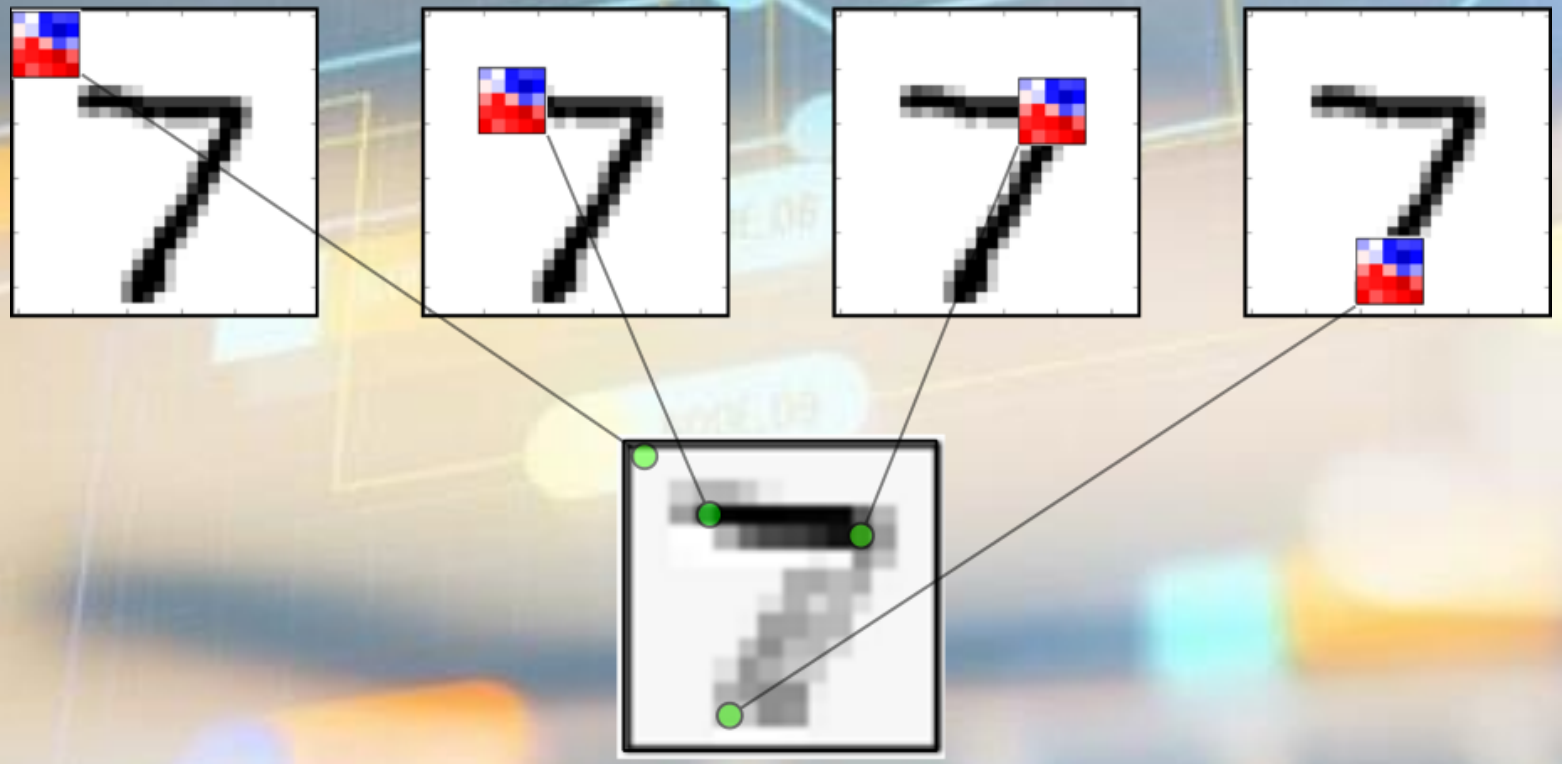
BAKER HUGHIES HACKATHON TEAM

VICTOR CANALES
ORLANDO RAMOS
PERCI SANTOS
KARINA PIÑA

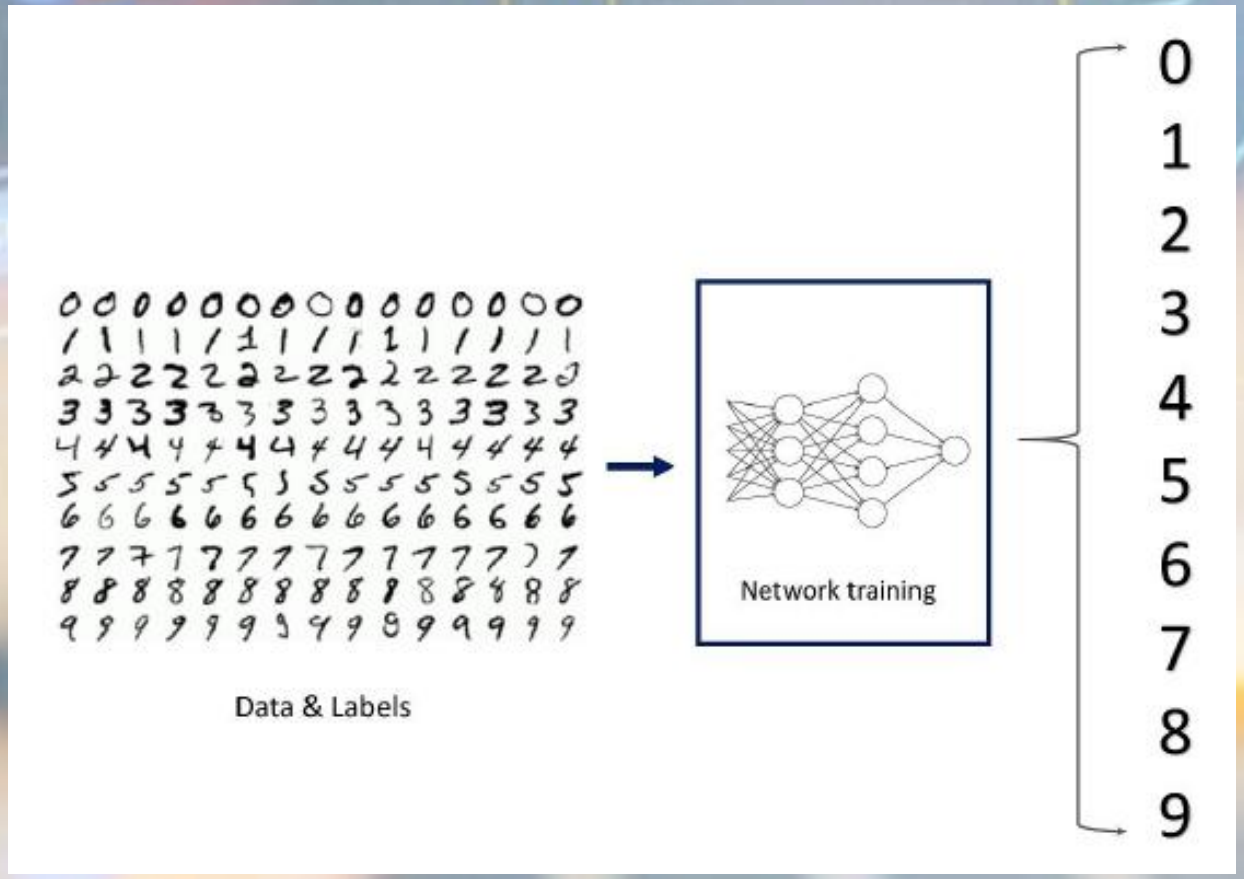
CHALLENGE CATEGORIZATION

Input Image with Filter Overlaid (4 copies for clarity)

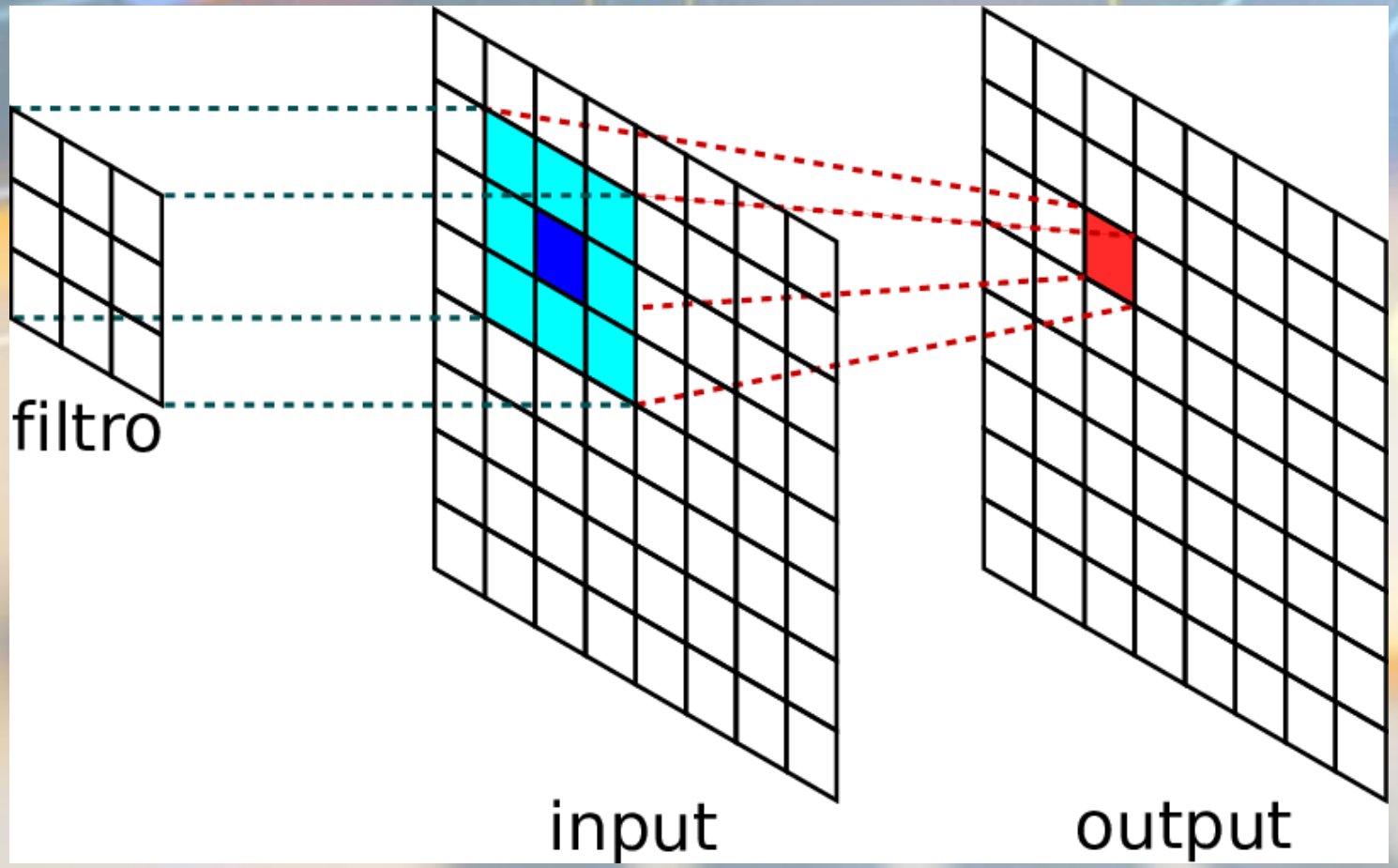


Result of Convolution

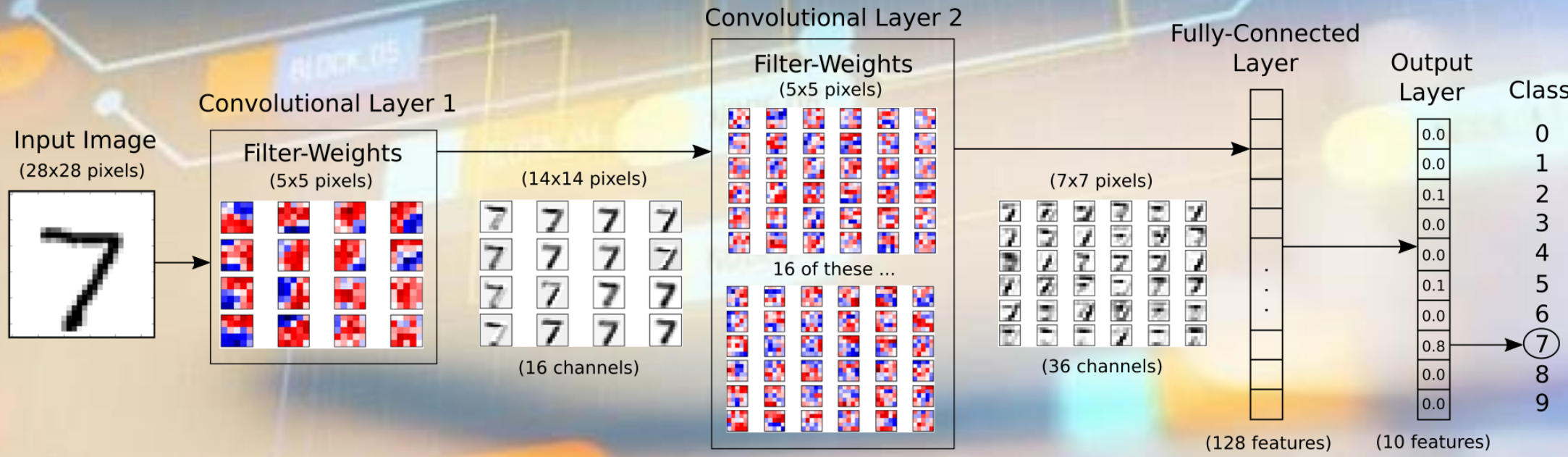
NEURAL NETWORK



CONVOLUTIONAL

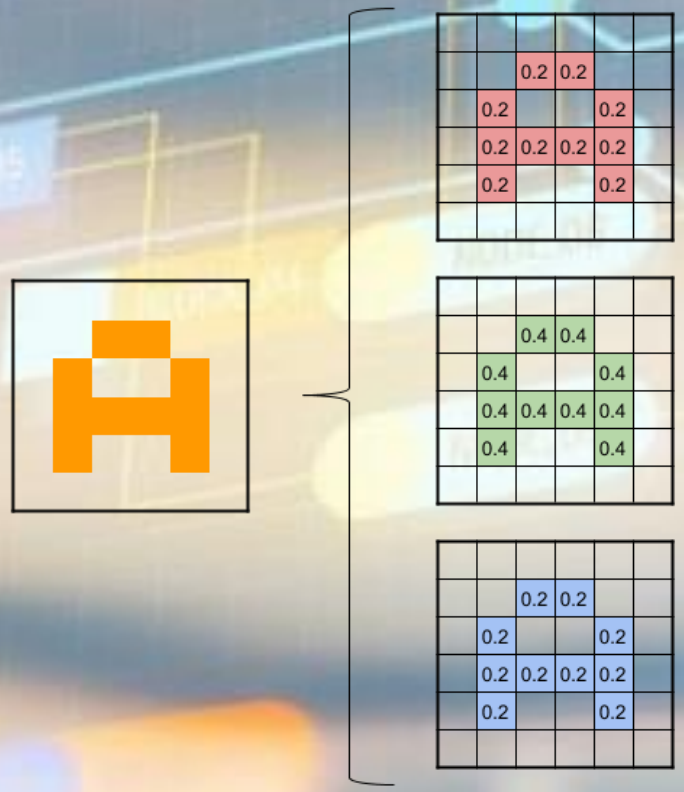


TENSORFLOW


Input Image
(28x28 pixels)
Convolutional Layer 1
Filter-Weights
(5x5 pixels)
(14x14 pixels)
(16 channels)
Convolutional Layer 2
Filter-Weights
(5x5 pixels)
16 of these ...
(7x7 pixels)
(36 channels)
Fully-Connected Layer
(128 features)
Output Layer
0.0
0.0
0.1
0.0
0.0
0.1
0.0
0.8
0.0
0.0
(10 features)
Class
0
1
2
3
4
5
6
7
8
9

Why used us convolutional neuronal networks?

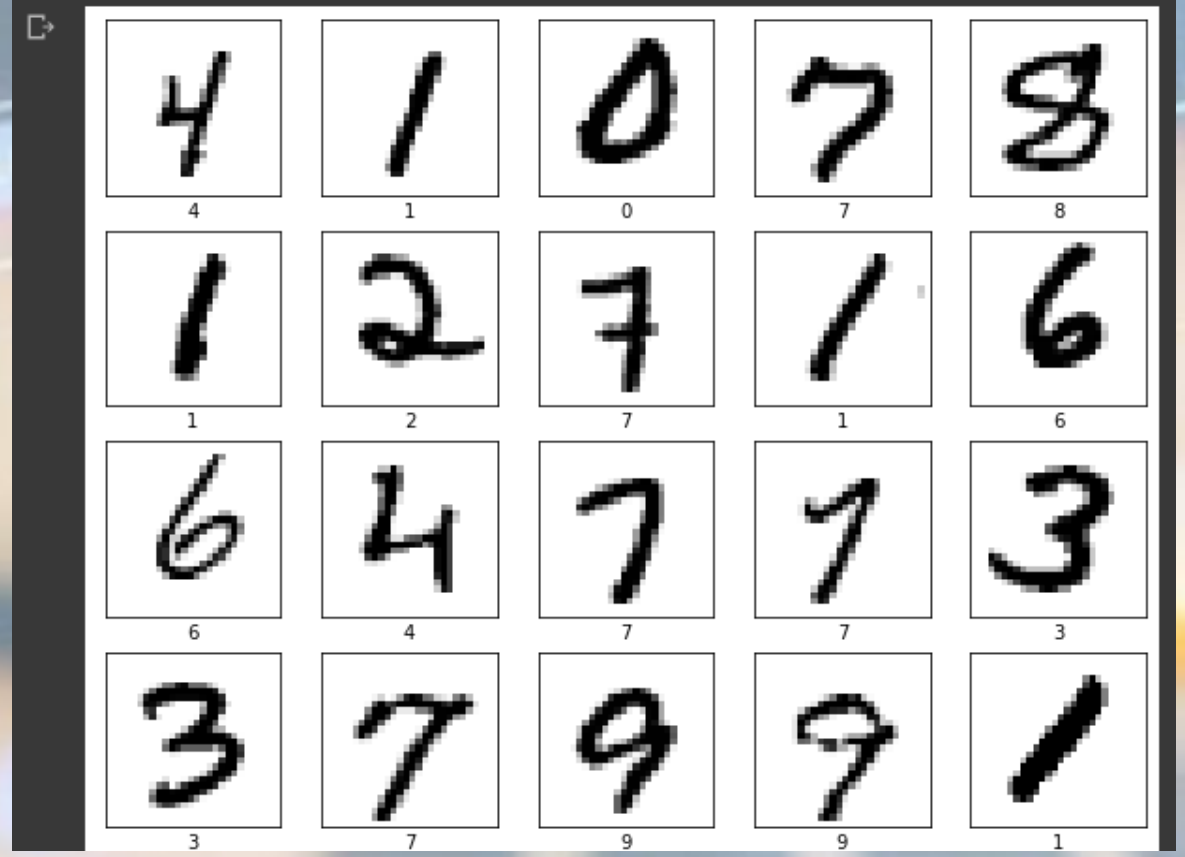
1.- Preprocessing



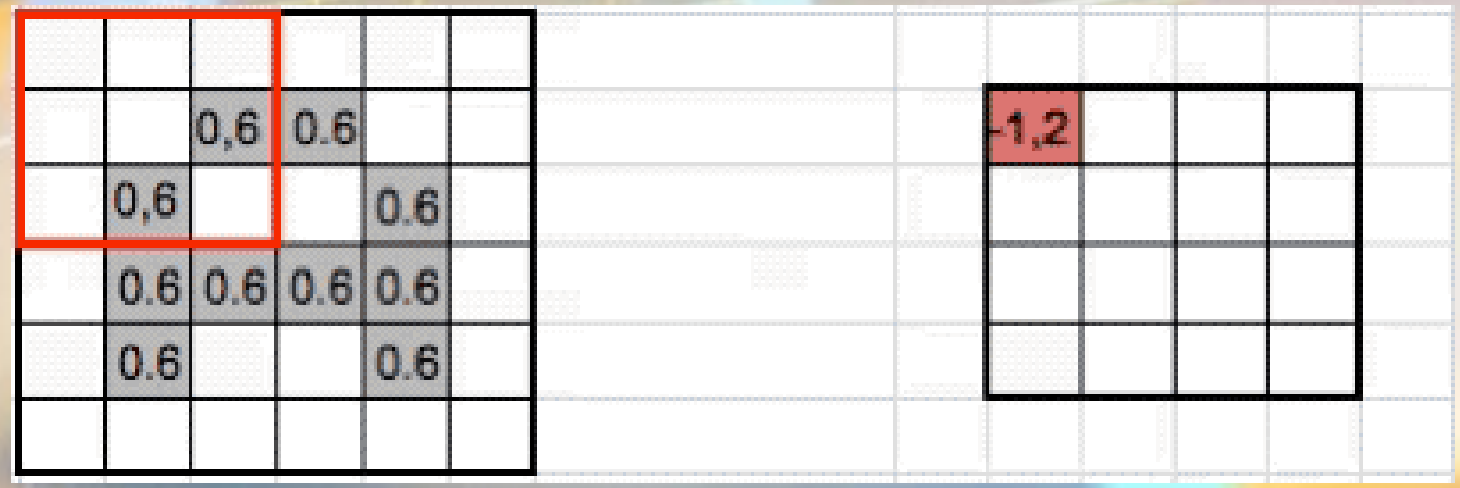
Si la imagen es a color, estará compuesta de tres canales: rojo, verde, azul.

ONE – HOT ENCONDING

```
plt.show()
```



Kernels



CONVOLUTION

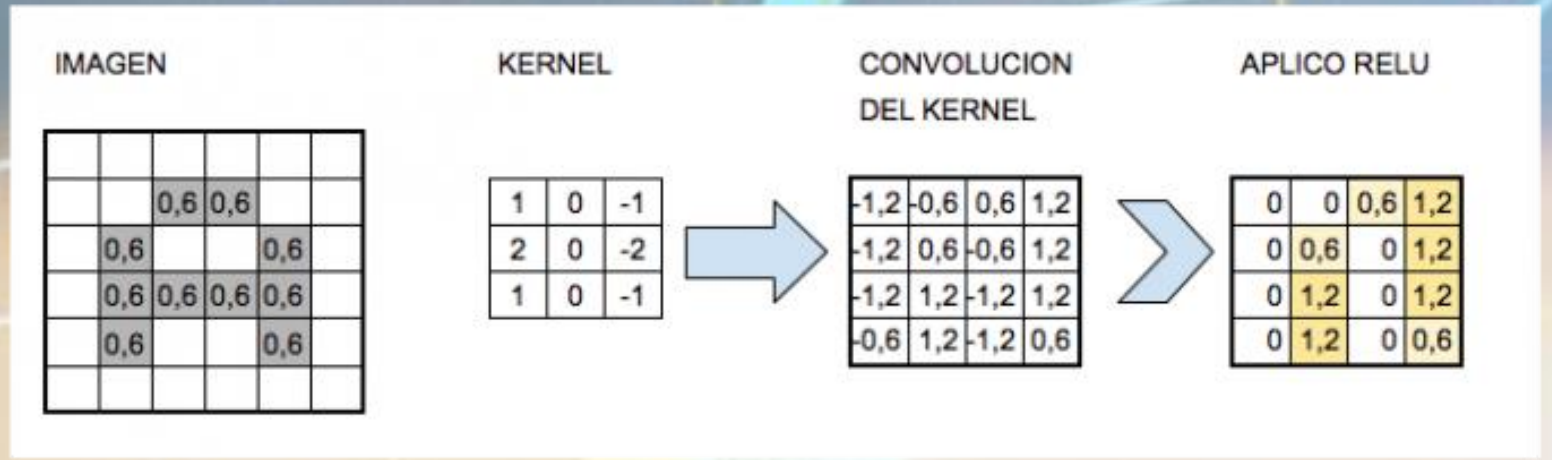
		0.6	0.6		
	0.6			0.6	
	0.6	0.6	0.6	0.6	
	0.6			0.6	

Imagen de entrada

1	0	-1
2	0	-2
1	0	-1

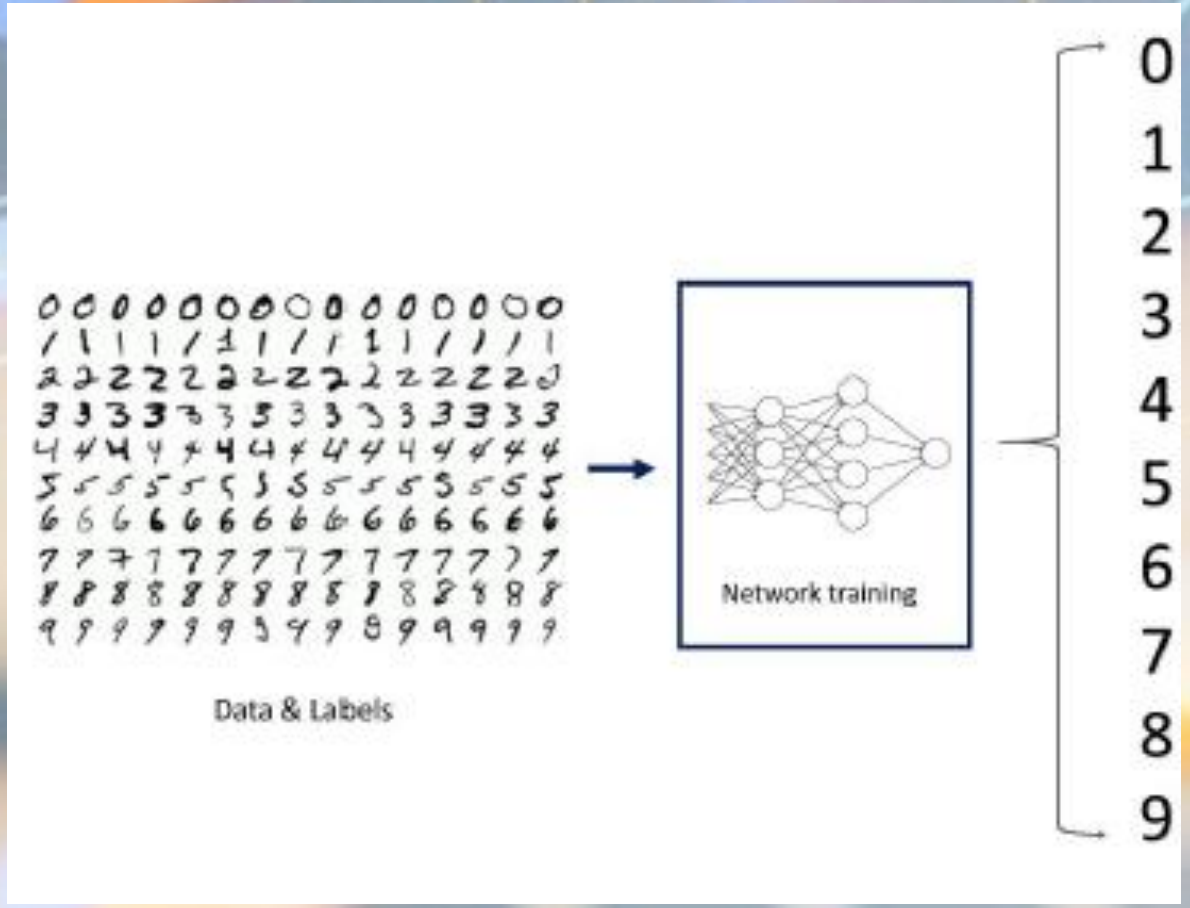
kernel

THE IMAGE PERFORMS A CONVOLUTION WITH A KERNEL



FINALMENTE OBTENGO UN MAPA DE DETECCIÓN DE CARACTERÍSTICAS

NEURAL NETWORK CONVOLUTIONAL



REFERENCES

"Deep Learning with Phyton" , Francois Chollet

https://www.aprendemachinelearning.com/como-funcionan-las-convolutional-neural-networks-vision-por-ordenador/

Curso API Data Science, Data Science School Cuernavaca UNAM