

# Python para Redes Neuronales

## Cheat Sheet para Keras

Más en: [umg.edu.mx](http://umg.edu.mx)

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### > Ejemplo básico

```
>>> import numpy as np
>>> from keras.models import Sequential
>>> from keras.layers import Dense

>>> data = np.random.random((1000,100))
>>> labels = np.random.randint(2,size=(1000,1))
>>> model = Sequential()
>>> model.add(Dense(32,
    activation= 'relu' ,
    input_dim=100))
>>> model.add(Dense(1, activation= 'sigmoid' ))
>>> model.compile(optimizer= 'adam',
    loss= 'categorical_crossentropy' ,
    metrics=['accuracy'])
>>> model.fit(data,labels,epochs=10,batch_size=32)
>>> predictions = model.predict(data)
```

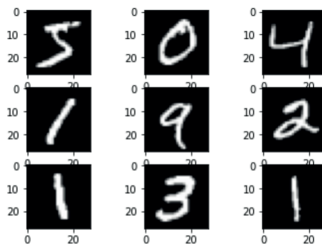
### 1 Cargar Datos y Pre-procesamiento

```
>>> from keras.datasets import mnist
>>> from tensorflow.keras.utils import to_categorical

>>> (X_train, y_train), (X_test, y_test) = \
    mnist.load_data()

>>> y_train = to_categorical(y_train)
>>> y_test = to_categorical(y_test)

>>> X_train = X_train.astype('float32') / 255
>>> X_test = X_test.astype('float32') / 255
```



### 2 Arquitectura del Modelo

```
>>> from keras.models import Sequential
>>> from keras.layers import Dropout

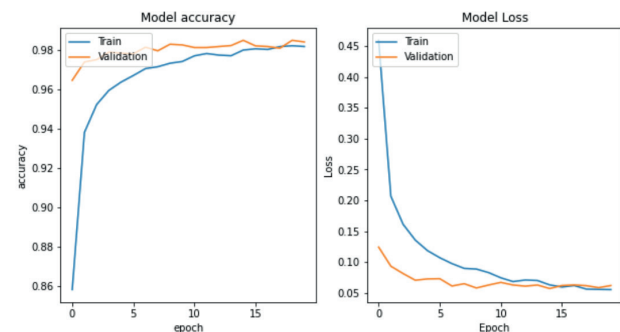
>>> model = Sequential(name='MLP')
>>> model.add(Dense(512,activation='relu' ,input_shape=(784,)))
>>> model.add(Dropout(0.2))
>>> model.add(Dense(512,activation= 'relu'))
>>> model.add(Dropout(0.2))
>>> model.add(Dense(10,activation= 'softmax' ))
```

### 3 Compilación del Modelo

```
>>> model.compile(optimizer= 'adam' ,
    loss= 'categorical_crossentropy' ,
    metrics=['accuracy'])
```

### 4 Entrenamiento del Modelo

```
>>> model.fit(X_train,
    y_train,
    batch_size=32,
    epochs=15,
    verbose=1,
    validation_split=.1)
```



### 5 Evaluación del Modelo

```
>>> model.evaluate(X_test,
    y_test,
    batch_size=32)
```

### 6 Predicciones

```
>>> preds = model.predict(X_test)
>>> classes =np.argmax(preds, axis=1)
```

### 7 Guardar/Cargar Modelos

```
>>> from keras.models import load_model

>>> model.save('model_file.h5')
>>> my_model = load_model('model_file.h5')
```



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