n (z_i - \mu)^2\right\}$$

$$\propto (\sigma^2)^{-(\frac{n+1}{2})} \cdot \exp\left\{-\frac{1}{2\sigma^2} \sum_{i=1}^n (z_i - \bar{z} + \bar{z} - \mu)^2\right\}$$

$$\propto (\sigma^2)^{-(\frac{n+1}{2})} \cdot \exp\left\{-\frac{1}{2\sigma^2} \cdot \sum_{i=1}^n [(z_i - \bar{z})^2 - 2(z_i - \bar{z})(\bar{z} - \mu) + (\bar{z} - \mu)^2]\right\}$$

$$\propto (\sigma^2)^{-(\frac{n+1}{2})} \cdot \exp\left\{-\frac{1}{2\sigma^2} \cdot \sum_{i=1}^n (z_i - \bar{z})^2\right\} \cdot \exp\left\{-\frac{1}{2\sigma^2} \sum_{i=1}^n [(\bar{z} - \mu)^2 - 2(z_i - \bar{z})(\bar{z} - \mu)]\right\}$$

$$(\sigma^2)^{-(\frac{n+1}{2})} \cdot \exp\left\{\left(\frac{1}{\sigma^2}\right) \cdot \left[\frac{1}{2} \sum_{i=1}^n (z_i - \bar{z})^2\right]\right\}$$

$\sigma^2 \sim \text{Gamma Inversa} \left(\frac{n+1}{2}, \frac{1}{2} \sum (z_i - \bar{z})^2 \right)$
 α, β

$$\exp\left\{-\frac{1}{2\sigma^2} \cdot (\bar{z} - \mu)^2 - 2(z_i - \bar{z})(\bar{z} - \mu)\right\}$$

$$\exp\left\{-\frac{1}{2\sigma^2} [(\bar{z} - \mu)^2 - 2[z_i \bar{z} - z_i \mu - \bar{z}^2 + \bar{z} \mu]]\right\}$$

$$\exp\left\{-\frac{1}{2\sigma^2} [(\bar{z} - \mu)^2 - 2[z_i (\bar{z} - \mu) - \bar{z} (\bar{z} - \mu)]]\right\}$$

$$\exp\left\{-\frac{1}{2\sigma^2} [(\bar{z} - \mu)^2 - 2z_i (\bar{z} - \mu) + 2\bar{z} (\bar{z} - \mu)]\right\}$$

$$\exp\left\{-\frac{1}{2\sigma^2} [(\bar{z} - \mu)^2 - (\bar{z} - \mu)(2z_i - 2\bar{z})]\right\}$$

$$\exp\left\{-\frac{1}{2\sigma^2} \left[(\bar{z} - \mu)^2 - 2(\bar{z} - \mu)(z_i - \bar{z}) + (z_i - \bar{z})^2 - (z_i - \bar{z})^2 \right]\right\}$$

Candidate No. _____

- Se toman los elementos encerrados en \bigcirc para generar el kernel:

$$\rightarrow \boxed{-\frac{1}{2\sigma^2} \sum_{i=1}^n [-2(z_i - \bar{z})]}$$

$$\boxed{+\frac{1}{2\sigma^2} (-2) \sum_{i=1}^n (z_i - \bar{z})}$$

$$\boxed{\frac{1}{\sigma^2} \sum_{i=1}^n (z_i - \bar{z})}$$

$m_1 = \bar{z}$ $\bigcirc = S_1$ es este el S_1 ?

o se descompone en 2 elementos?

$$\bigcirc m_1 = \bar{z}$$

$$\mu/\sigma^2 \sim N(m_1, S_1)$$