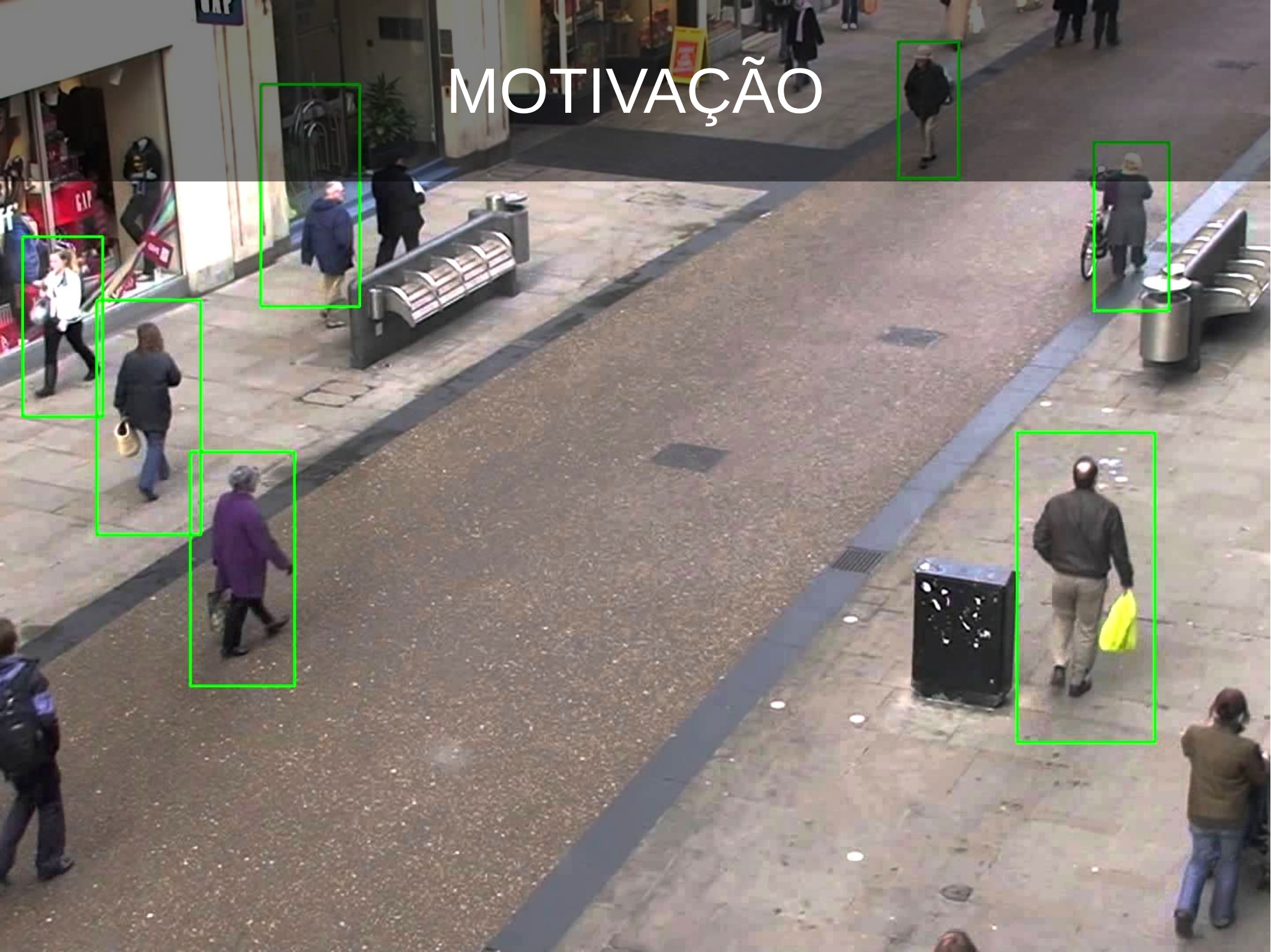
IDENTIFICAÇÃO DE ALVOS

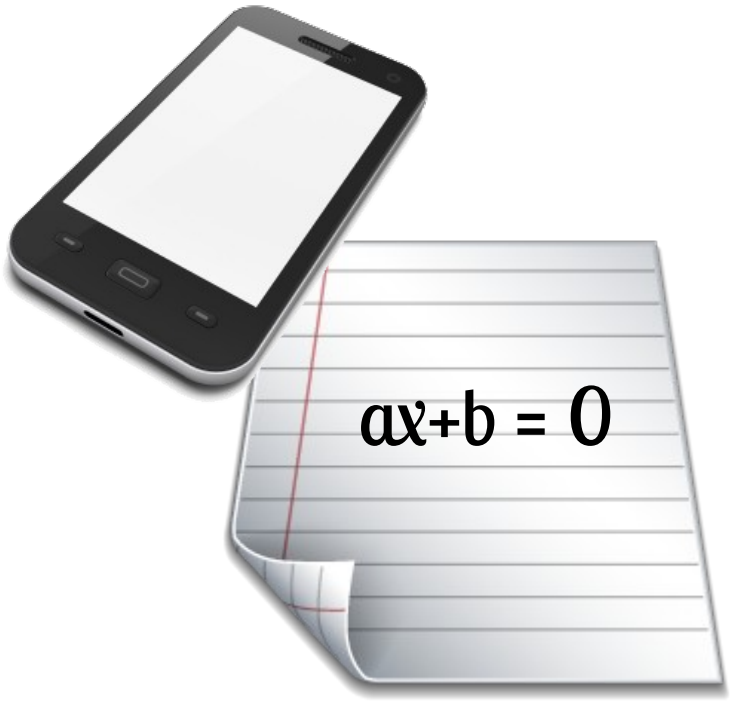
Análise de alvos por forma ou textura

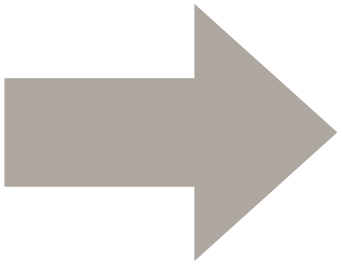
Aluno: Bruno Vieira Costa
Orientador: Carlos Frederico de Sá Volotão

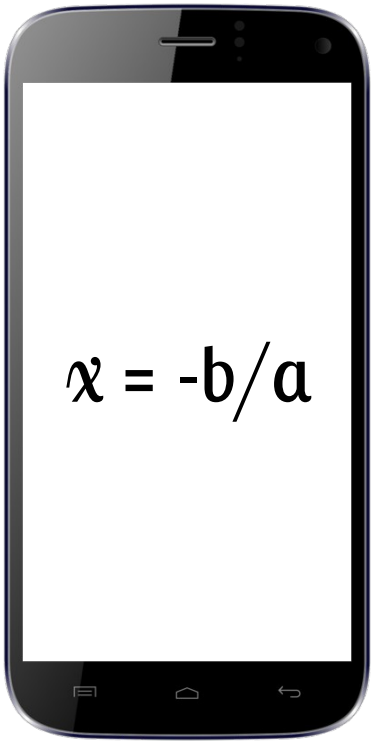
MOTIVAÇÃO



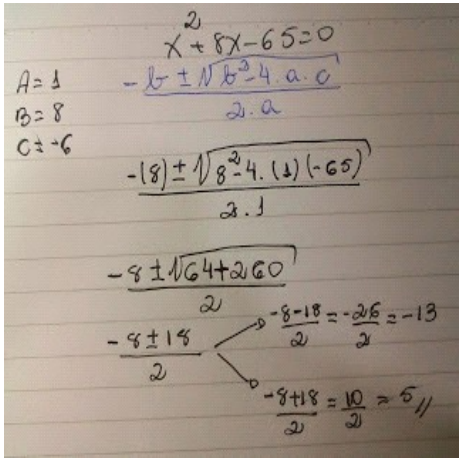
PROJETO



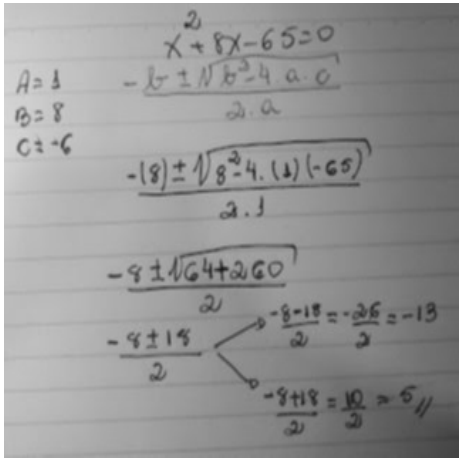




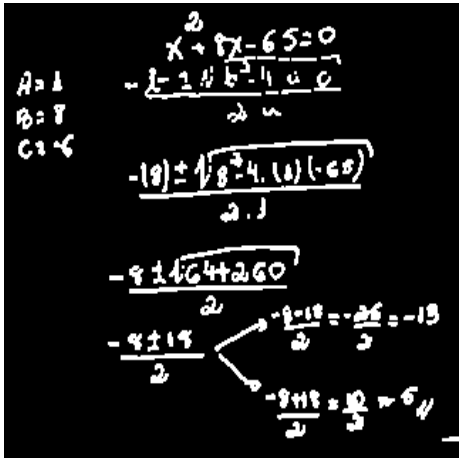
METODOLOGIA



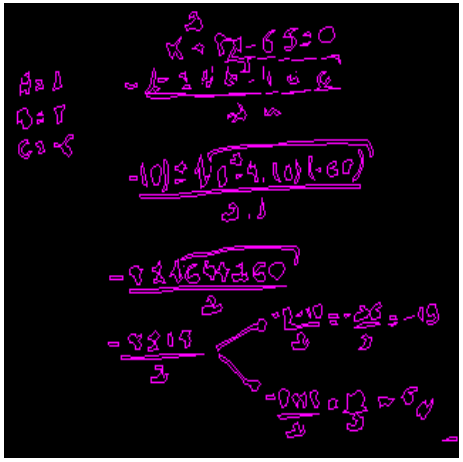
Captura



Tratamento

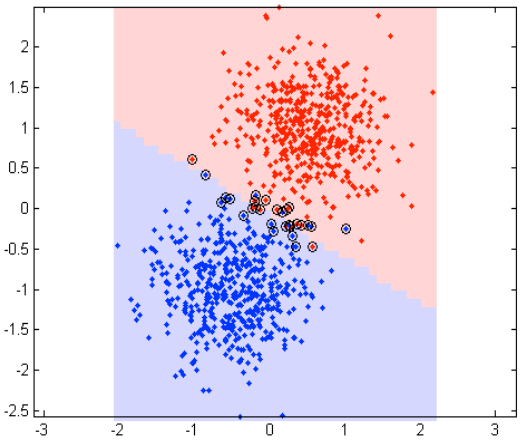


Limiarização



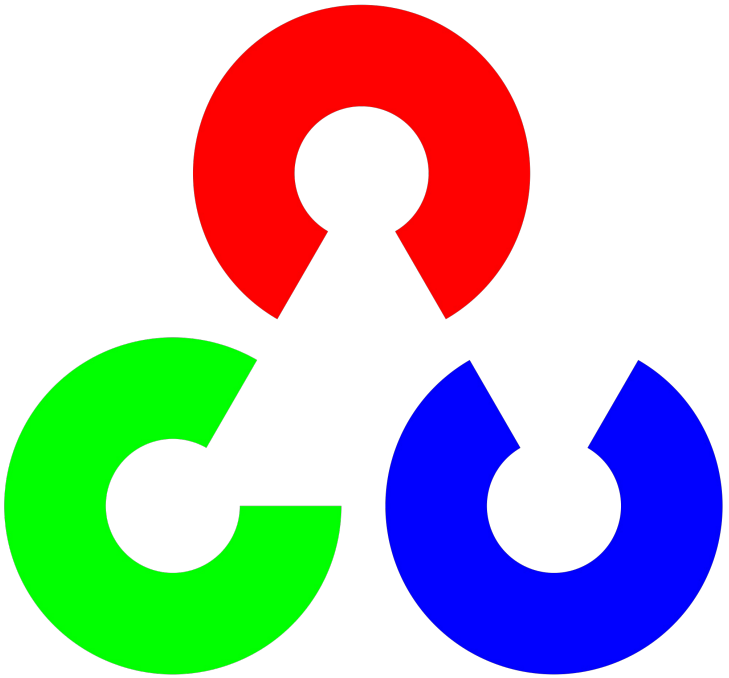
Extração de bordas

Descrição



Classificação

CAPTURA



OpenCV

android

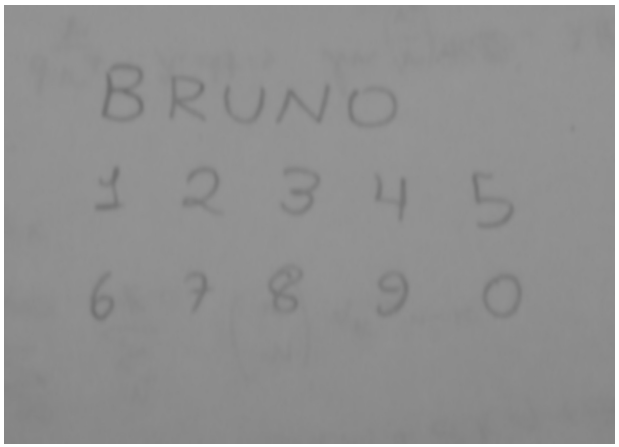
TRATAMENTO

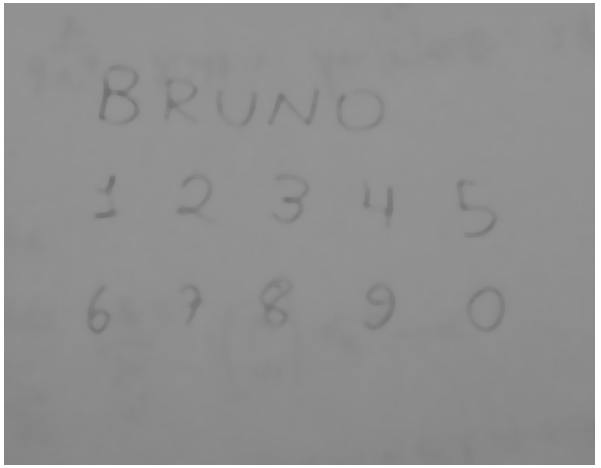
Média

Gaussiana

Mediana

w=21





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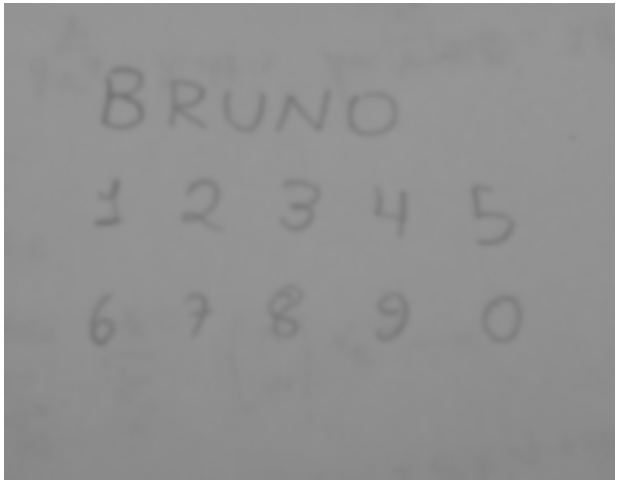
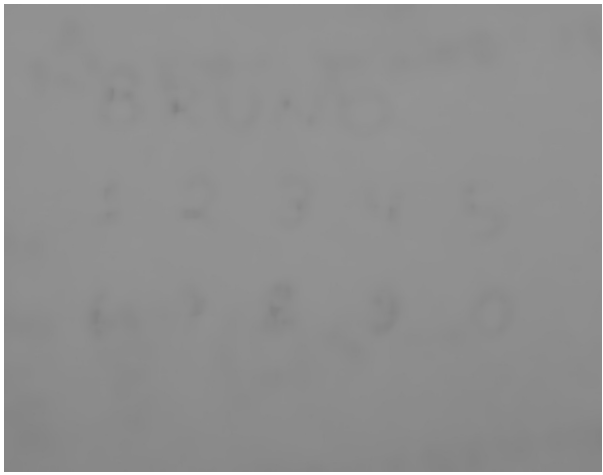
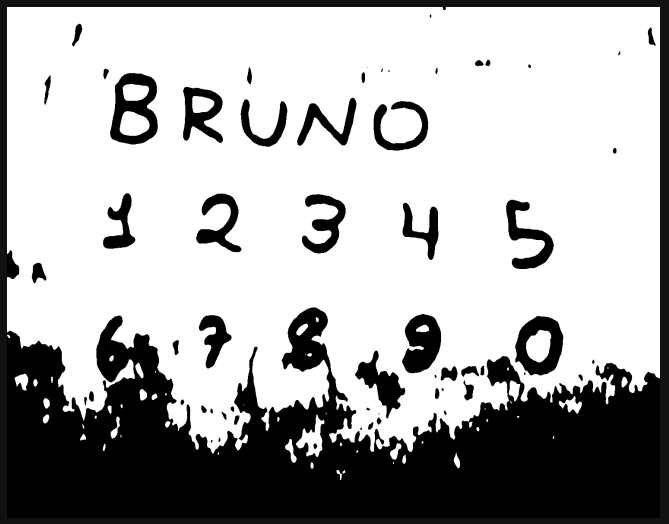
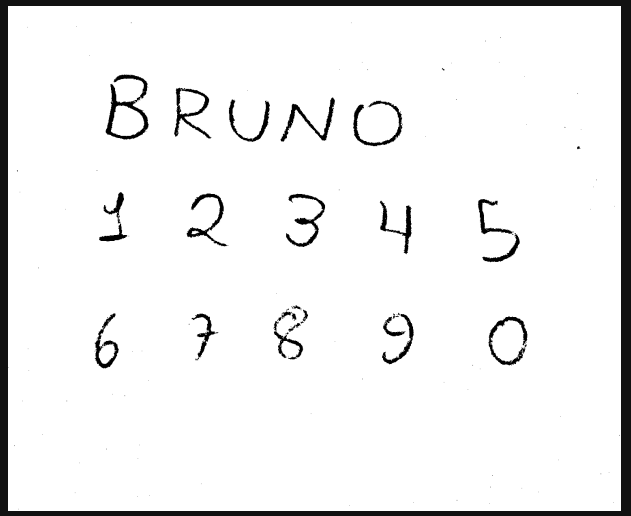




LIMIARIZAÇÃO



Threshold

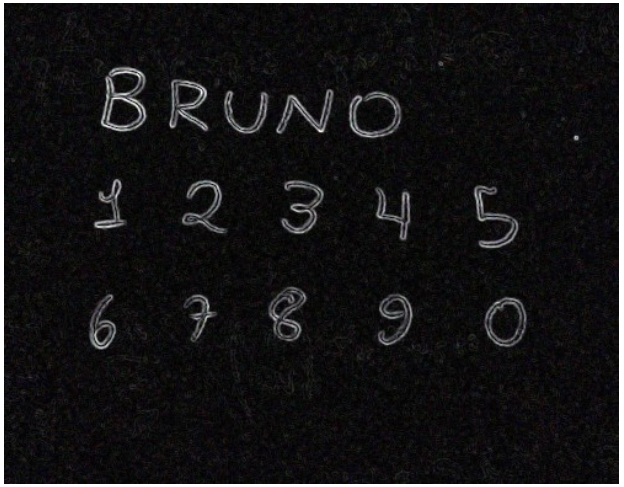


AdaptiveThreshold

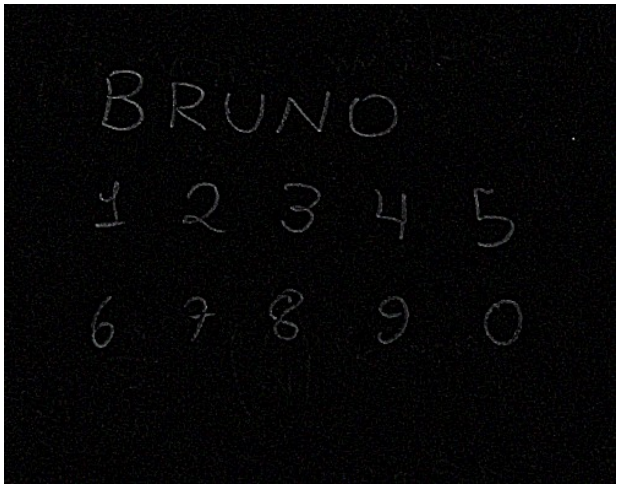
EXTRAÇÃO DE BORDAS

$$\mathbf{G}_x = \begin{bmatrix} -1 & 0 & +1 \\ -2 & 0 & +2 \\ -1 & 0 & +1 \end{bmatrix} * \mathbf{A} \quad \text{and} \quad \mathbf{G}_y = \begin{bmatrix} -1 & -2 & -1 \\ 0 & 0 & 0 \\ +1 & +2 & +1 \end{bmatrix} * \mathbf{A}$$

Sobel

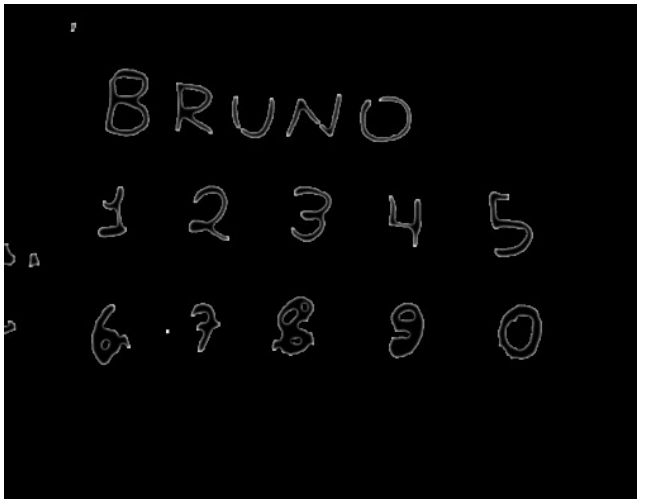


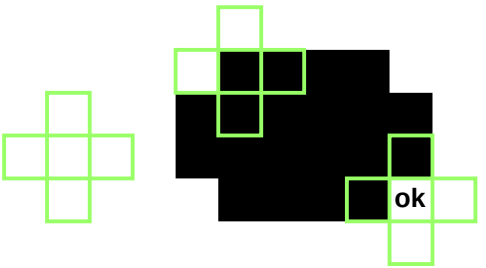
Laplaciano do Gaussiano



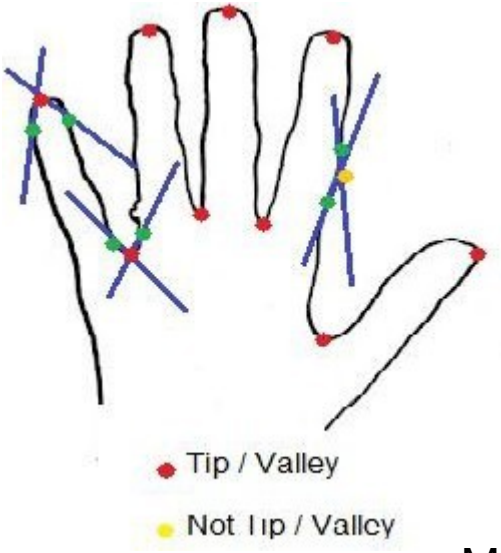
$$LoG(x,y) = -\frac{1}{\pi\sigma^4}\left[1 - \frac{x^2+y^2}{2\sigma^2}\right] e^{-\frac{x^2+y^2}{2\sigma^2}}$$

4-Vizinhança

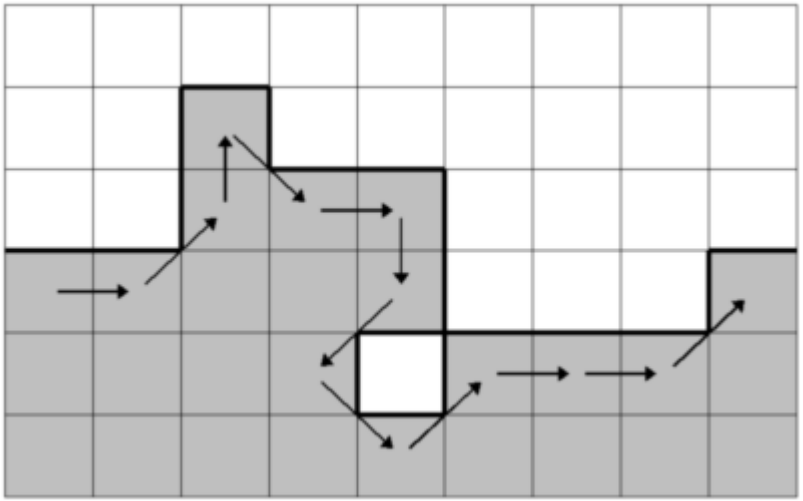




DESCRIÇÃO



K-Curvatura



Chain code

Momentos invariantes de Hu

$$\phi_1 = \eta_{20} + \eta_{02}$$

$$\phi_2 = (\eta_{20} - \eta_{02})^2 + (2\eta_{11})^2$$

$$\phi_3 = (\eta_{30} - 3\eta_{12})^2 + (3\eta_{21} - \eta_{03})^2$$

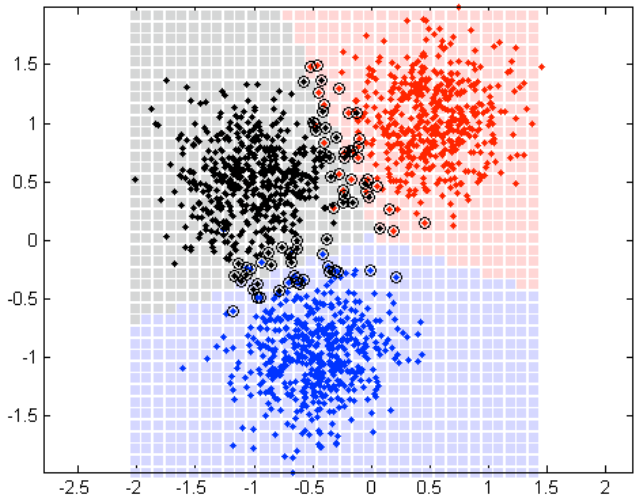
$$\phi_4 = (\eta_{30} + \eta_{12})^2 + (\eta_{21} + \eta_{03})^2$$

$$\phi_5 = (\eta_{30} - 3\eta_{12})(\eta_{30} + \eta_{12})[(\eta_{30} + \eta_{12})^2 - 3(\eta_{21} + \eta_{03})^2] + (3\eta_{21} - \eta_{03})(\eta_{21} + \eta_{03})[3(\eta_{30} + \eta_{12})^2 - (\eta_{21} + \eta_{03})^2]$$

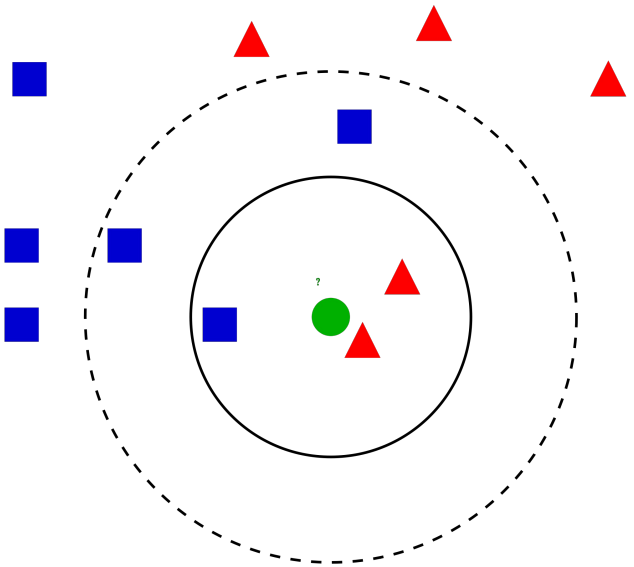
$$\phi_6 = (\eta_{20} - \eta_{02})[(\eta_{30} + \eta_{12})^2 - (\eta_{21} + \eta_{03})^2] + 4\eta_{11}(\eta_{30} + \eta_{12})(\eta_{21} + \eta_{03})$$

$$\phi_7 = (3\eta_{21} - \eta_{03})(\eta_{30} + \eta_{12})[(\eta_{30} + \eta_{12})^2 - 3(\eta_{21} + \eta_{03})^2] + (\eta_{30} - 3\eta_{12})(\eta_{21} + \eta_{03})[3(\eta_{30} + \eta_{12})^2 - (\eta_{21} + \eta_{03})^2].$$

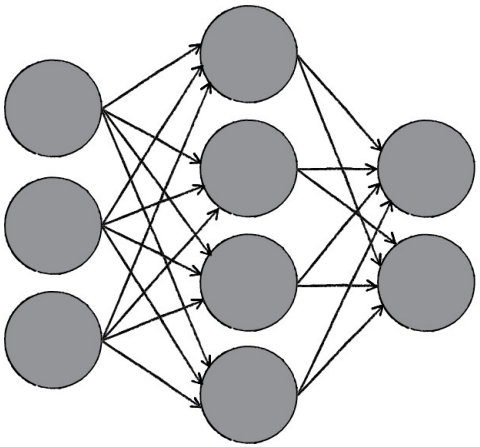
CLASSIFICAÇÃO



SVM

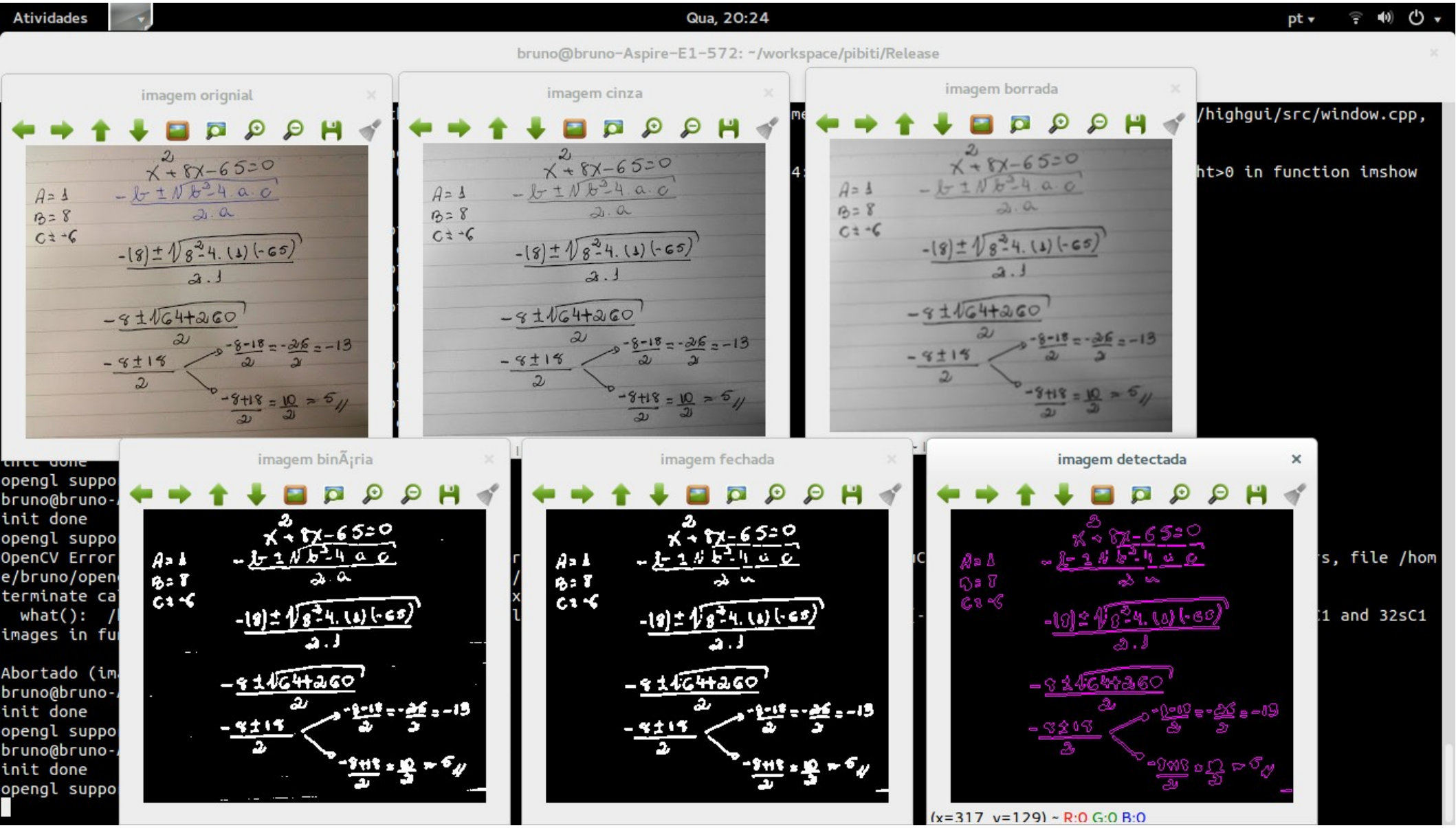
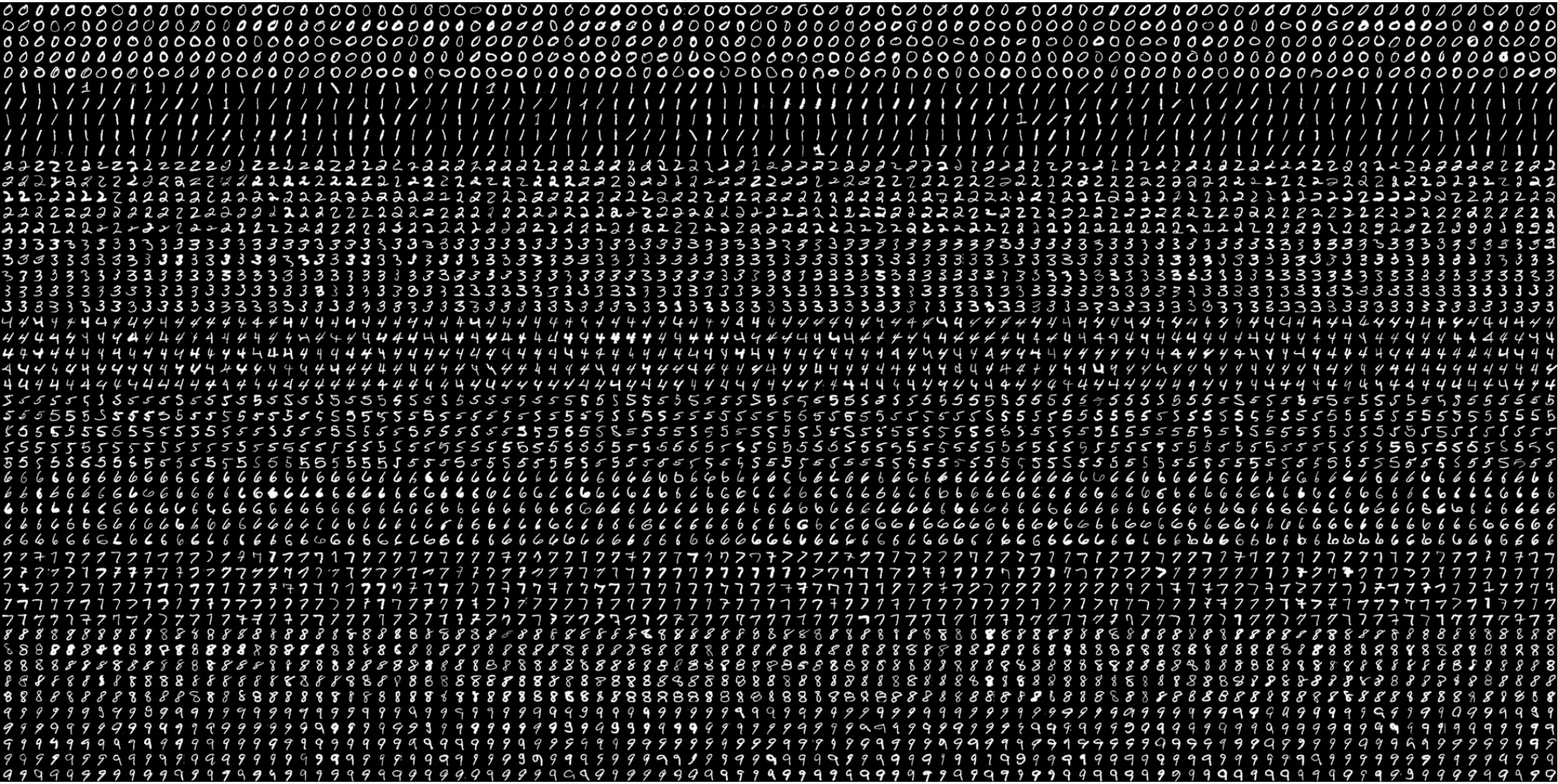


KNN



Redes neurais

IMPLEMENTAÇÃO



TESTES