

IFT780 – TP3

Question 2

Endroits où du code a été ajouté (texte en **vert**: ajout, texte en **rouge**: retrait)

- Fichier 'src/train.py':

```
[...]
from copy import copy

[...]
```

```
    if data_augment:
        print('Data augmentation activated!')
        data_augment_transforms = [
            transforms.RandomRotation(15),
            transforms.ColorJitter(contrast=0.1,
                                   hue=0.1),
            transforms.RandomHorizontalFlip(p=0.5),
            transforms.RandomCrop(32, padding=4)
        ]
    else:
        print('Data augmentation NOT activated!')
        data_augment_transforms = []

[...]
```

```
base_transform = transforms.Compose([
    transforms.ToTensor(),
    transforms.Normalize((0.5, 0.5, 0.5), (0.5, 0.5, 0.5))
])

train_transform = transforms.Compose([
    *data_augment_transforms,
    transforms.ToTensor(),
    transforms.Normalize((0.5, 0.5, 0.5), (0.5, 0.5, 0.5))
])

if args.dataset == 'cifar10':
    # Download the train and test set and apply transform on it
    train_set = datasets.CIFAR10(root='../data', train=True, download=True, transform=base_transform)
    train_set = datasets.CIFAR10(root='../data', train=True, download=True, transform=train_transform)
    test_set = datasets.CIFAR10(root='../data', train=False, download=True, transform=base_transform)

elif args.dataset == 'svhn':
    # Download the train and test set and apply transform on it
    train_set = datasets.SVHN(root='../data', split='train', download=True, transform=base_transform)
    train_set = datasets.SVHN(root='../data', split='train', download=True, transform=train_transform)
    test_set = datasets.SVHN(root='../data', split='test', download=True, transform=base_transform)

if val_set:
    len_val_set = int(len(train_set) * val_set)
    train_set, val_set = torch.utils.data.random_split(train_set, [len(train_set) - len_val_set, len_val_set])
    val_set.dataset = copy(train_set.dataset)
    val_set.dataset.transform = base_transform

[...]
```

Courbes d'entraînement et de validation

1. `--model=CnnVanilla --dataset=cifar10 --num-epochs=20 --batch_size=100`

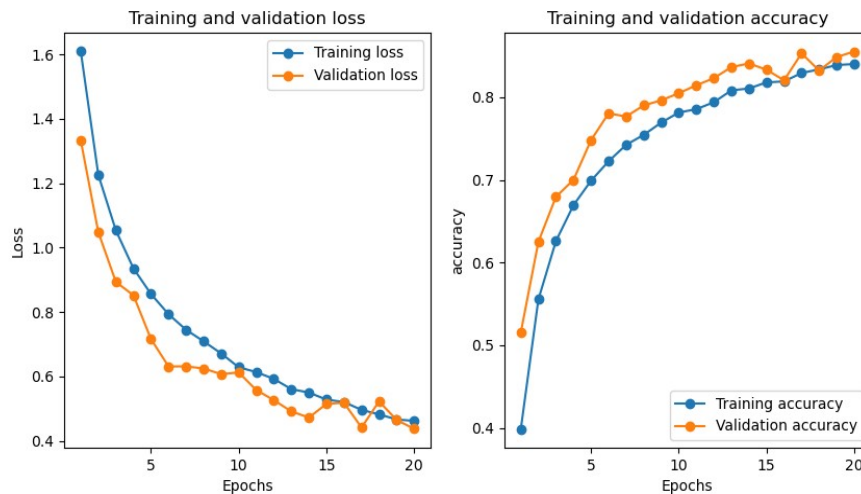


```
(ift725) simon@alien:~/tp3/src$ python train.py --model=CnnVanilla --dataset=cifar10 --num-epochs=20 --batch_size=100
Data augmentation NOT activated!
Files already downloaded and verified
Files already downloaded and verified
Training CnnVanilla on cifar10 for 20 epochs
```

Finished training.

Accuracy (or Dice for UNet) on the test set: 80.760 %

2. `--model=CnnVanilla --dataset=cifar10 --num-epochs=20 --batch_size=100 --data_aug`

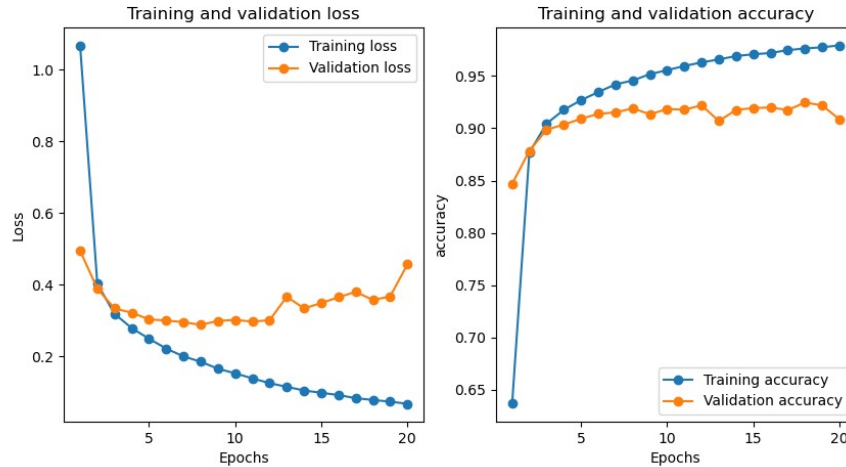


```
(ift725) simon@alien:~/tp3/src$ python train.py --model=CnnVanilla --dataset=cifar10 --num-epochs=20 --batch_size=100 --
data_aug
Data augmentation activated!
Files already downloaded and verified
Files already downloaded and verified
Training CnnVanilla on cifar10 for 20 epochs
```

Finished training.

Accuracy (or Dice for UNet) on the test set: 82.780 %

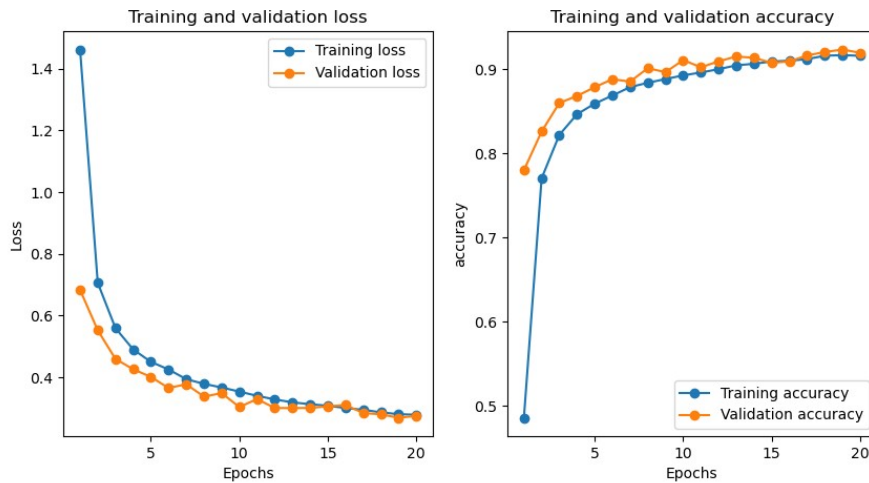
3. `--model=CnnVanilla --dataset=svhn --num-epochs=20 --batch_size=100`



```
((ift725) simon@alien:~/tp3/src$ python train.py --model=CnnVanilla --dataset=svhn --num-epochs=20 --batch_size=100
Data augmentation NOT activated!
Using downloaded and verified file: ../data/train_32x32.mat
Using downloaded and verified file: ../data/test_32x32.mat
Training CnnVanilla on svhn for 20 epochs
```

Finished training.
Accuracy (or Dice for UNet) on the test set: 90.627 %

4. `--model=CnnVanilla --dataset=svhn --num-epochs=20 --batch_size=100 --data_aug`

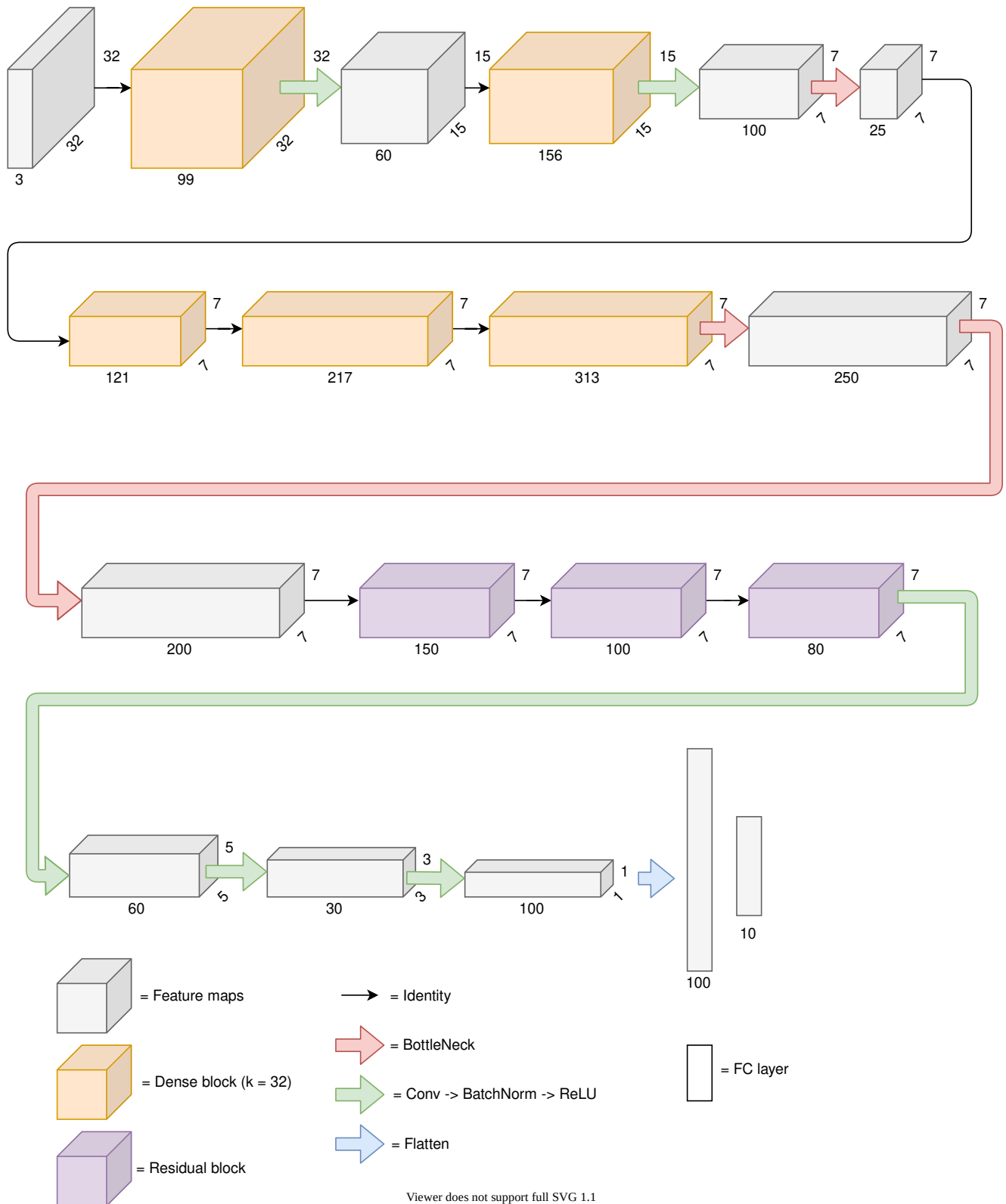


```
((ift725) simon@alien:~/tp3/src$ python train.py --model=CnnVanilla --dataset=svhn --num-epochs=20 --batch_size=100 --
data_aug
Data augmentation activated!
Using downloaded and verified file: ../data/train_32x32.mat
Using downloaded and verified file: ../data/test_32x32.mat
Training CnnVanilla on svhn for 20 epochs
```

Finished training.
Accuracy (or Dice for UNet) on the test set: 82.636 %

Question 2

Représentation graphique du réseau IFT725Net



Courbes d'apprentissage et de validation

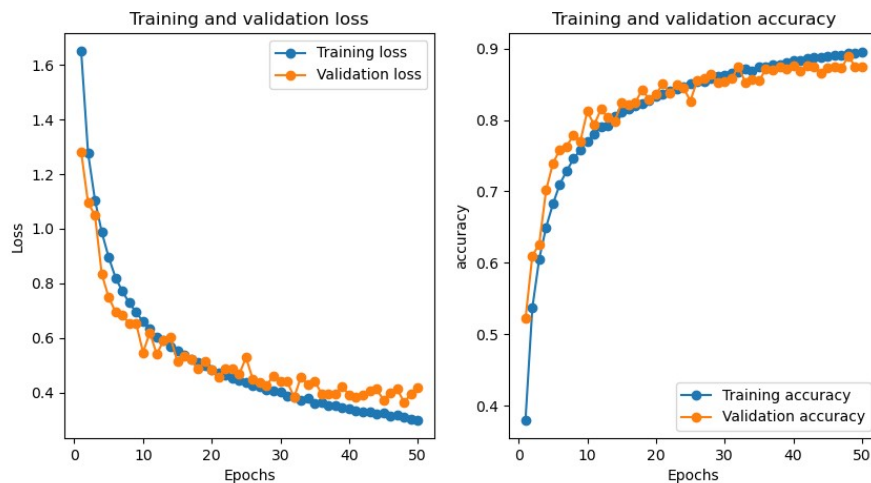
1. `--model=IFT725Net --dataset=cifar10 --num-epochs=50 --batch_size=100 --data_aug`



```
(ift725) nicolas@alien:~/Documents/IFT780/tp3/src$ python train.py --model=IFT725Net --num-epochs=50 --dataset=cifar10 --  
batch_size=100 --data_aug  
Data augmentation activated!  
Files already downloaded and verified  
Files already downloaded and verified  
Training IFT725Net on cifar10 for 50 epochs
```

Finished training.
Accuracy (or Dice for UNet) on the test set: 86.520 %

2. `--model=CnnVanilla --dataset=cifar10 --num-epochs=50 --batch_size=100 --data_aug`



```
(ift725) nicolas@alien:~/Documents/IFT780/tp3/src$ python train.py --model=CnnVanilla --num-epochs=50 --dataset=cifar10 --  
batch_size=100 --data_aug  
Data augmentation activated!  
Files already downloaded and verified  
Files already downloaded and verified  
Training CnnVanilla on cifar10 for 50 epochs
```

Finished training.
Accuracy (or Dice for UNet) on the test set: 84.650%