Compound Loss Function Variants

Goal: To find the ideal weights for the compound loss functions variants, the recommended variants were:

- Wassertein + CE + Normal Consistency Loss + Dice Loss
- Hausdorff + CE + Normal Consistency Loss + Dice Loss

Dataset Used: https://www.creatis.insa-lyon.fr/Challenge/acdc/databases.html

Model Used: SwinTransformer

Initial grid search to find the best weights for the compound loss functions:

Compound Loss Function:
w1(Wassertein/Hausdorff)+w2(CE)+w3(NCL)+w4(Dice)

```
candidate_weights = [
    (0.25, 0.25, 0.25, 0.25),
    (0.20, 0.30, 0.30, 0.20),
    (0.30, 0.20, 0.20, 0.30),
    (0.10, 0.40, 0.40, 0.10)
]

weights[0]*ce + weights[1]*nc + weights[2]*hd + weights[3]*dice
(or)
weights[0]*ce + weights[1]*nc + weights[2]*wd + weights[3]*dice
```

Variant 1 Results (15 Epochs - Hausdorff):

Weights Combination	Dice
(0.25, 0.25, 0.25, 0.25)	0.7596

Weights Combination	Dice
(0.2, 0.3, 0.3, 0.2)	0.7590
(0.3, 0.2, 0.2, 0.3)	**0.7608**
(0.1, 0.4, 0.4, 0.1)	0.7589 (8 Epochs)

Variant 2 Results (15 Epochs - Wasserstein):

Weights Combination	Dice
(0.25, 0.25, 0.25, 0.25)	0.7587
(0.2, 0.3, 0.3, 0.2)	0.7654
(0.3, 0.2, 0.2, 0.3)	**0.7843**
(0.1, 0.4, 0.4, 0.1)	0.7588