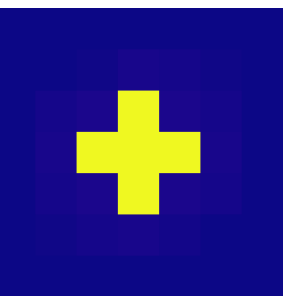
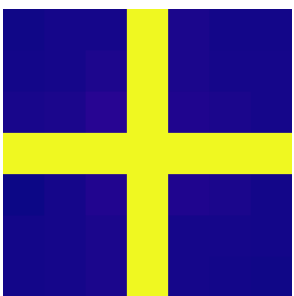


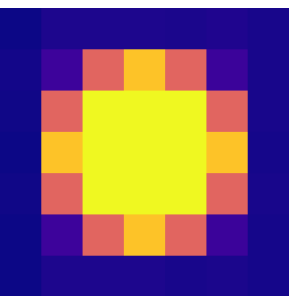
Opération : **ouverture**
Jeu : **MNIST**



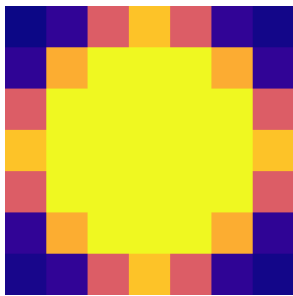
cross3



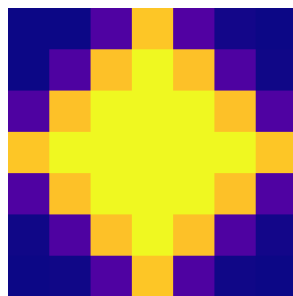
cross7



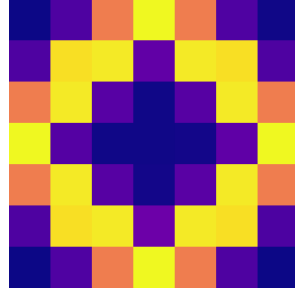
disk2



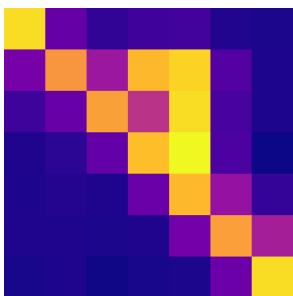
disk3



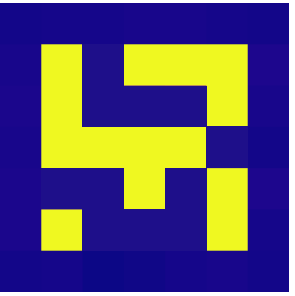
diamond3



complex



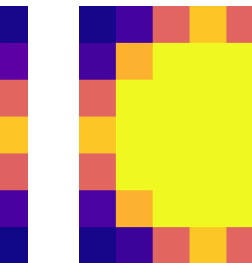
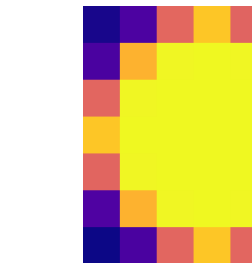
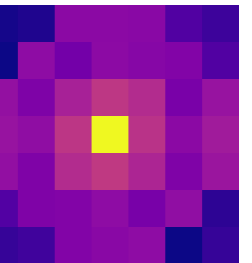
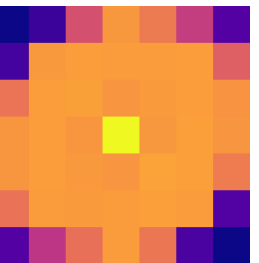
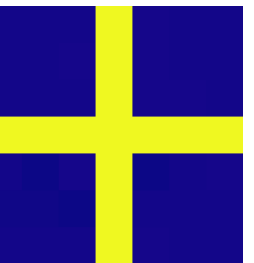
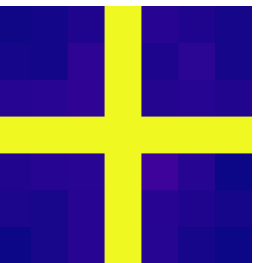
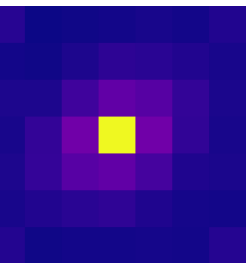
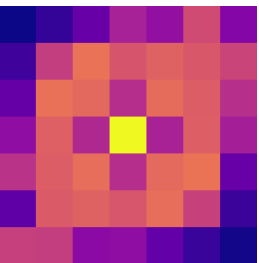
adiag



brand

Sans partage

w_1/w_2



α_1

-0.53 ± 0.001

-29.67 ± 0.02

-1.12 ± 0.001

-33.94 ± 0.46

-45.34 ± 0.04

-21.71 ± 0.04

-6.64 ± 2.32

-30.00 ± 0.06

α_2

-5.18 ± 0.008

47.32 ± 0.06

-0.63 ± 0.003

52.63 ± 0.07

54.49 ± 0.02

17.00 ± 0.01

-0.63 ± 0.06

49.47 ± 0.03

RMSE₁

$0.46 \pm 9 \times 10^{-4}$

$0.04 \pm 9 \times 10^{-3}$

$0.44 \pm 2 \times 10^{-3}$

$0.02 \pm 1 \times 10^{-2}$

$0.02 \pm 7 \times 10^{-3}$

$0.11 \pm 3 \times 10^{-3}$

$0.42 \pm 3 \times 10^{-2}$

$0.09 \pm 4 \times 10^{-3}$

RMSE₂

$0.23 \pm 1 \times 10^{-3}$

$0.01 \pm 5 \times 10^{-3}$

$0.36 \pm 1 \times 10^{-3}$

$0.02 \pm 8 \times 10^{-3}$

$0.01 \pm 1 \times 10^{-3}$

$0.05 \pm 6 \times 10^{-3}$

$0.41 \pm 3 \times 10^{-3}$

$0.02 \pm 8 \times 10^{-3}$

LOSS

$4.7 \times 10^{-3} \pm 9 \times 10^{-6}$

$1.6 \times 10^{-6} \pm 5 \times 10^{-7}$

$3.5 \times 10^{-3} \pm 7 \times 10^{-5}$

$1.9 \times 10^{-6} \pm 8 \times 10^{-7}$

$1.8 \times 10^{-6} \pm 4 \times 10^{-7}$

$6.9 \times 10^{-6} \pm 1 \times 10^{-6}$

$1.6 \times 10^{-3} \pm 9 \times 10^{-5}$

$2.1 \times 10^{-6} \pm 5 \times 10^{-7}$

EPOCHS

22 ± 7

32 ± 5

24 ± 7

39 ± 8

37 ± 6

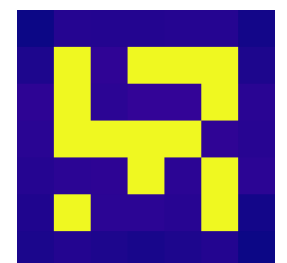
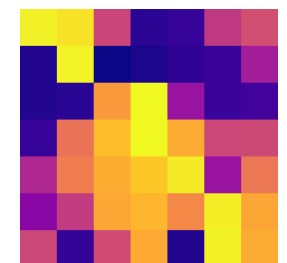
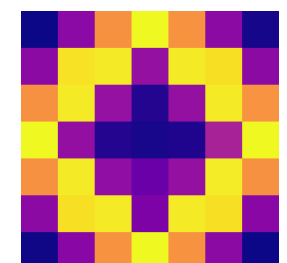
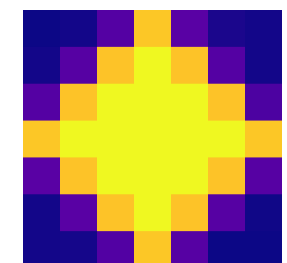
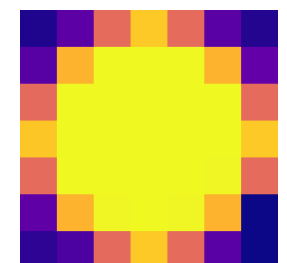
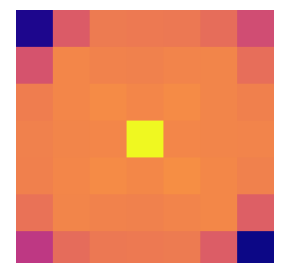
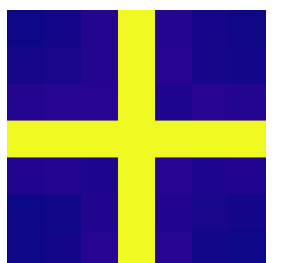
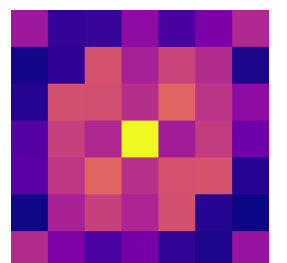
37 ± 6

42 ± 14

34 ± 4

Partage dur

w



α_1

-0.51 ± 0.003

-30.28 ± 0.02

-1.04 ± 0.002

-32.29 ± 1.91

-45.09 ± 0.01

-29.70 ± 0.06

-4.31 ± 0.32

-23.85 ± 1.47

α_2

-1.17 ± 0.003

47.80 ± 0.05

-0.49 ± 0.002

52.06 ± 2.32

55.93 ± 0.01

19.05 ± 0.03

-0.38 ± 0.03

40.69 ± 2.29

RMSE

$0.37 \pm 1 \times 10^{-3}$

$0.03 \pm 2 \times 10^{-3}$

$0.47 \pm 2 \times 10^{-3}$

$0.03 \pm 4 \times 10^{-3}$

$0.02 \pm 5 \times 10^{-3}$

$0.10 \pm 2 \times 10^{-3}$

$0.48 \pm 1 \times 10^{-2}$

$0.04 \pm 4 \times 10^{-3}$

LOSS

$5.5 \times 10^{-3} \pm 5 \times 10^{-5}$

$1.6 \times 10^{-6} \pm 4 \times 10^{-7}$

$3.6 \times 10^{-3} \pm 1 \times 10^{-4}$

$1.9 \times 10^{-6} \pm 9 \times 10^{-8}$

$1.8 \times 10^{-6} \pm 9 \times 10^{-7}$

$5.7 \times 10^{-6} \pm 9 \times 10^{-7}$

$2.1 \times 10^{-3} \pm 1 \times 10^{-5}$

$2.1 \times 10^{-6} \pm 4 \times 10^{-7}$

EPOCHS

21 ± 2

36 ± 7

29 ± 9

35 ± 5

40 ± 5

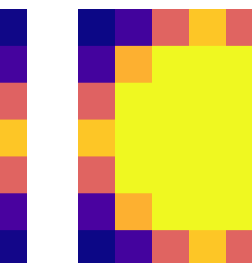
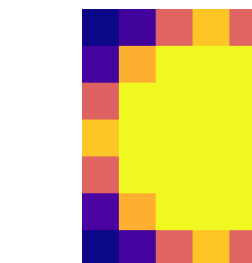
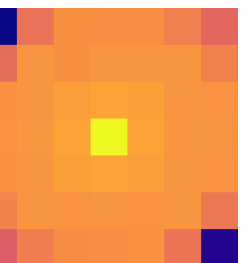
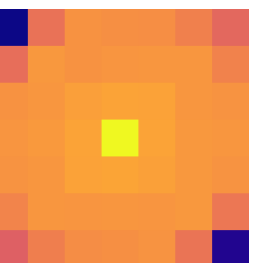
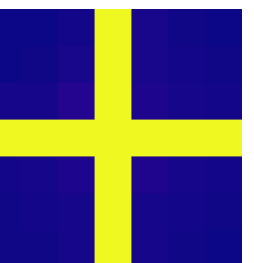
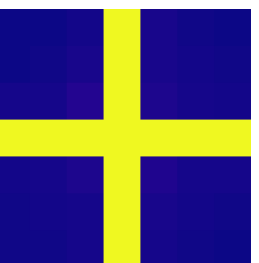
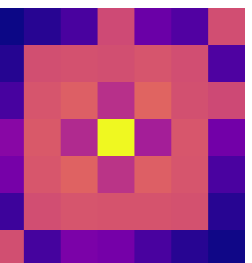
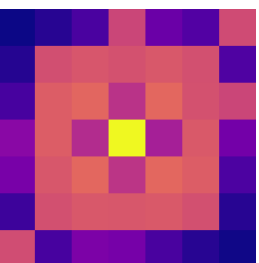
37 ± 2

31 ± 8

35 ± 6

Partage doux

w_1/w_2



α_1

-0.52 ± 0.002

-29.98 ± 0.04

-1.21 ± 0.01

-34.89 ± 0.02

-45.51 ± 0.01

-23.24 ± 0.03

-3.70 ± 0.008

-29.35 ± 0.10

α_2

-5.25 ± 0.011

47.58 ± 0.01

-0.61 ± 0.01

53.79 ± 0.03

55.07 ± 0.01

17.55 ± 0.05

-0.36 ± 0.003

49.59 ± 0.05

RMSE₁

$0.43 \pm 3 \times 10^{-4}$

$0.01 \pm 2 \times 10^{-3}$

$0.53 \pm 1 \times 10^{-2}$

$0.004 \pm 6 \times 10^{-4}$

$0.005 \pm 2 \times 10^{-3}$

$0.11 \pm 7 \times 10^{-4}$

$0.51 \pm 5 \times 10^{-4}$

$0.05 \pm 2 \times 10^{-3}$

RMSE₂

$0.42 \pm 2 \times 10^{-3}$

$0.01 \pm 2 \times 10^{-3}$

$0.53 \pm 1 \times 10^{-2}$

$0.004 \pm 6 \times 10^{-4}$

$0.005 \pm 2 \times 10^{-3}$

$0.11 \pm 7 \times 10^{-4}$

$0.51 \pm 4 \times 10^{-4}$

$0.05 \pm 2 \times 10^{-3}$

LOSS

$4.9 \times 10^{-3} \pm 3 \times 10^{-5}$

$1.5 \times 10^{-6} \pm 6 \times 10^{-7}$

$3.6 \times 10^{-3} \pm 3 \times 10^{-5}$

$1.4 \times 10^{-6} \pm 4 \times 10^{-7}$

$1.5 \times 10^{-6} \pm 4 \times 10^{-7}$

$5.1 \times 10^{-6} \pm 5 \times 10^{-7}$

$2.0 \times 10^{-3} \pm 2 \times 10^{-5}$

$1.6 \times 10^{-6} \pm 5 \times 10^{-7}$

EPOCHS

18 ± 2

37 ± 6

17 ± 4

34 ± 5

44 ± 3

39 ± 6

37 ± 6

36 ± 9