

31.08.2010

→ Construir 5 Minute bot. (site Lego tem instruções)

→ Programa de controlo "line follower"

- 2-way line follower

↓

melhor: 3-way line follower

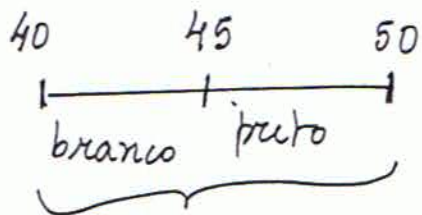
↓

ainda melhor: proportional line follower

(ver também a parte de calibração automática? Ou calibraremos manualmente?)

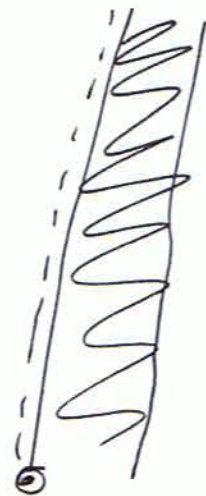
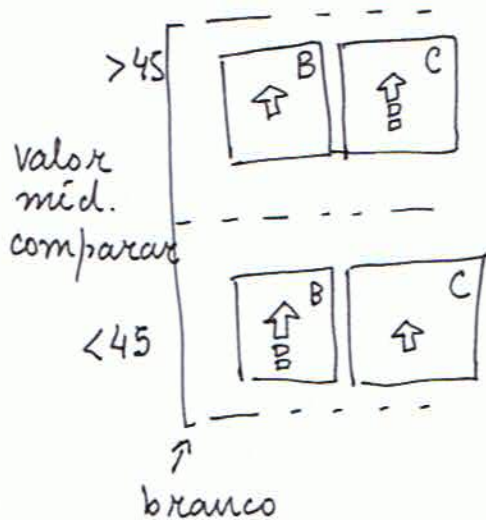
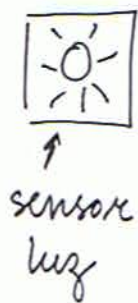
[controlador PID: so far, temos o P!]

↳ Depois temos que passar ao integrador



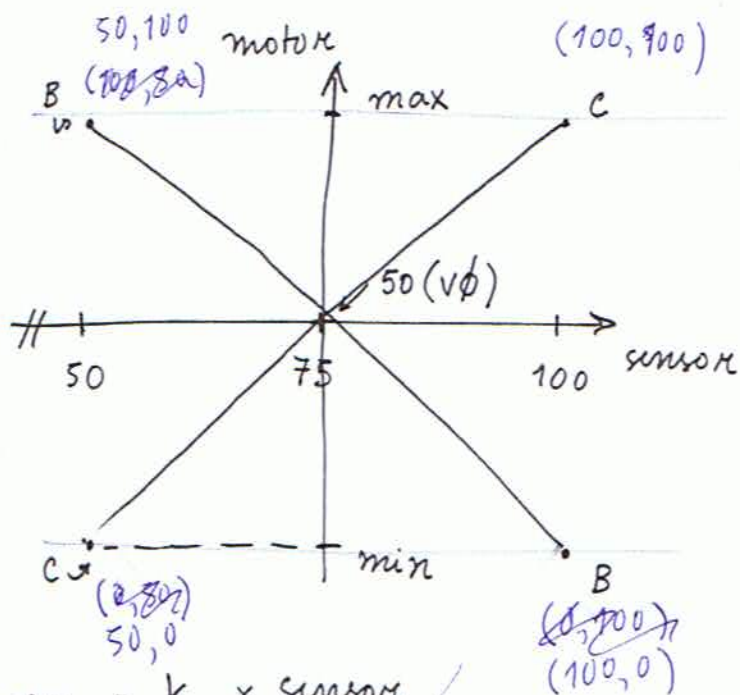
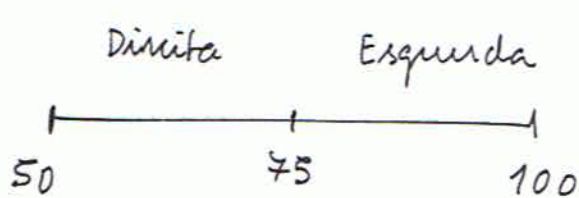
calibração manual (para já ...)

↳ limites ficaram definidos
no programa



motor esquerdo B
" direito C





$$m_B = k_B \times \text{sensor}$$

$$m_C = k_C \times \text{sensor}$$

$$m_B = V\phi + (\dots)$$

$$m_B = V\phi - (\dots)$$

$$m_B = k_B \times S + k'$$

$$0 = 2 \times 50 + k'$$

$$k' = -100$$

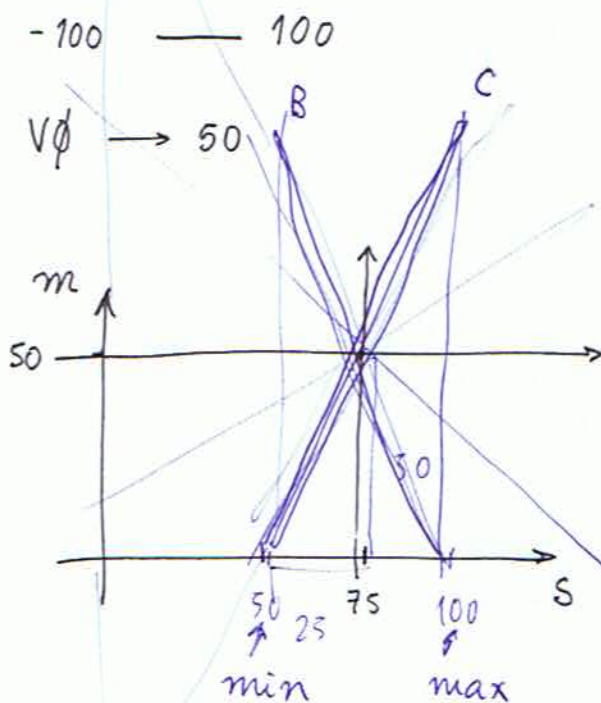
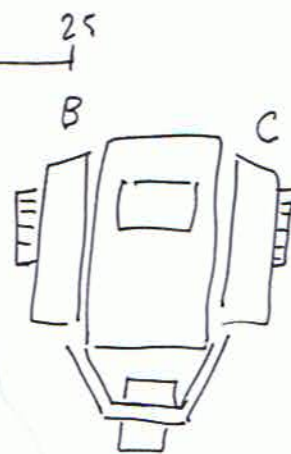
$$m_C = \dots \quad k' = 100$$

$$m_B = -2 \times \text{sensor} + 100$$

$$m_C = 2 \times \text{sensor} - 100$$

$$V\phi = \pm K \times \text{med} \pm k'$$

$$V\phi = k \times \text{med} + k' \quad k' = V\phi - k \times \text{med}$$



$$\frac{50}{25} = \frac{10}{5} = 2$$

$$K = \frac{\text{max} - \text{min}}{\text{med} - 100}$$

$$k'_c = v\phi - k \times med$$

$$k'_B = v\phi + k \times med$$

$$m_c = k \times sensor + k'_c$$

$$m_B = -k \times sensor + k'_B$$

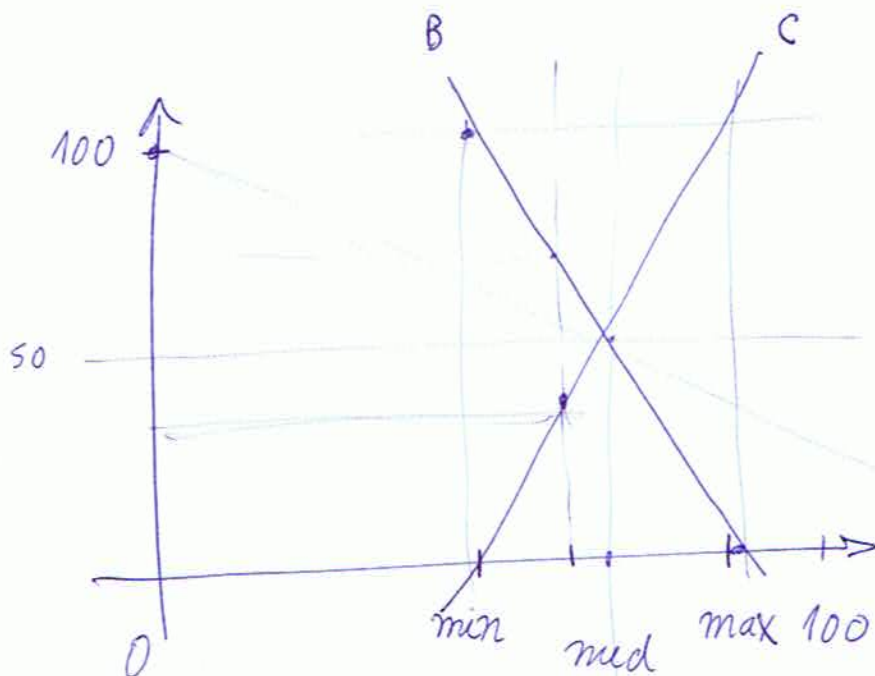
$$(1^\circ) k \times med$$

$$(2^\circ) k'_c$$

$$(3^\circ) k'_B$$

$$(4^\circ) m_c$$

B C



$$m_B = -k \times sensor + k'_B$$

$$m_c = k \times sensor + k'_c$$

$$v\phi = -k \times sensor + k'_B \longrightarrow k'_B = v\phi + k \times sensor$$