

$$a_i x + b_i y + c_i = 0$$

③

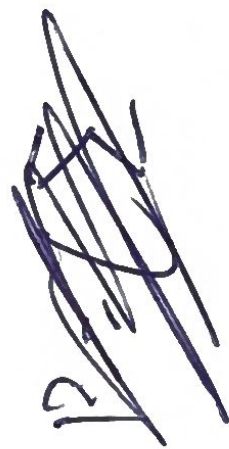
$$\text{slope} = m_i = \tan(\theta_i)$$

$$\text{line eq: } y - y_i = m_i(x - x_i)$$

$$m_i x - y + (y_i - m_i x_i) = 0$$

$$a_i = m_i, \quad b_i = -1, \quad c_i = y_i - m_i x_i$$

$$\begin{bmatrix} a_1 & b_1 \\ a_2 & b_2 \\ \vdots & \vdots \\ a_n & b_n \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = - \begin{bmatrix} c_1 \\ c_2 \\ \vdots \\ c_n \end{bmatrix}$$



$$\begin{bmatrix} x \\ y \end{bmatrix} = (A^T A)^{-1} A^T b \quad A \rightarrow \text{Matrix of } a_i, b_i \text{ coefficients}$$

$$C_1 (0, 0) + \theta_1$$

$$C_2 (d, 0) + \theta_2 \quad d = \text{some random distance}$$

$$r(t) = C_i + t d_i$$

Localization Formula

$$P = (\sum C_i^2 - d_i d_i^T)^{-1} (\sum (1 - d_i d_i^T) C_i)$$