SIENDO TUS OJOS

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OBJETIVO

Brindar una herramienta de apoyo a aquellas personas con discapacidad visual mediante el reconocimiento de caracteres traducidos a señales auditivas.

MOTIVACIÓN

Algunos de los estudiantes que integran la comunidad UIS cuentan con discapacidad visual, muchos de ellos no poseen herramientas útiles para consultar la información que requieren, pues no todos los libros se encuentran en sistema braille.

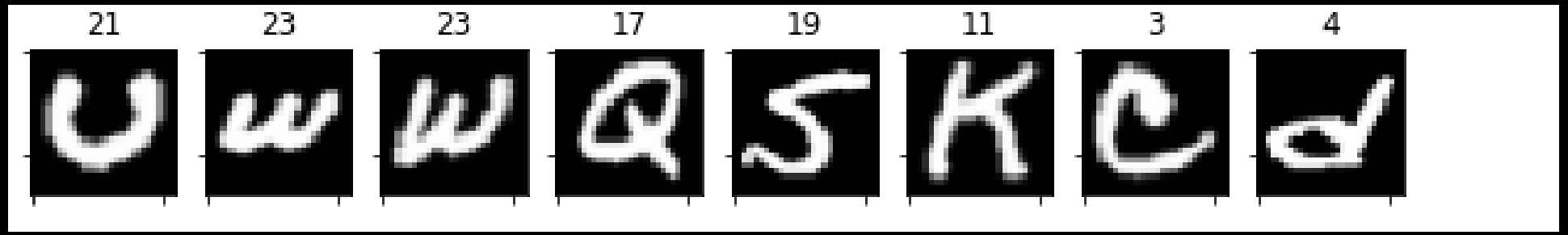
ESTADO DEL ARTE

Anillo para leer cualquier texto

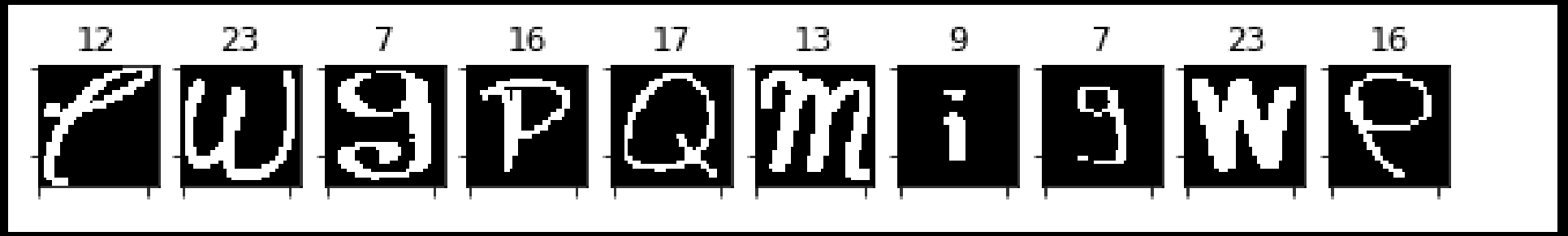
AllReader (máquina inteligente permite leer cualquier tipo de documento)

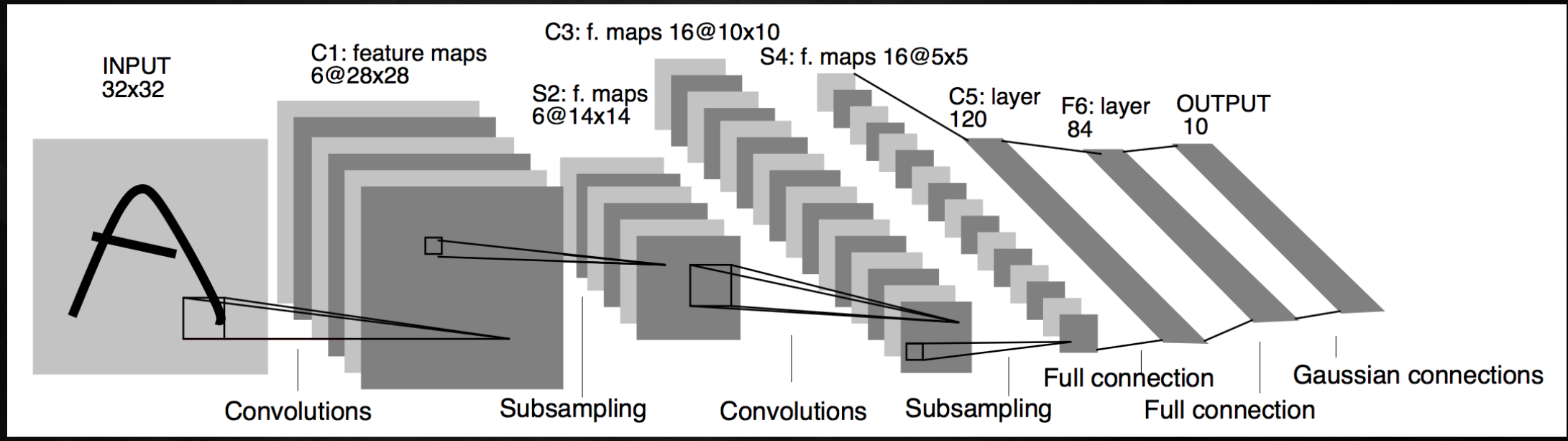
DATASETS

EMNIST



ALFABETO_UIS

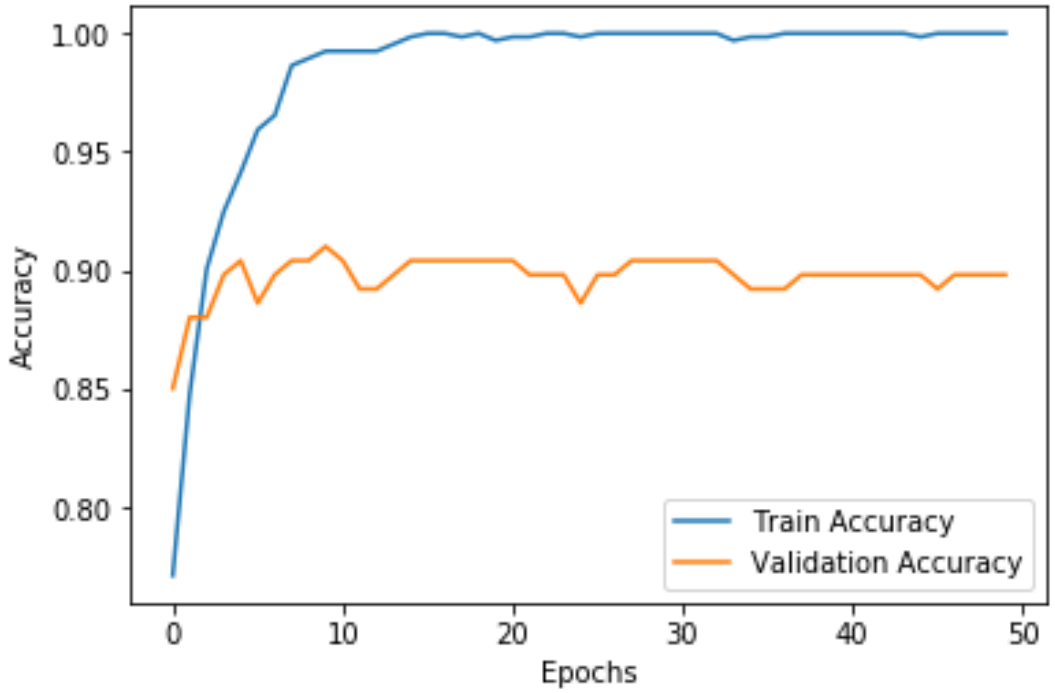



INPUT
32x32
C1: feature maps
6@28x28
S2: f. maps
6@14x14
C3: f. maps 16@10x10
S4: f. maps 16@5x5
C5: layer
120
F6: layer
84
OUTPUT
10
Convolutions
Subsampling
Convolutions
Subsampling
Full connection
Full connection
Gaussian connections

TRANSFER LEARNING

```
plt.plot(history.history['acc'], label='Train Accuracy')
plt.plot(history.history['val_acc'], label='Validation Accuracy')
plt.xlabel('Epochs')
plt.ylabel('Accuracy')
plt.legend()
```

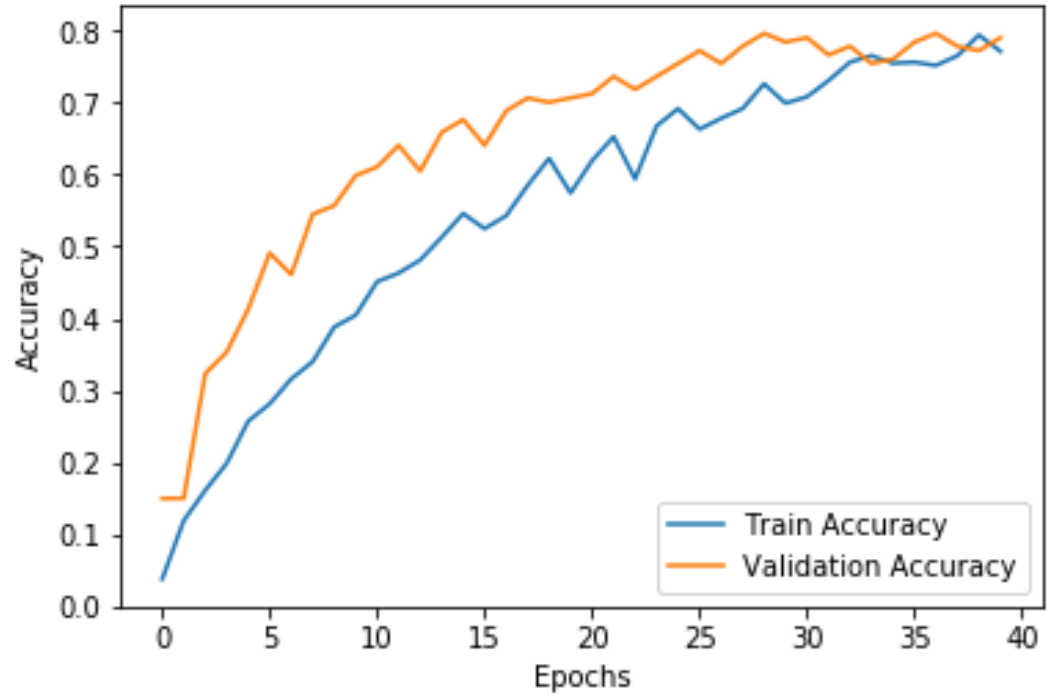
```
<matplotlib.legend.Legend at 0x7fe2006bf278>
```



REDES NEURONALES

```
plt.plot(history.history['acc'], label='Train Accuracy')
plt.plot(history.history['val_acc'], label='Validation Accuracy')
plt.xlabel('Epochs')
plt.ylabel('Accuracy')
plt.legend()
```

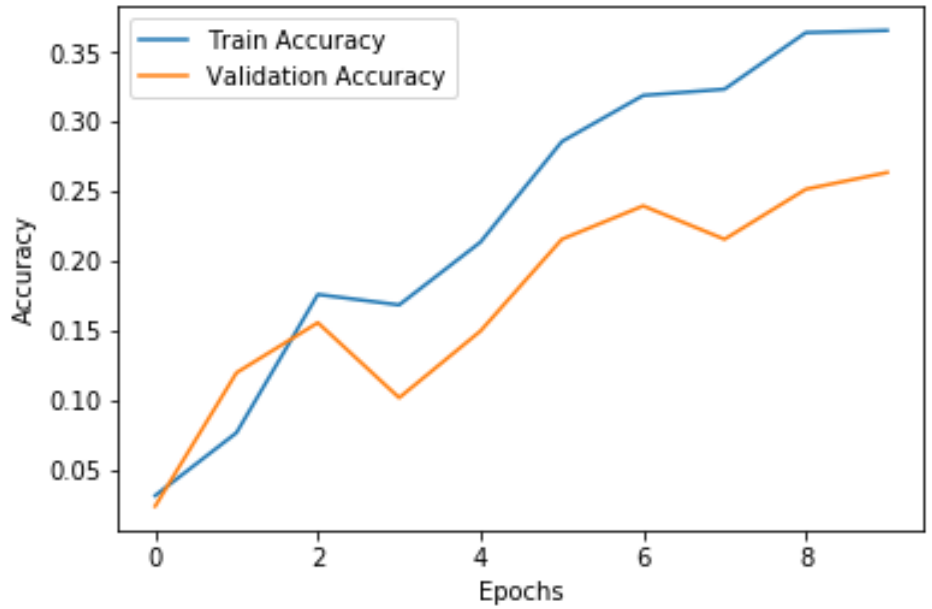
```
<matplotlib.legend.Legend at 0x7fe1af947400>
```



DEEP FEATURES

```
[43]  plt.plot(history.history['acc'], label='Train Accuracy')
      plt.plot(history.history['val_acc'], label='Validation Accuracy')
      plt.xlabel('Epochs')
      plt.ylabel('Accuracy')
      plt.legend()
```

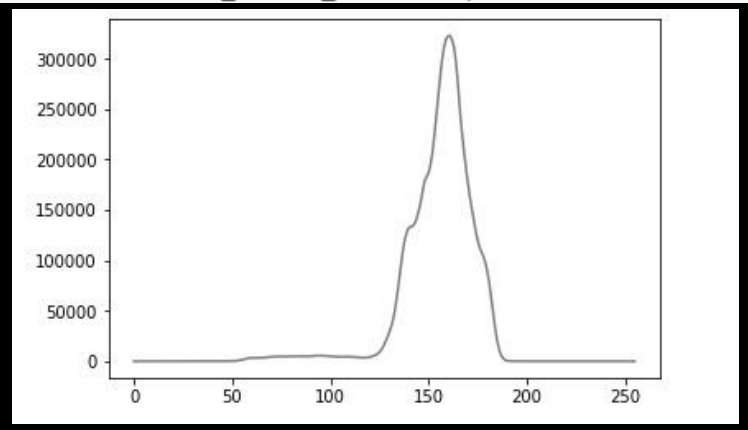
```
<matplotlib.legend.Legend at 0x7fc045822be0>
```

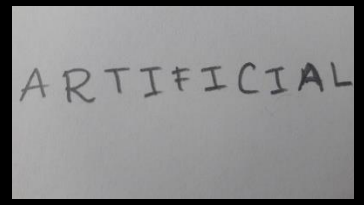


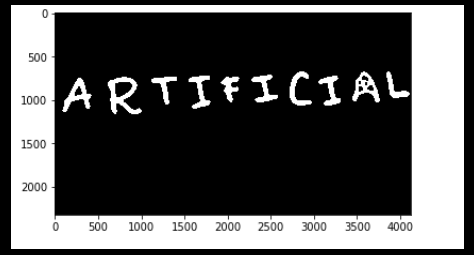
PROCESAMIENTO DE IMÁGENES

ADAPTIVE

```
th3 = cv2.adaptiveThreshold (gray2, 255, cv2.ADAPTIVE_THRESH_GAUSSIAN_C,
            cv2.THRESH_BINARY_INV, 47,2)
```

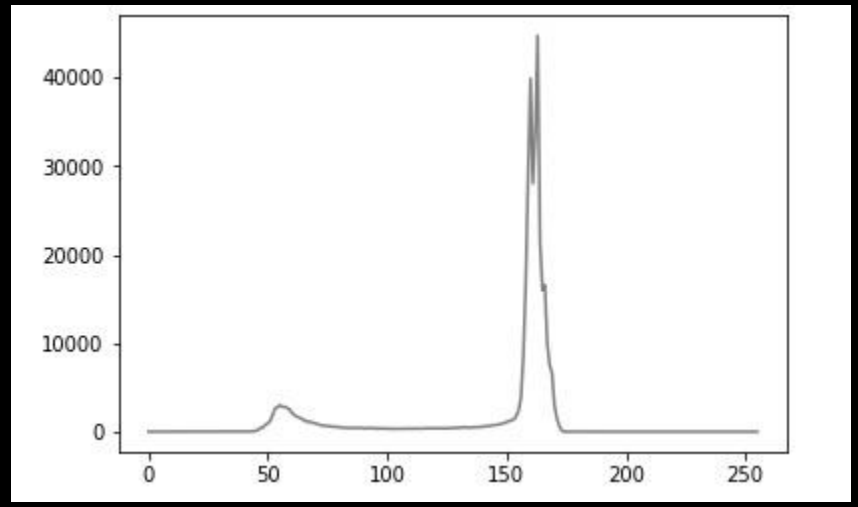


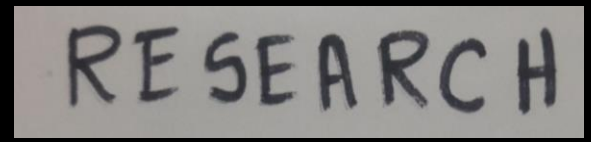




OTSU

```
blur = cv2.GaussianBlur(gray ,(7,7),0)
ret3,th3 = cv2.threshold(blur,0,255,cv2.THRESH_BINARY_INV+cv2.THRESH_OTSU)
```

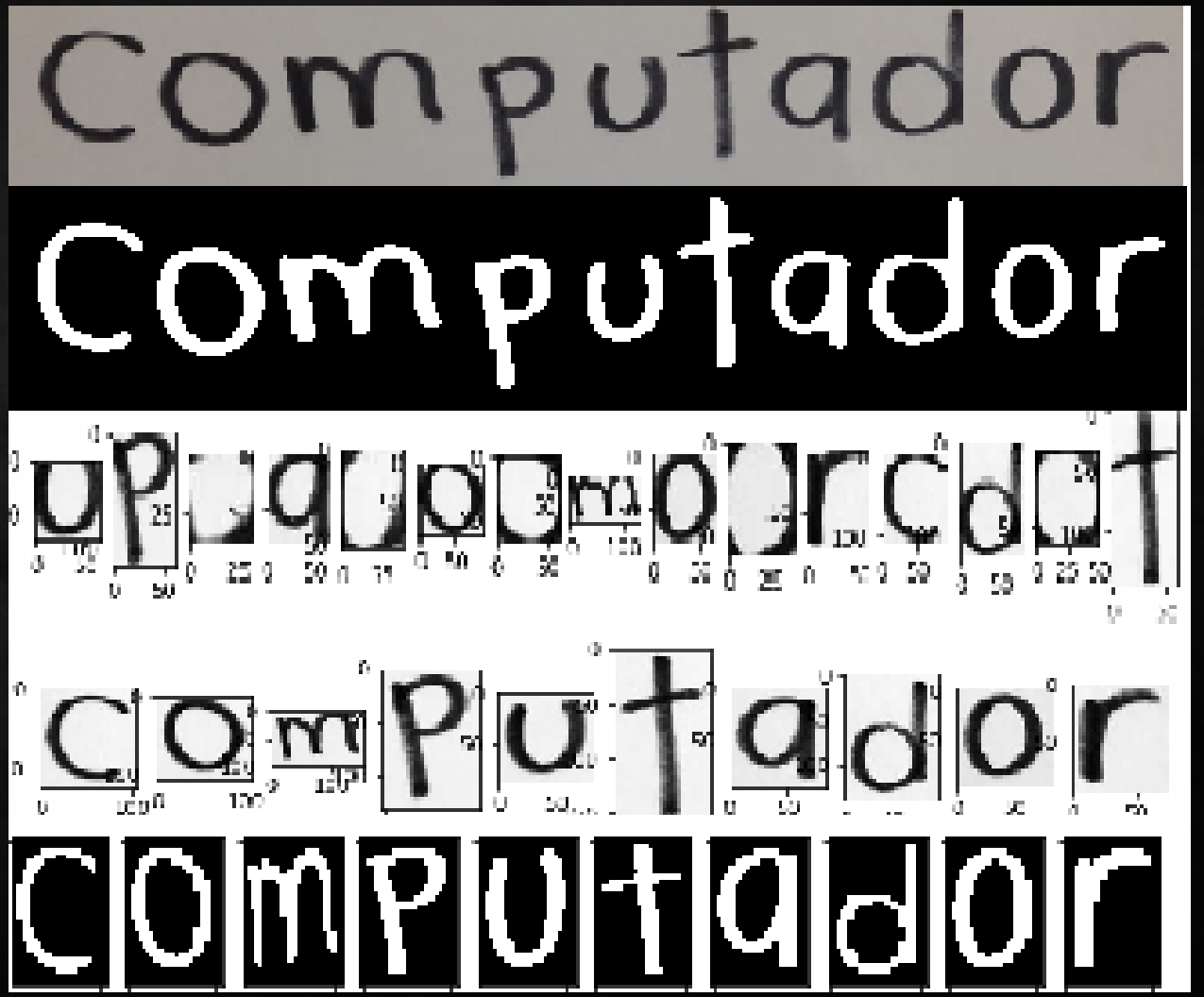




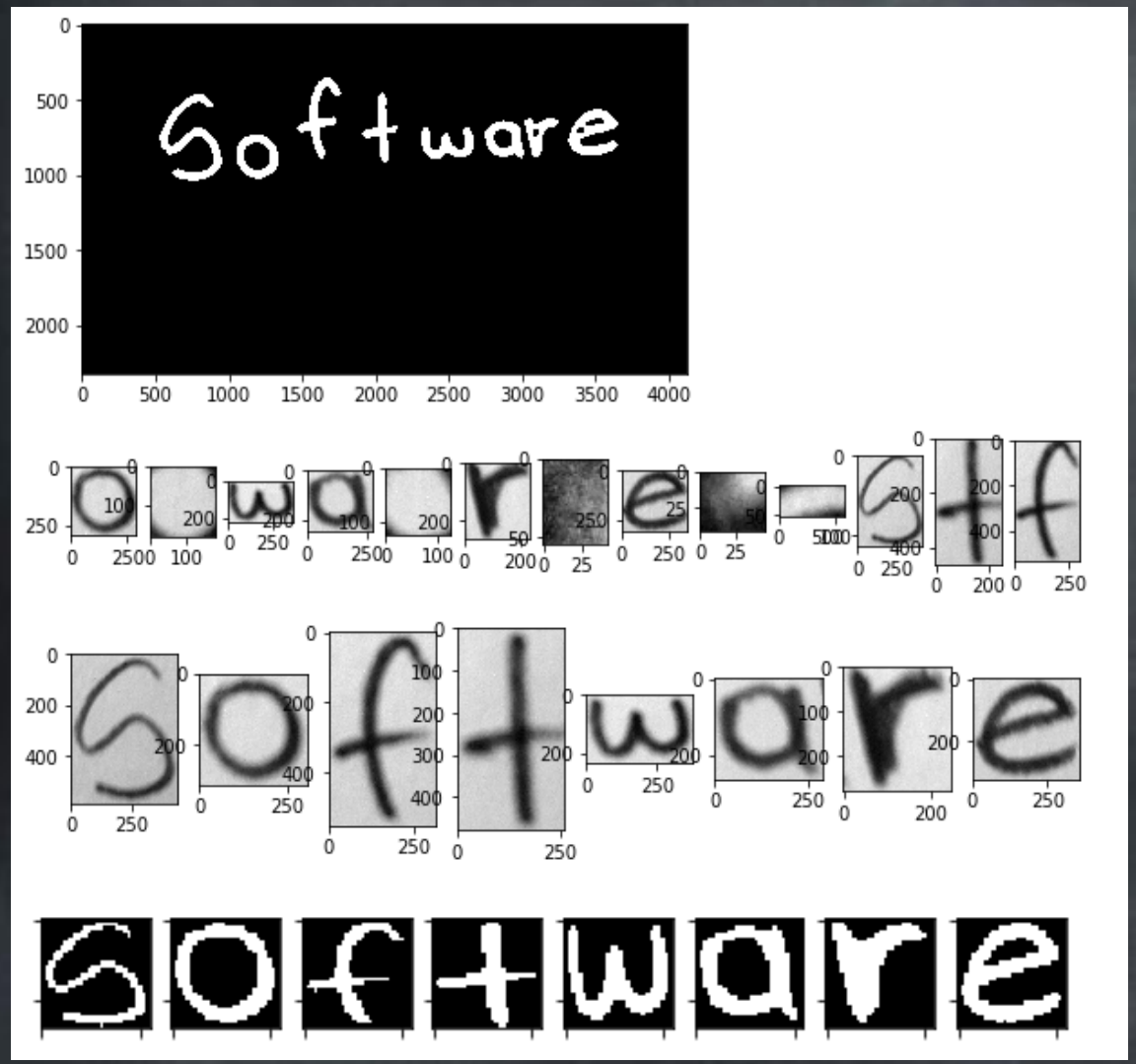
Transformaciones Morfológicas

Original *Erosión* *Dilatación* *Apertura* *Cierre*

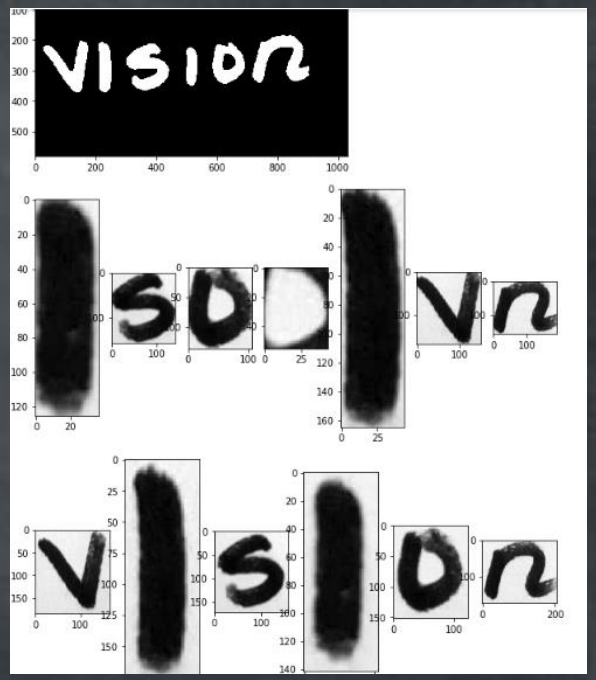
SEGMENTACIÓN



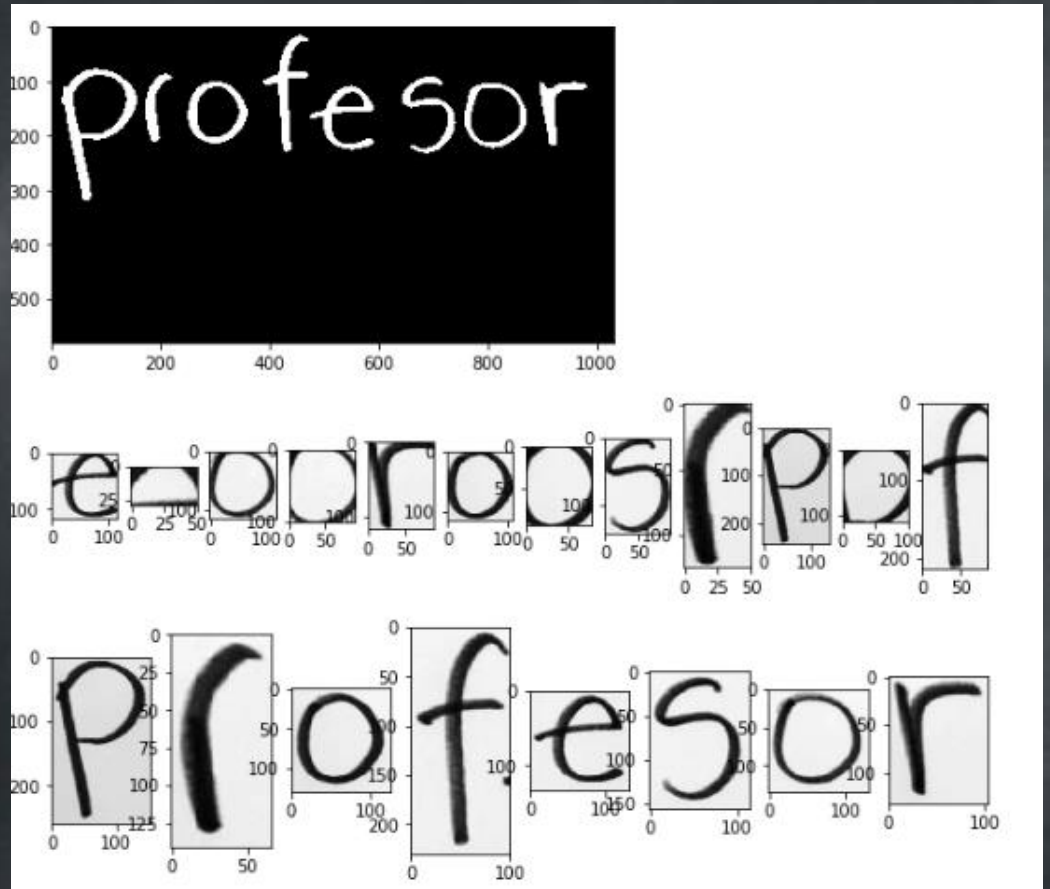
RESULTADOS



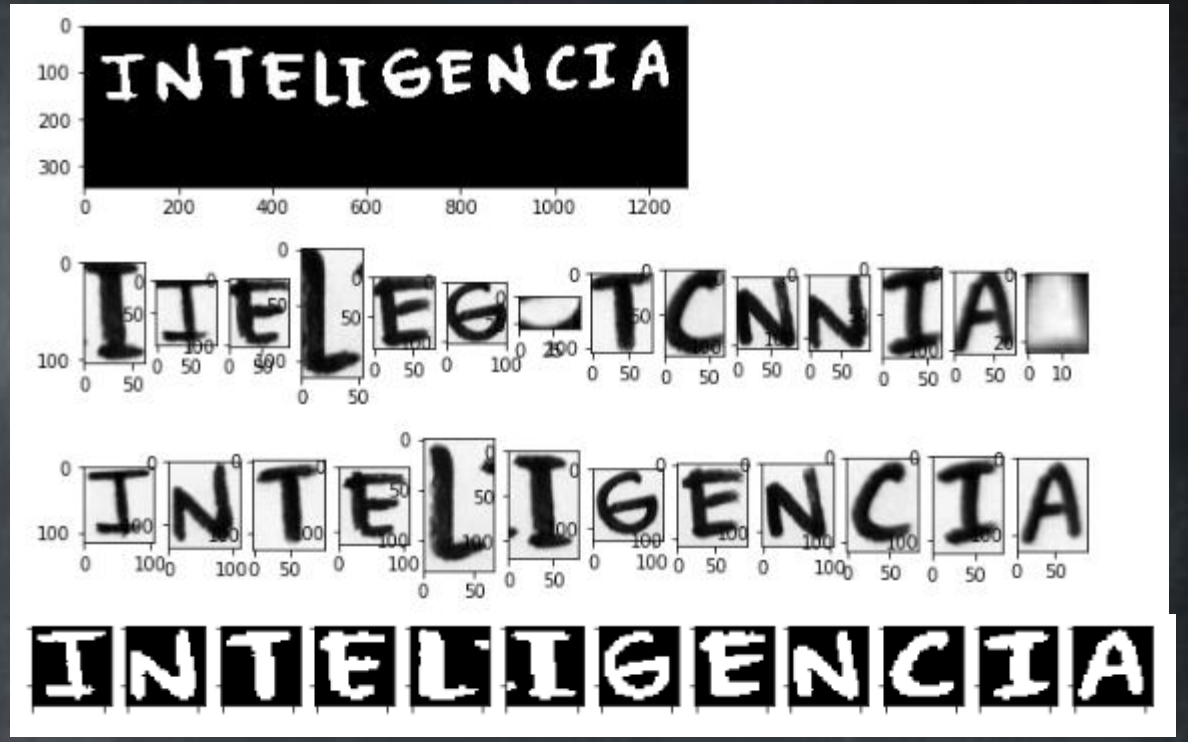
SOFTWARE



VISION



PIOTESOR



INIELIBENCIA

GRACIAS