


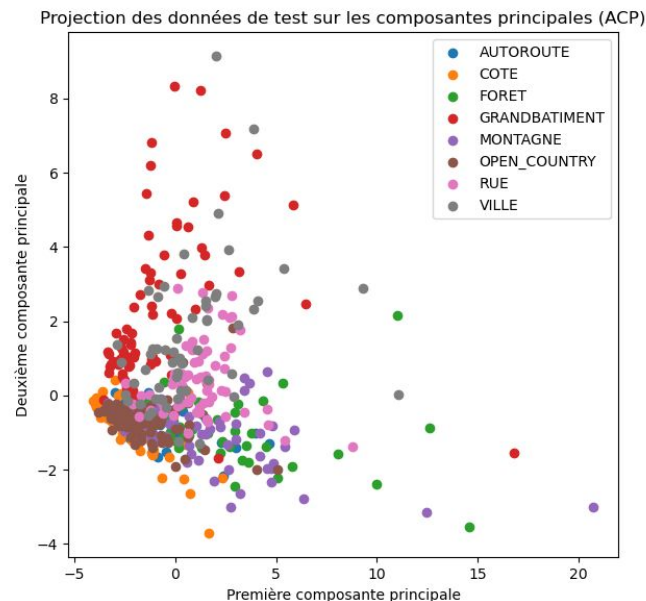
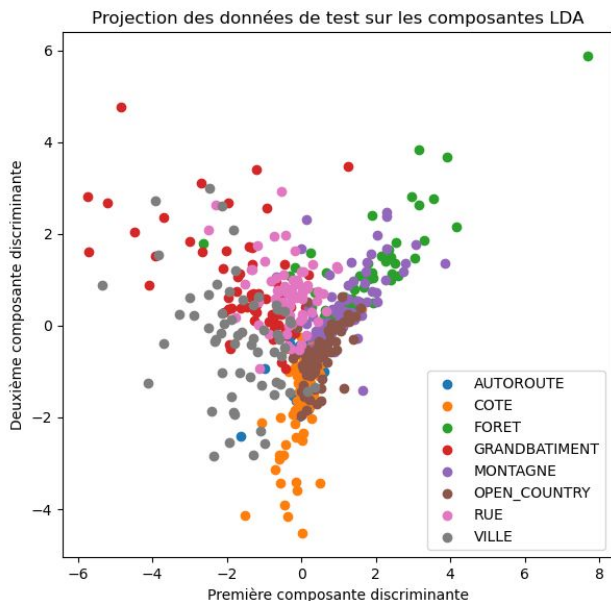
Classification automatique supervisée d'images naturelles et artificielles



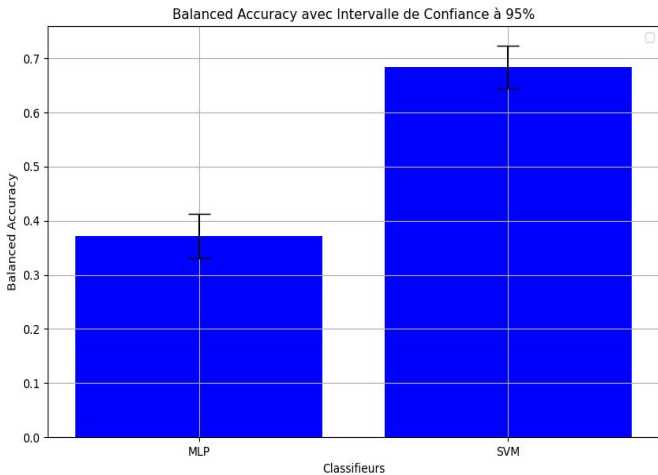
Apprentissage Automatique
Group 9

Ana PAVANELLI
André PEREIRA
Anthony VICTOR
Roxane KOUAME

Première partie : Machine learning classique

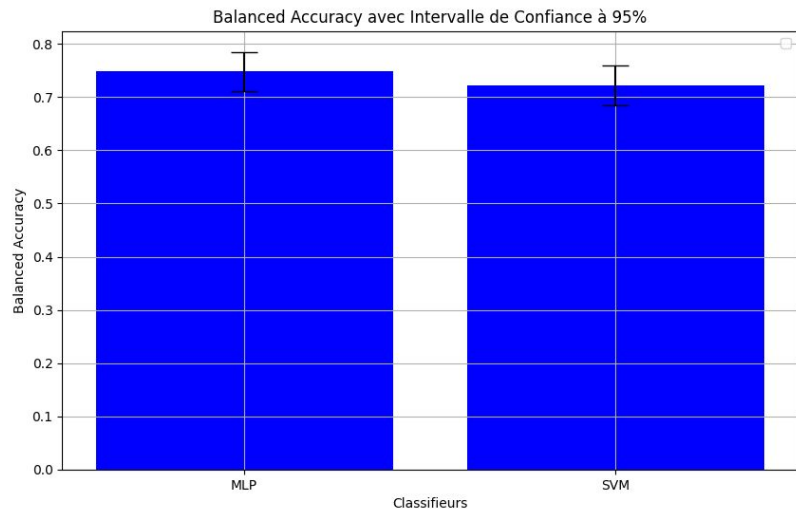


Comparaison des modèles traditionnels (SVM vs MLP)



N° de neurones = 1
Function d'activation='relu'
Alpha = 0.1
Solve r='lbfgs'
Learning rate = 'constant'

C = 2
Decision_function_shape: 'ovr'
Gamma: 'scale',
Noyau: 'rbf'

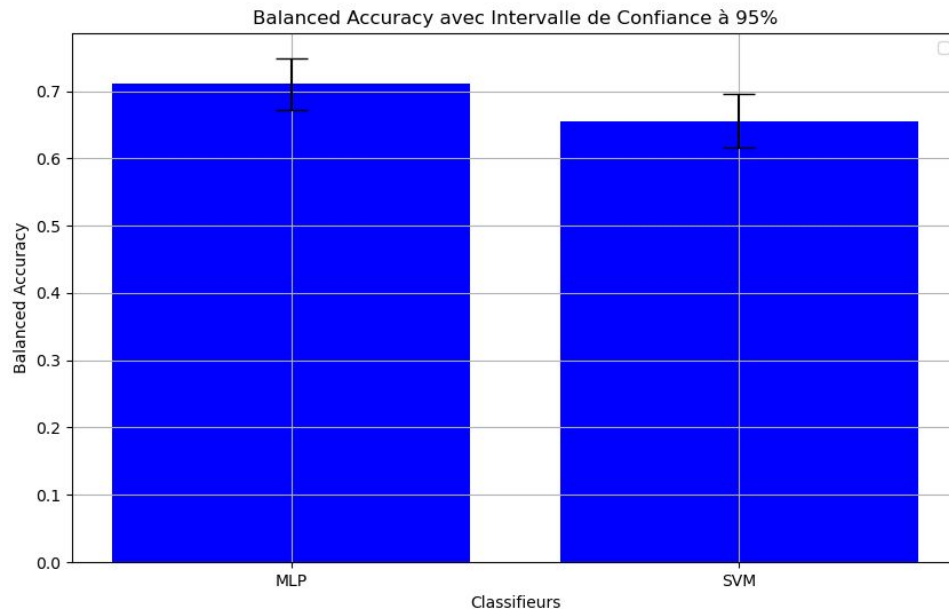


N° de neurones = 200
function d'activation='relu'
alpha = 0.0001
solver = adam
learning rate = 'constant'

C = 100
decision_function_shape: "ovo"
gamma: 'scale',
Noyau: 'linear'

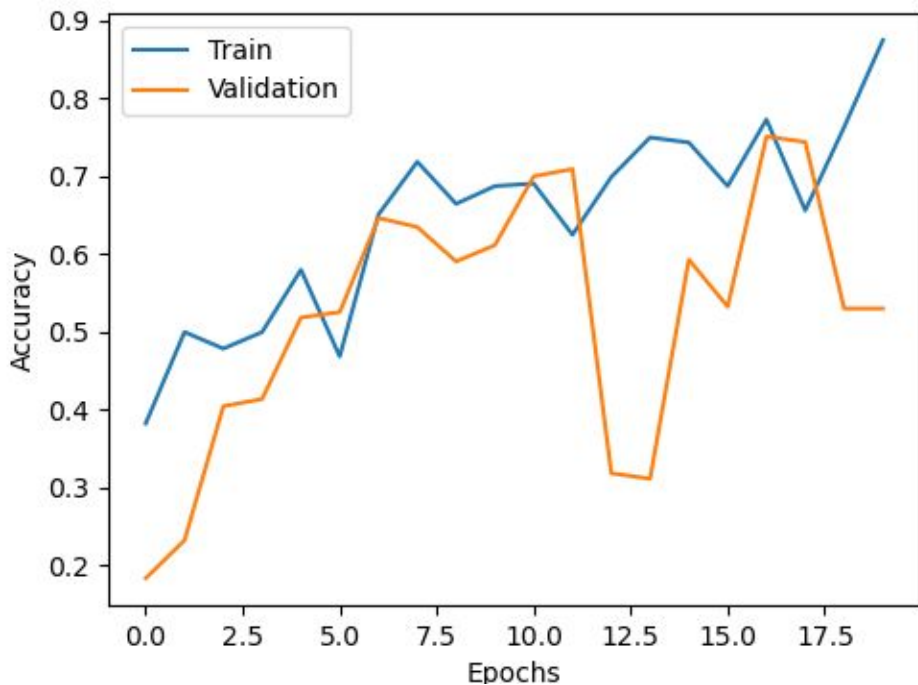
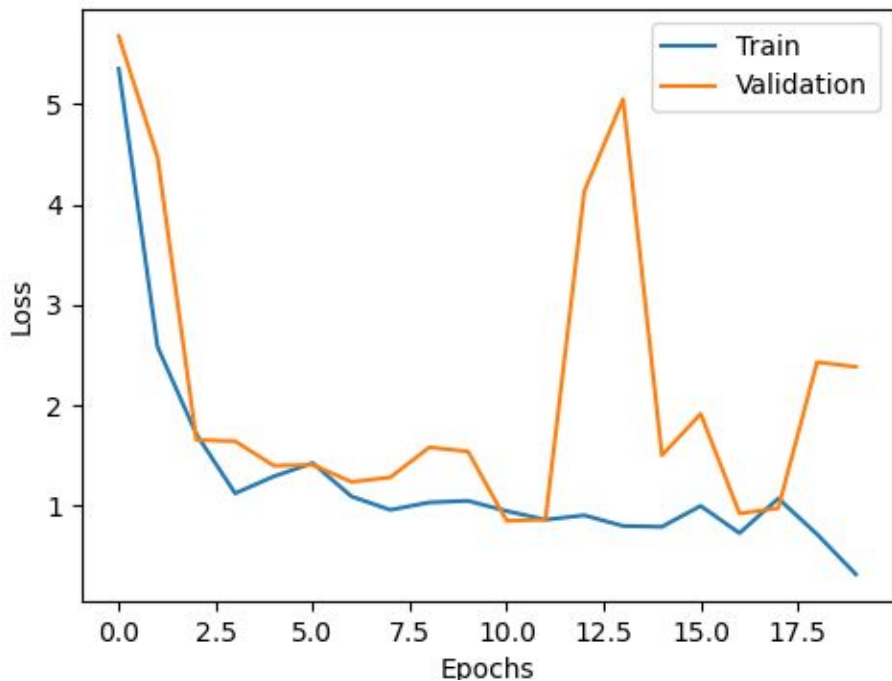
| Selon figure 2 | Balanced Accuracy | Intervalle de confiance 95% |
|----------------|-------------------|-----------------------------|
| MLP | 74,83% | 71,16% - 78,50% (+/- 3,66%) |
| SVM | 72,25% | 68,46% - 76,03% (+/- 3,78%) |

Impact de la suppression des 3 dernières caractéristiques

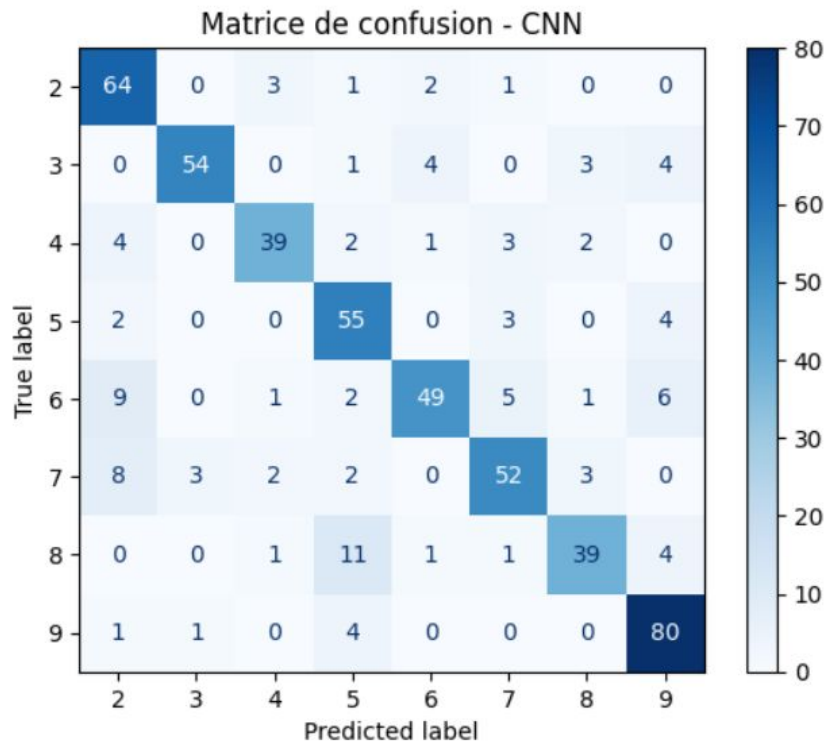


| Sans les 3 dernières caractéristiques | Balanced Accuracy | Intervalle de confiance 95% |
|---------------------------------------|-------------------|-----------------------------|
| MLP | 71,06 % | 67.24% - 74.89% (+/- 3,82%) |
| SVM | 65,58 % | 61.56% - 69.59% (+/- 4,02%) |

Deuxième partie : Deep Learning – CNN

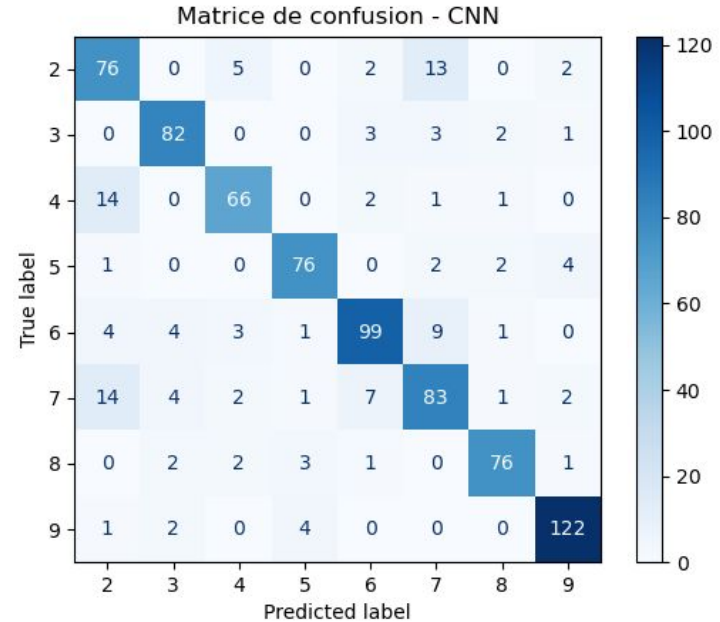
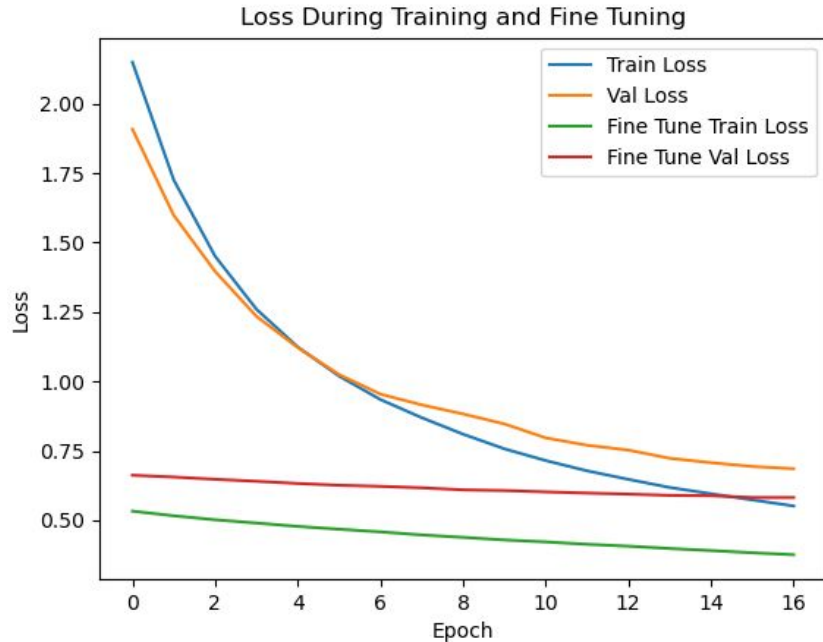


Deuxième partie : Deep Learning – CNN



CNN Balanced Accuracy = 0.797 +- 0.03401885914890864

Le Transfert Learning et Fine-Tuning



Sur la base de test:

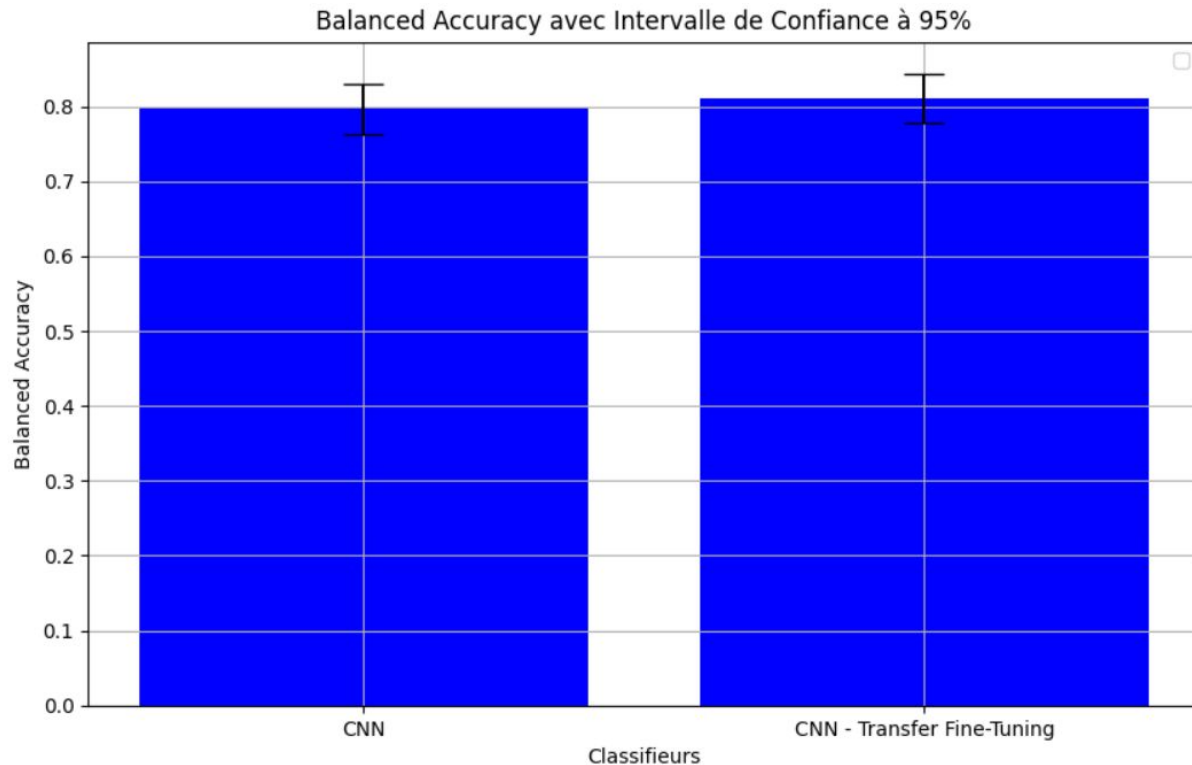
Bien classées par Transfert Learning = 669 sur 806, donc accuracy de **83%**

Bien classées après fine-tuning = 692 sur 807, donc précision de **86%**

Intervalle de confiance de la Balanced Accuracy à 95% par Transfert Learning: **78.67% - 84.19% (+/- 2.76%)**

Intervalle de confiance de la Balanced Accuracy à 95% par Transfert Learning: **81.17% - 86.27% (+/- 2.55%)**

CNN Vs CNN Transfer Learning Fine-Tuning



Conclusion



Grand
Bâtiment



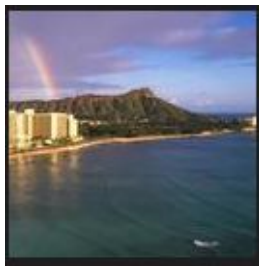
Autoroute



Montagne



Grand
Bâtiment



Côte