


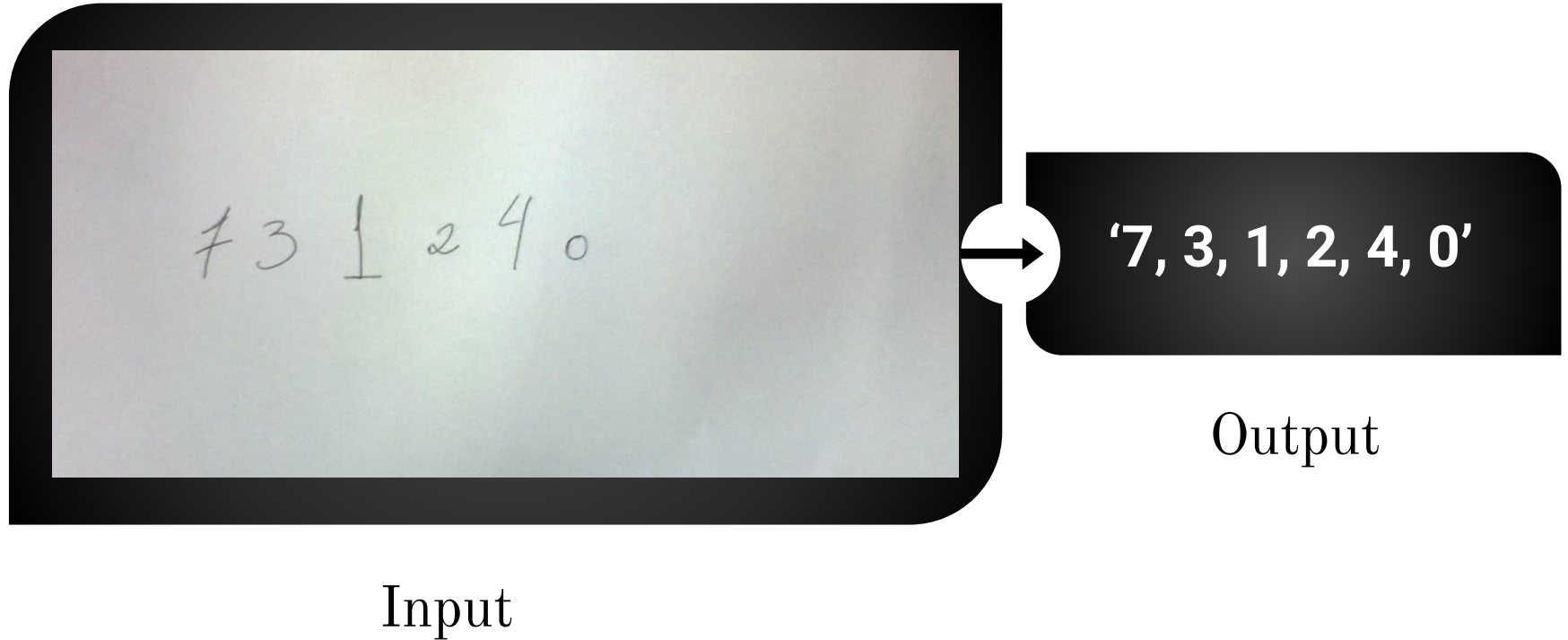


RECONHECIMENTO DE DÍGITOS

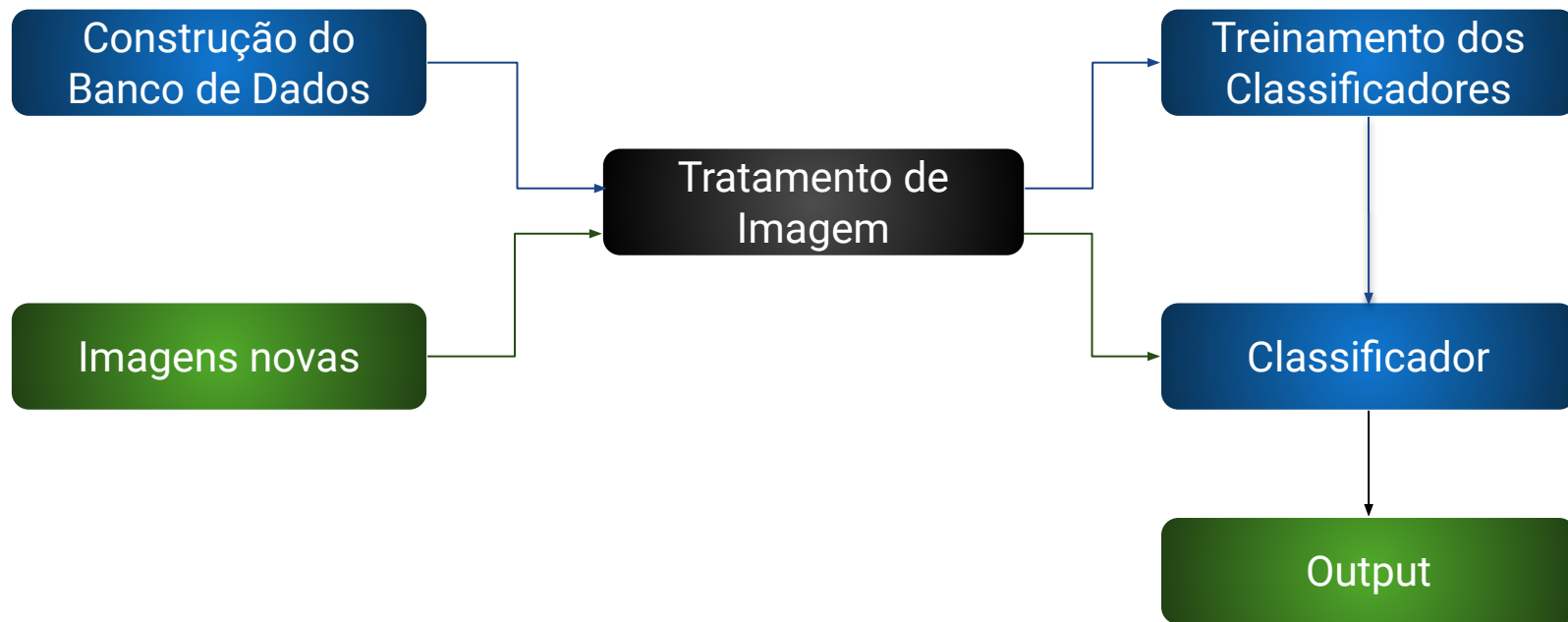
ALTAMIRO
EGMARA
JOÃO
RENAN



OBJETIVO

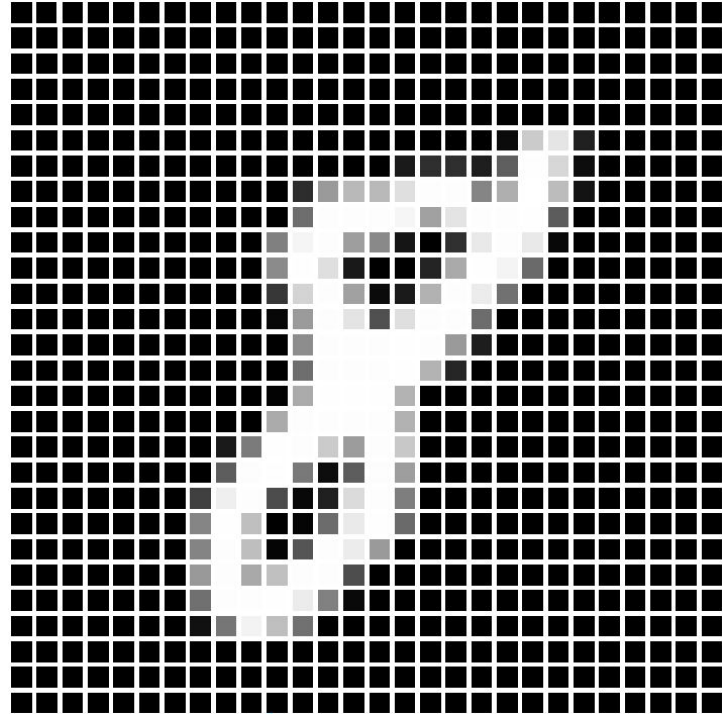


Etapas



Construção do Banco de Dados

- MNIST: 70000 amostras
- 7000 de cada dígito
- Imagens 28x28

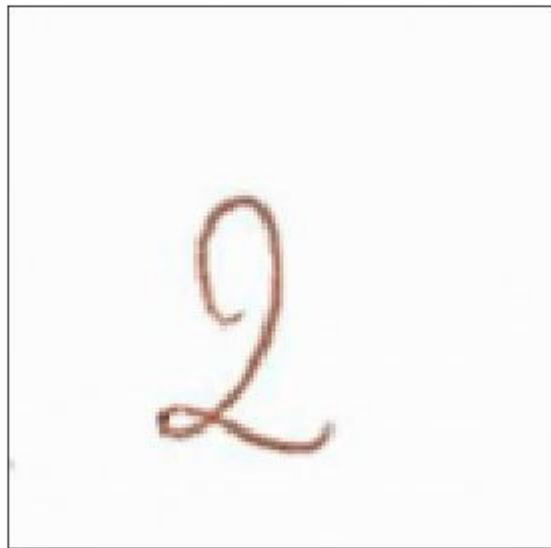


Construção do Banco de Dados

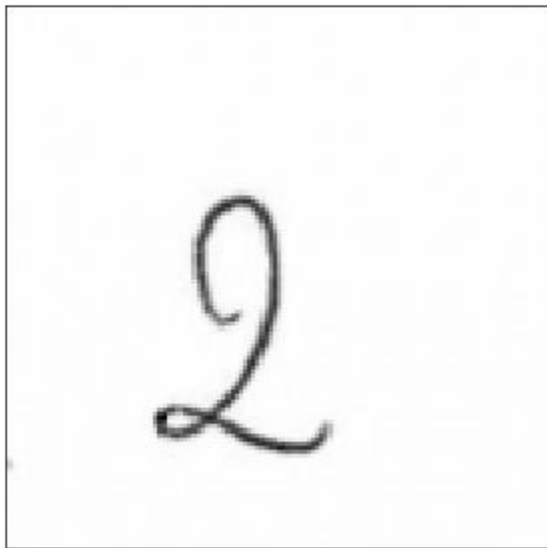
- 15 folhas
- 15 linhas por folha
- 225 amostras por dígito

[illegible][illegible]

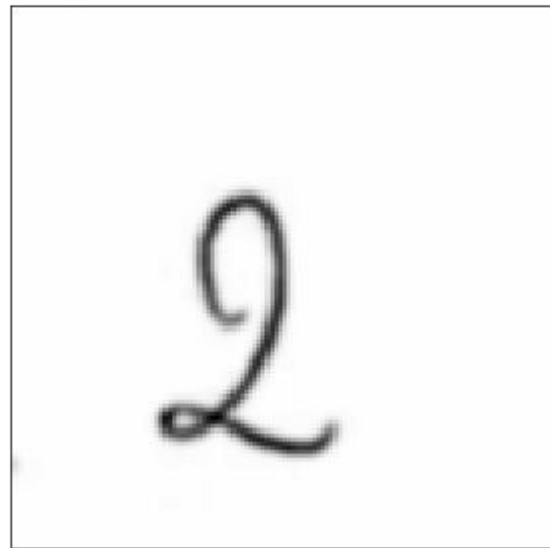
Tratamento de Imagem



Original

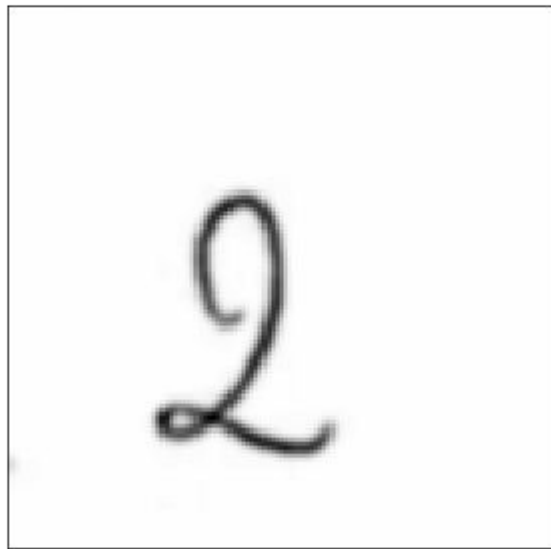


Cinza

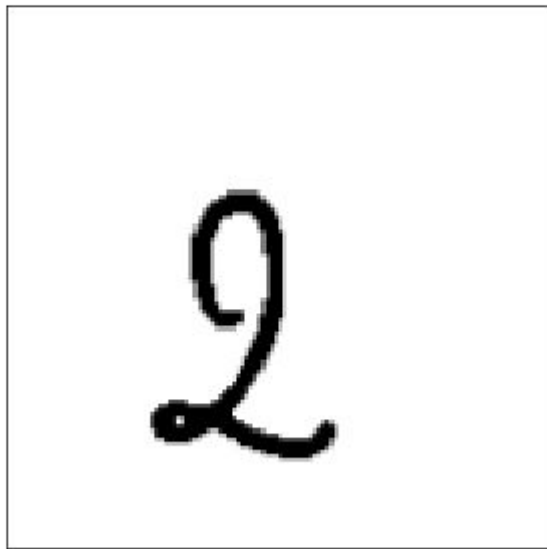


Borrada

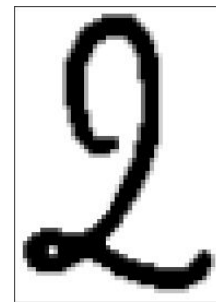
Tratamento de Imagem



Borrada

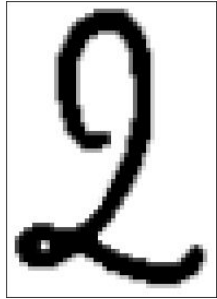


Threshold

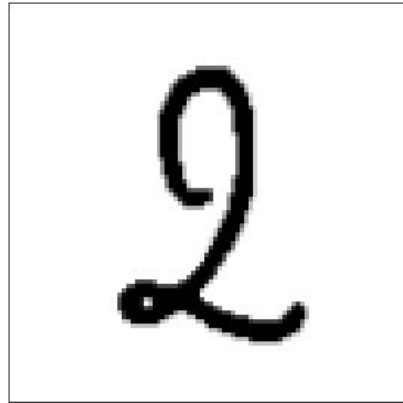


Cortada

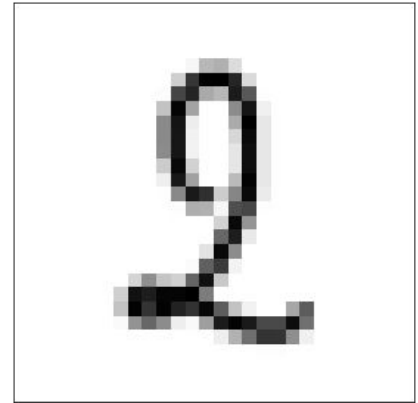
Tratamento de Imagem



Cortada



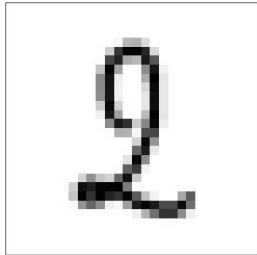
Centralizada



28x28

Normalização da imagem

$$\begin{bmatrix} 255 & 255 & 0 & 255 & 255 \\ 255 & 255 & 0 & 255 & 255 \\ 255 & 255 & 0 & 255 & 255 \\ 255 & 255 & 0 & 255 & 255 \\ 255 & 255 & 0 & 255 & 255 \end{bmatrix} \rightarrow \begin{bmatrix} 0 & 0 & 255 & 0 & 0 \\ 0 & 0 & 255 & 0 & 0 \\ 0 & 0 & 255 & 0 & 0 \\ 0 & 0 & 255 & 0 & 0 \\ 0 & 0 & 255 & 0 & 0 \end{bmatrix} \rightarrow \begin{bmatrix} 0 \\ 0 \\ 0 \\ \vdots \\ 255 \\ 255 \\ \vdots \\ 0 \end{bmatrix} \rightarrow \begin{bmatrix} 0 \\ 0 \\ 0 \\ \vdots \\ 1 \\ 1 \\ \vdots \\ 0 \end{bmatrix}$$



Banco de dados

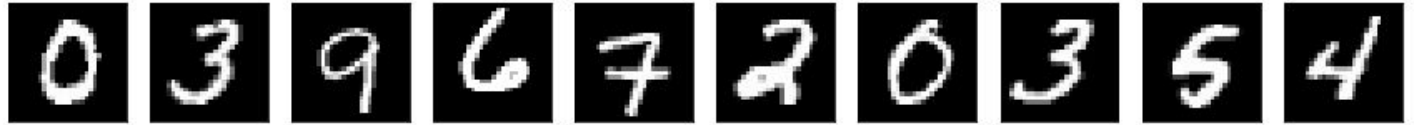
[illegible][illegible]

Banco de dados

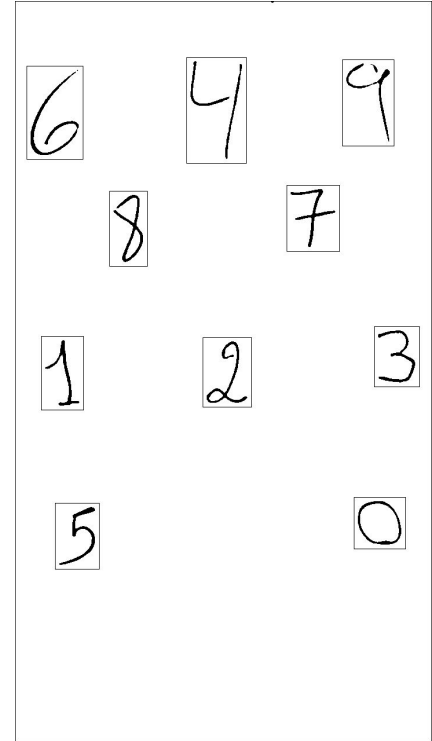
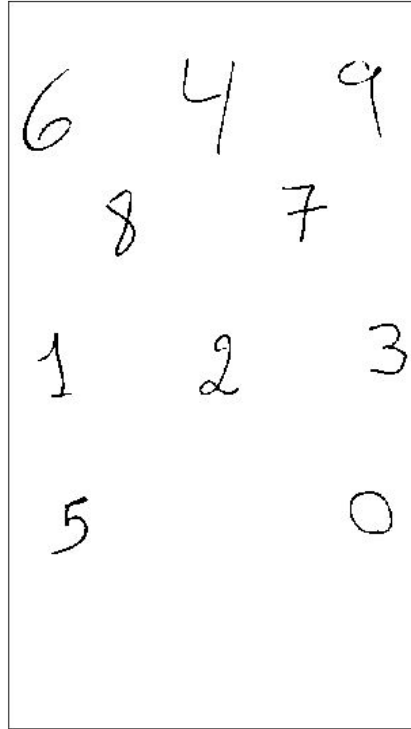
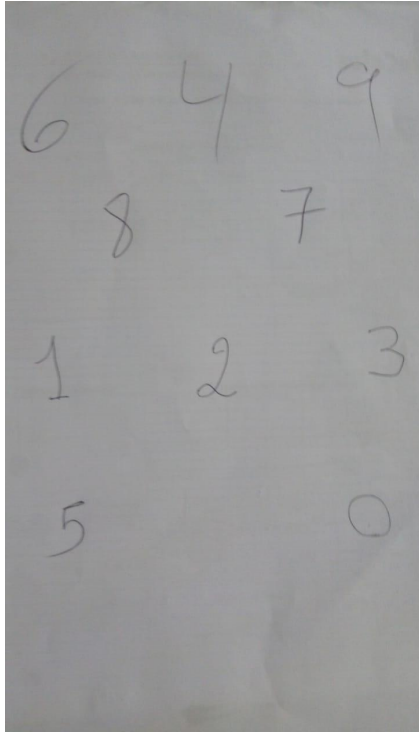
- Nosso



- MNIST



Tratamento de novas imagens



Treinamento dos Classificadores

- Usando o Scikit-Learn
 - Redes Neurais
 - Árvores

