



CRÉEZ UN OUTIL DE VISUALISATION POUR UN RÉSEAU NEURONAL CONVOLUTIF

CHEMS / ALICIA

OBJECTIF

Création d'un outil de pour expliquer le fonctionnement d'un réseau de neurones

3 versions de l'application:

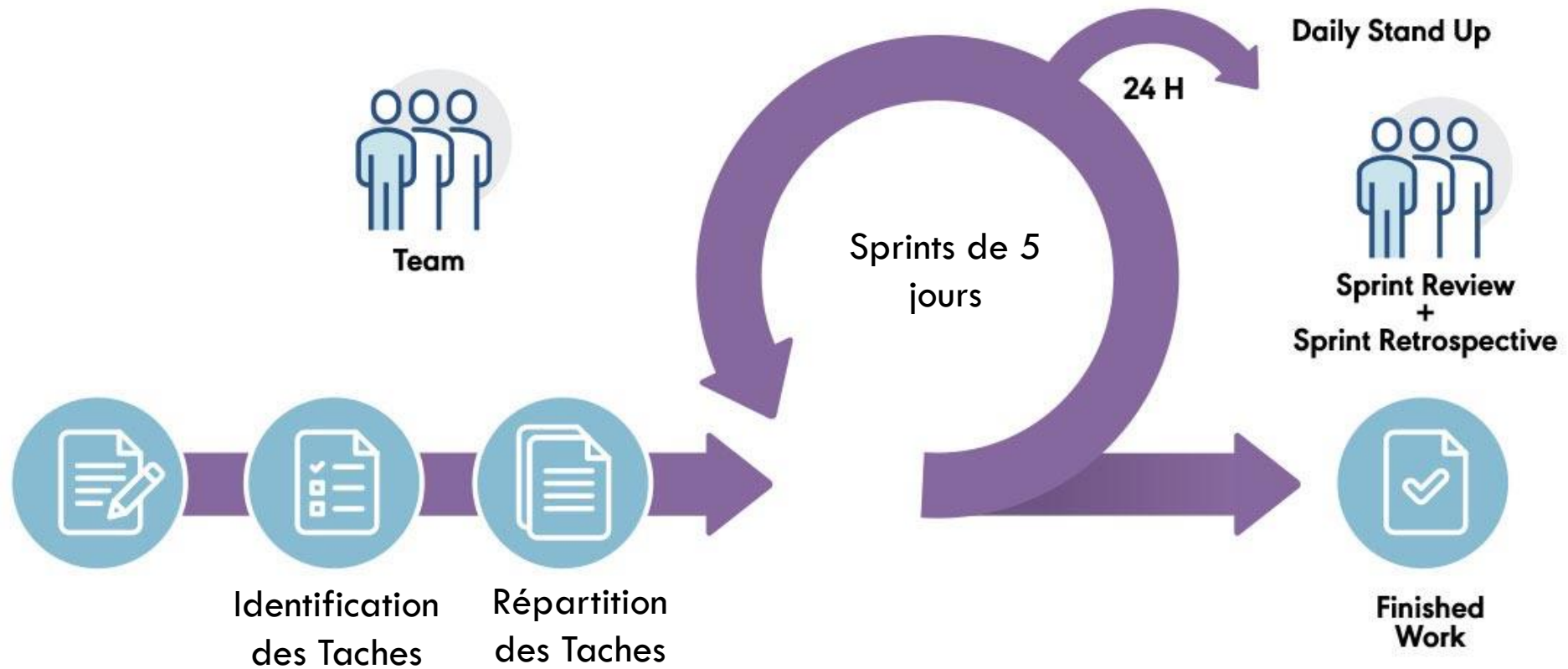
- Prédire un chiffre
- Prédire un chiffre d'après le dessin
- Visualisation des neurones

The background is a dark teal gradient. In the corners, there are white line-art illustrations of circuit traces or neural network connections. These lines branch out and terminate in small circles, resembling a stylized electronic or biological network.

PRÉSENTATION DE L'APPLICATION

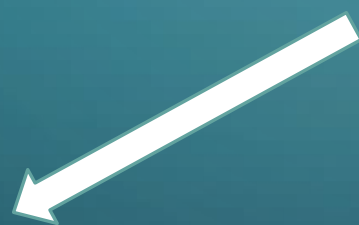
ORGANISATION

SCRUM PROCESS

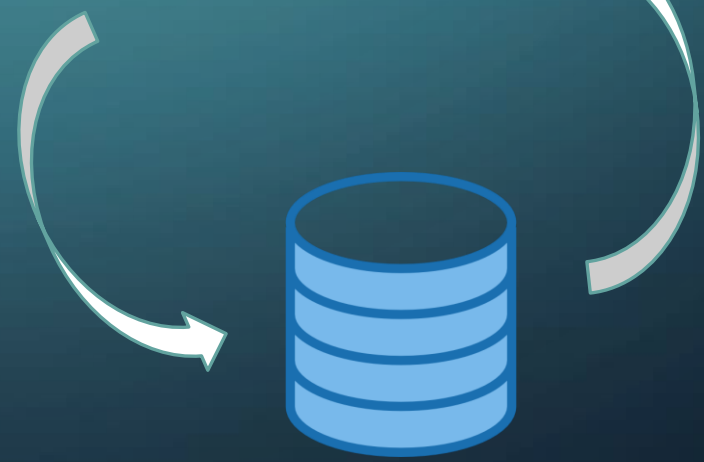




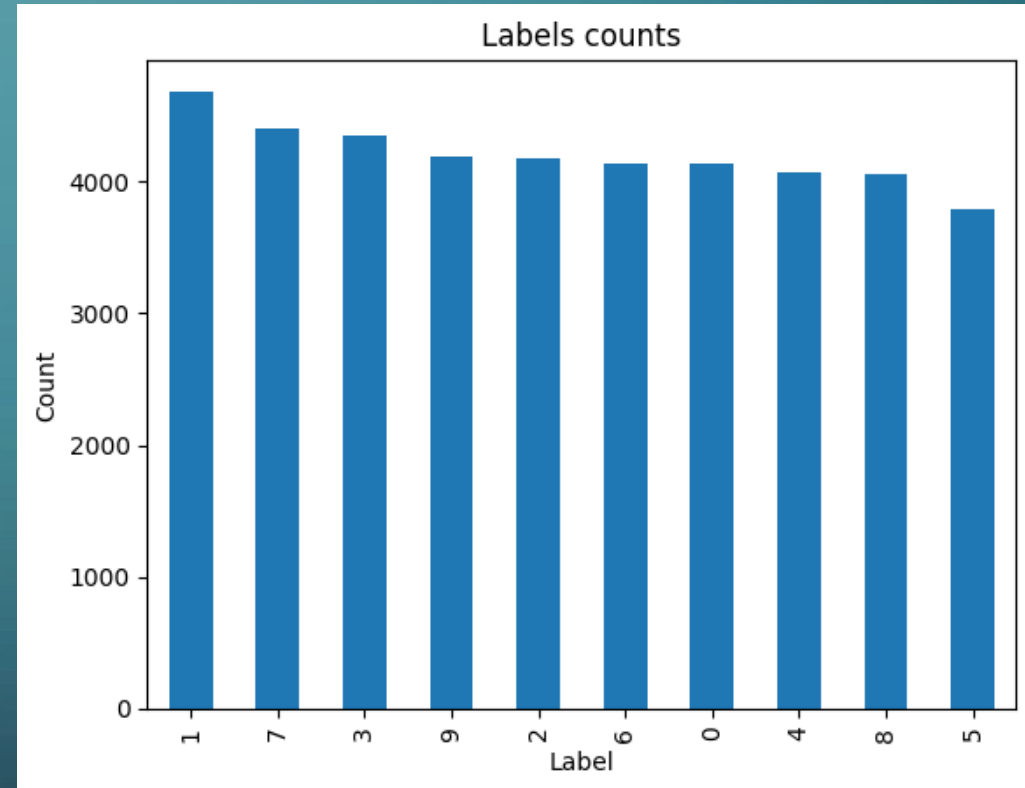
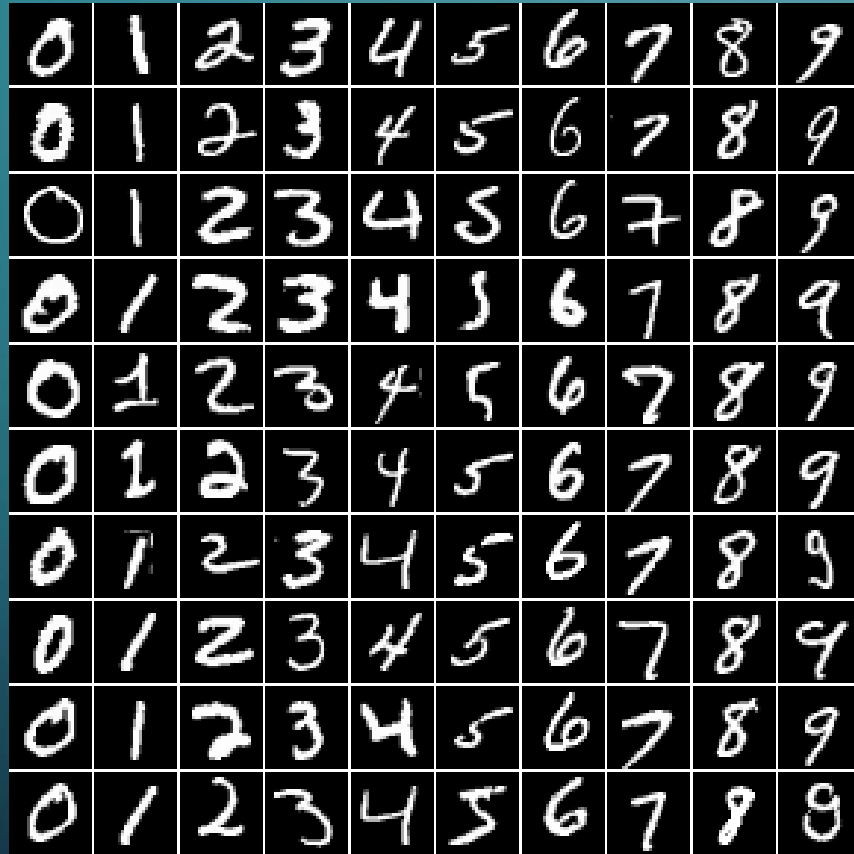
Streamlit



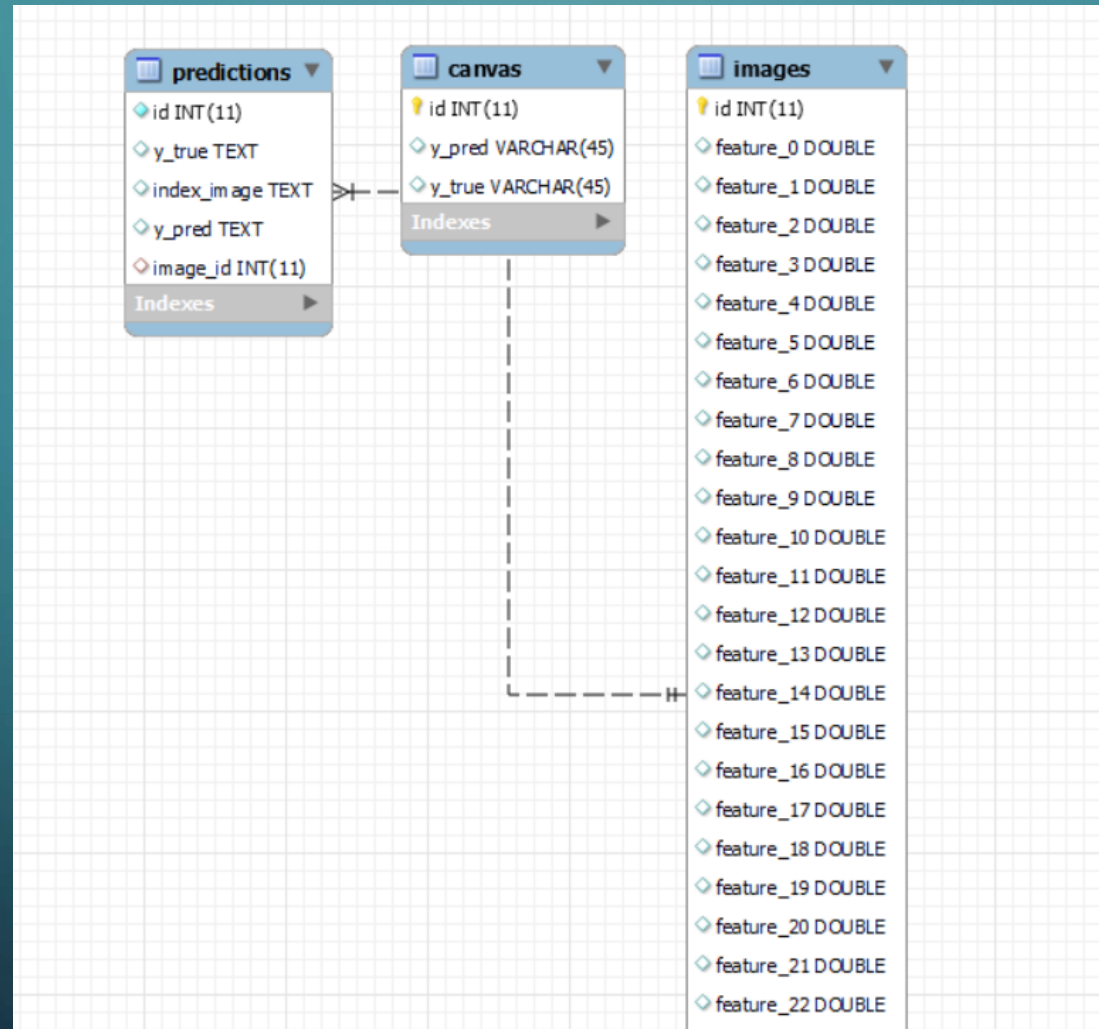
Prédiction



DONNÉ D'ENTRAINEMENT DU MODEL

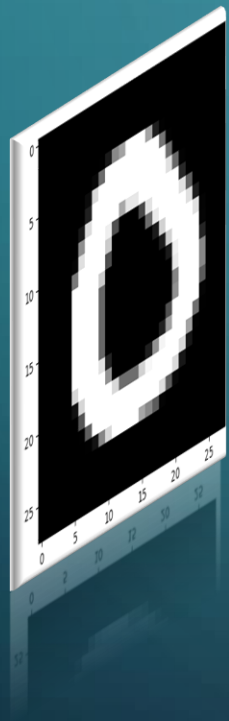


BASE DE DONNÉ



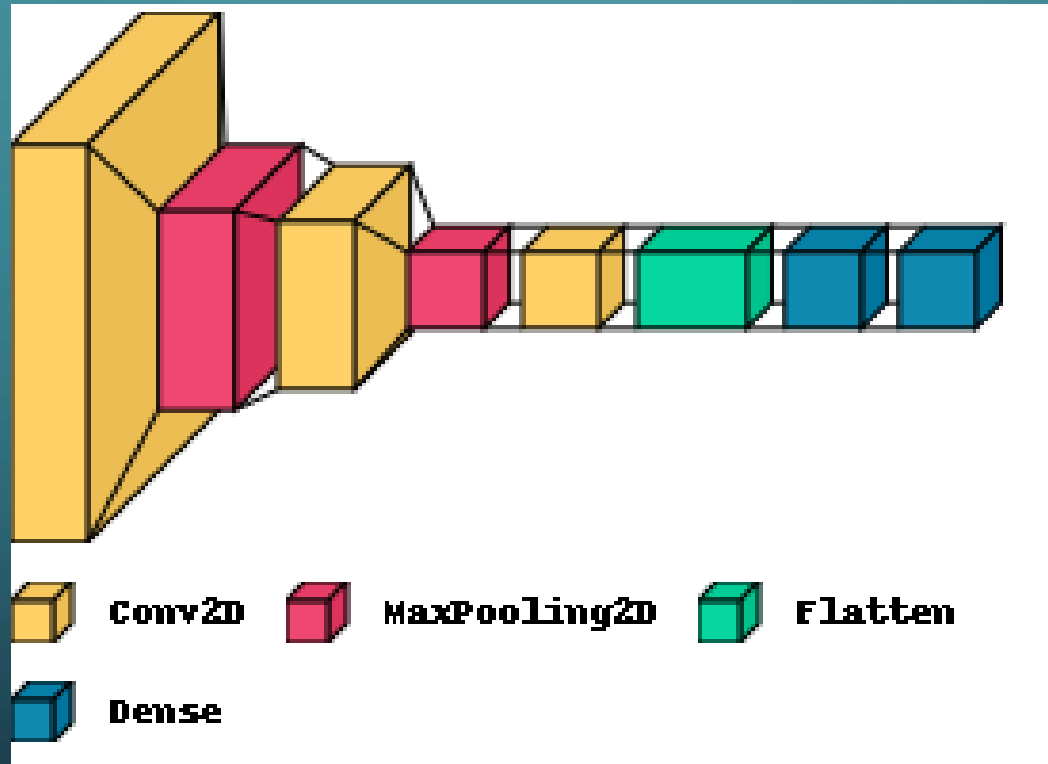
MODEL

Input



Feature extraction

Classifier

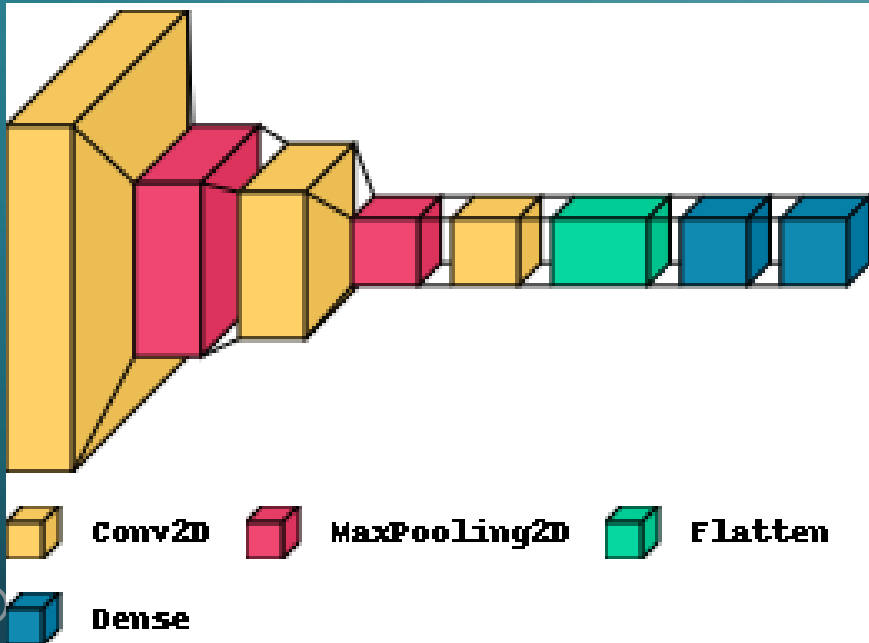


Output



Prédiction:
0

MODEL

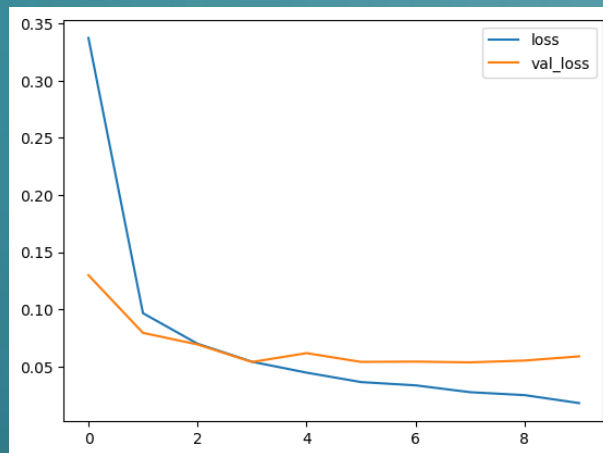


```
model = tf.keras.models.Sequential([  
  
    tf.keras.layers.Conv2D(8, (3, 3), activation='relu', input_shape=(28, 28, 1)),  
    tf.keras.layers.MaxPooling2D(2, 2),  
    tf.keras.layers.Conv2D(16, (3, 3), activation='relu'),  
    tf.keras.layers.MaxPooling2D(2, 2),  
  
    tf.keras.layers.Conv2D(32, (3, 3), activation='relu'),  
  
    tf.keras.layers.Flatten(),  
    tf.keras.layers.Dense(128, activation='relu'),  
  
    tf.keras.layers.Dense(len(train.label.unique()), activation=tf.nn.softmax)  
])
```

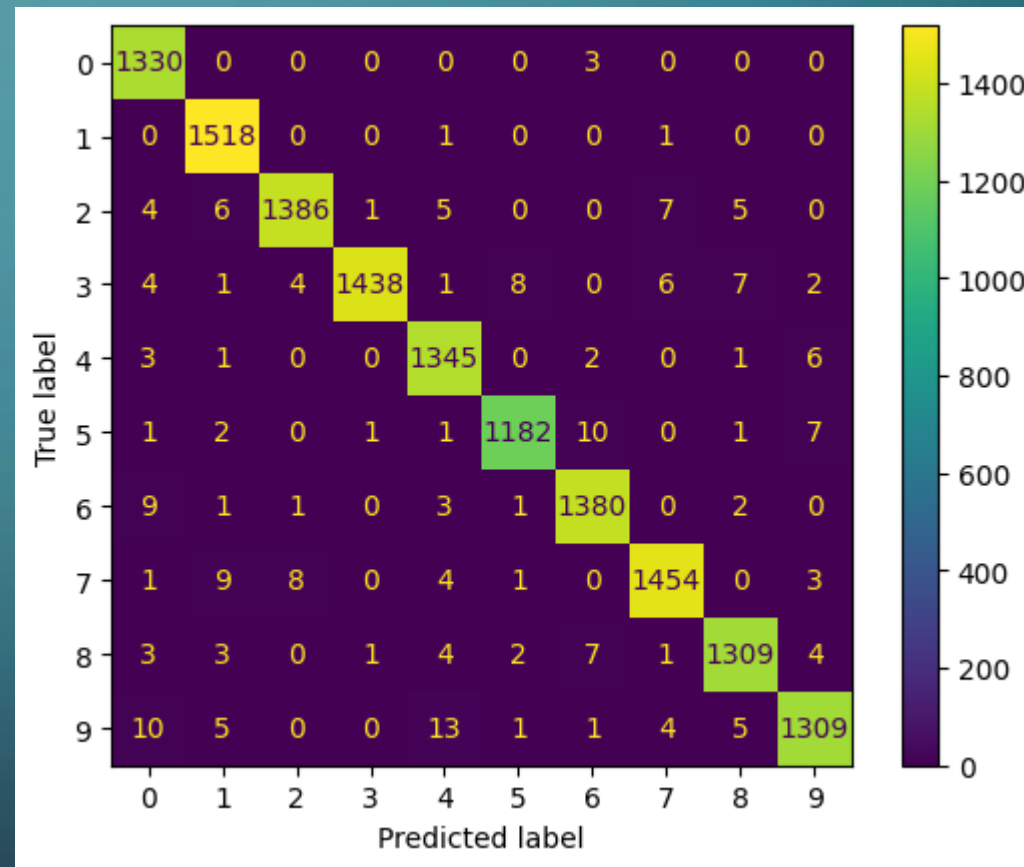
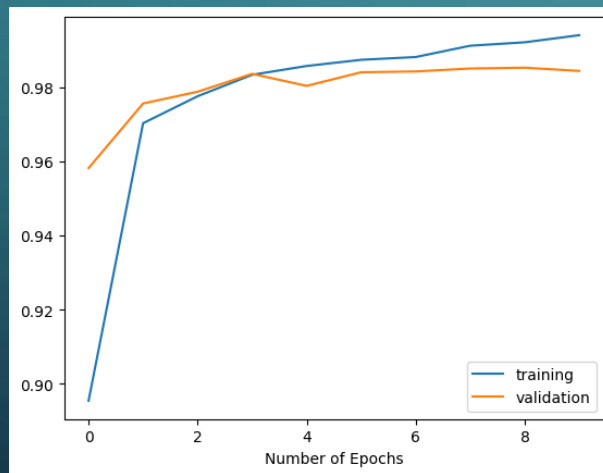
10 epoch
batch_size=32

EVALUATION DU MODÈLE

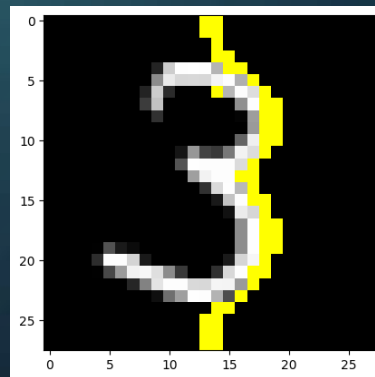
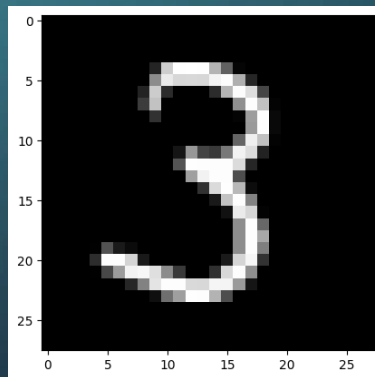
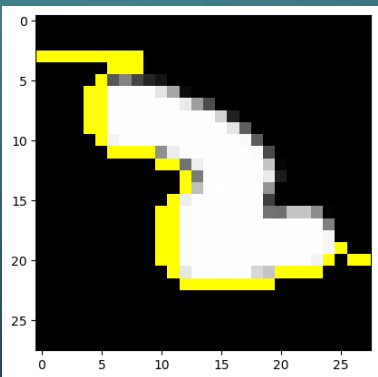
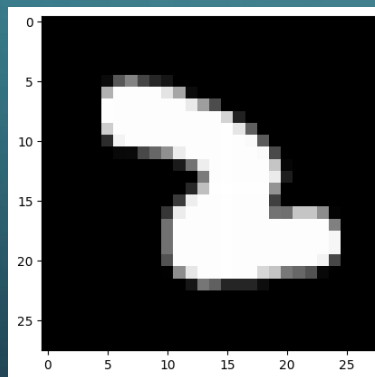
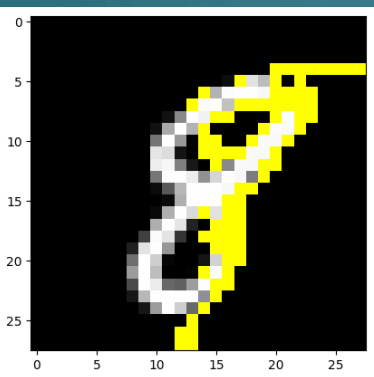
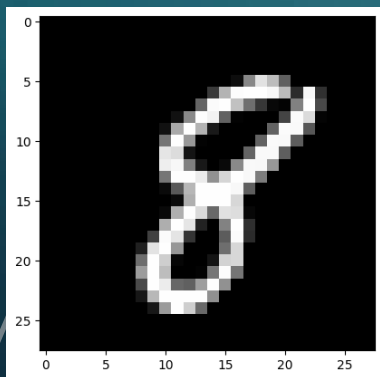
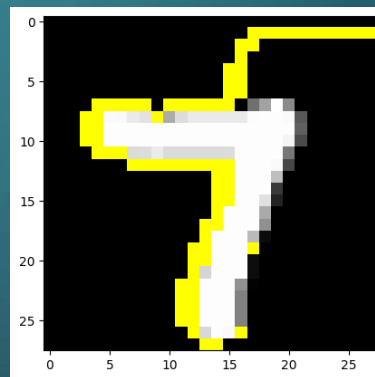
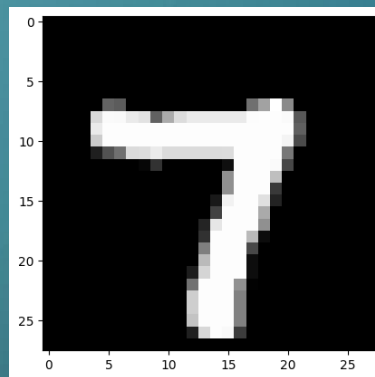
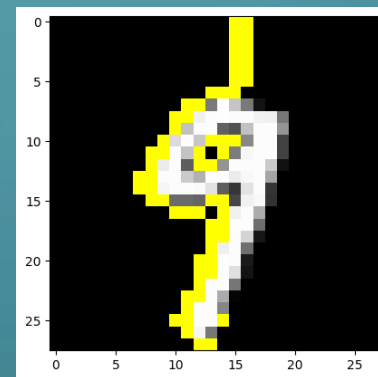
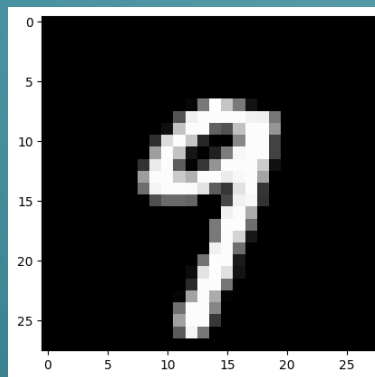
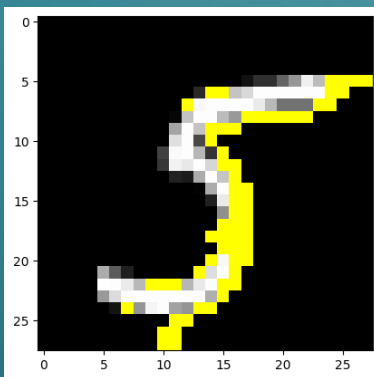
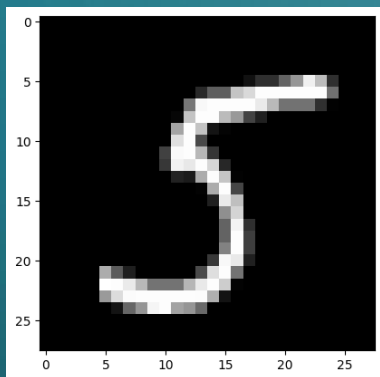
Loss



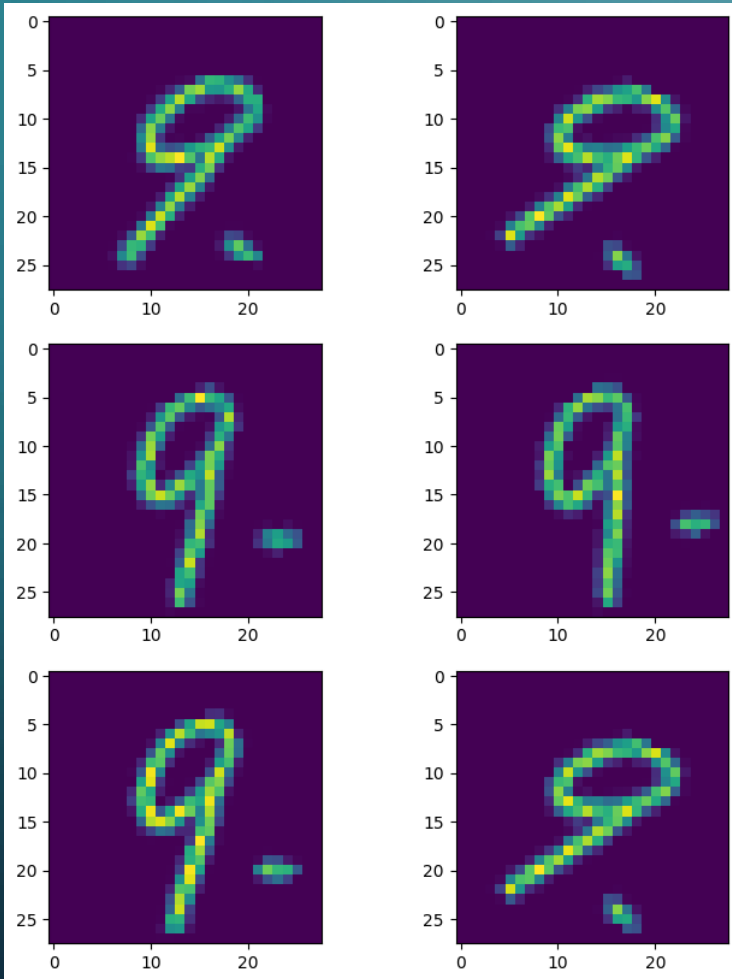
Accuracy



EXPLICABILITÉ DU MODEL AVEC LIME



DATA AUGMENTATION



Utilisation des Random Rotation

PERSPECTIVES

- Tester d'autre architecture
- Amélioration du model
- Transfer Learning
- Déploiement total
- Refaire l'application sur Django

