$$\bar{P}_i = p_0 - 10n \log_{10}(d_i) + \varepsilon_i$$

$$= p_0 - 10n \log_{10}(\|\underline{a}_i - \underline{t}\|) + \varepsilon_i$$

$$\underline{P} \to \bar{P}_i \sim N\Big(\underbrace{p_0 - 10n \log_{10}(\|\underline{a}_i - \underline{t}\|)}_{\mu_i}, \sigma^2\Big)$$

N numero di anchors

$$\underbrace{f(\underline{P}; \underline{t})}_{f} = \underbrace{\prod_{i=1}^{N} f(\bar{P}_i; \underline{t})} \to \arg\max_{\underline{t}} f(\underline{P}; \underline{t}) \quad \Leftarrow \underbrace{ML}$$

$$\arg\max_{\underline{t}} \log f(\underline{P}; \underline{t}) \quad \Leftarrow ML$$

$$\arg\max_{\underline{t}} \sum_{i=1}^{N} \log f(\bar{P}_i; \underline{t})$$

$$\sum_{i=1}^{N} \log\left(\frac{1}{\underbrace{\sqrt{2\pi}\,\sigma}} \exp\left(-\frac{(\bar{P}_i - \mu_i)^2}{2\sigma^2}\right)\right)$$

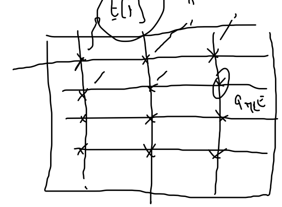
$$\arg\max_{\underline{t}} \underbrace{\sum_{i=1}^{N} \left[\log \frac{1}{\sqrt{2\pi}\,\sigma}\right]} + \log\left(\exp\left(-\frac{(\bar{P}_i - \mu_i)^2}{2\sigma^2}\right)\right)$$

$$\arg\max_{\underline{t}} -\sum_{i=1}^{N} \frac{(\bar{P}_i - \mu_i)^2}{2\sigma^2} \Rightarrow \arg\min_{\underline{t}} \sum_{i=1}^{N} \frac{(\bar{P}_i - \mu_i)^2}{2\sigma^2} \Rightarrow \arg\min_{\underline{t}} \sum_{i=1}^{N} (\bar{P}_i - \mu_i)^2$$

$$\arg\min_{\underline{t}} \|\underline{P} - \underline{\mu}\|^2$$

$$\begin{bmatrix} \bar{P}_1 \\ \bar{P}_2 \\ \vdots \\ \bar{P}_N \end{bmatrix} \qquad \arg\min_{\underline{t}} \left\| \begin{bmatrix} \bar{P}_1 \\ \vdots \\ \bar{P}_N \end{bmatrix} - \begin{bmatrix} p_0 - 10n\log_{10}(\|\underline{a}_1 - \underline{t}\|) \\ p_0 - 10n\log_{10}(\|\underline{a}_2 - \underline{t}\|) \\ \vdots \\ p_0 - \dots \end{bmatrix} \right\|^2$$

$\underline{t}(j)$ $\to \|\cdot\|^2$



$\|\cdot\|^2$ ----

$$\begin{bmatrix} \bar{P}_1 \\ \bar{P}_2 \\ \vdots \\ \bar{P}_N \end{bmatrix}$$

$\underline{t}(j) \to \underline{\mu}_j$

$$\begin{bmatrix} p_0 - 10n\log_{10}\|\underline{a}_1 - \underline{t}(j)\| \\ \vdots \end{bmatrix}$$