

lista4

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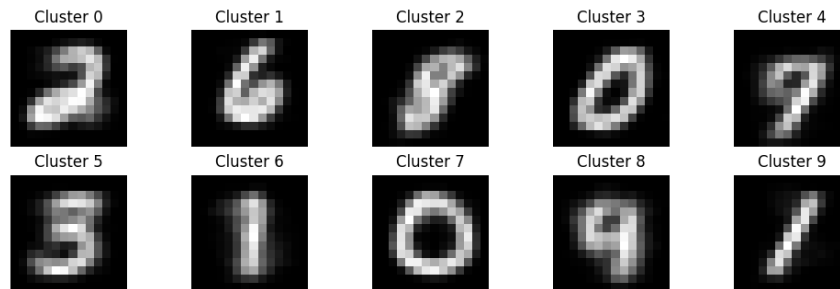
June 20, 2025

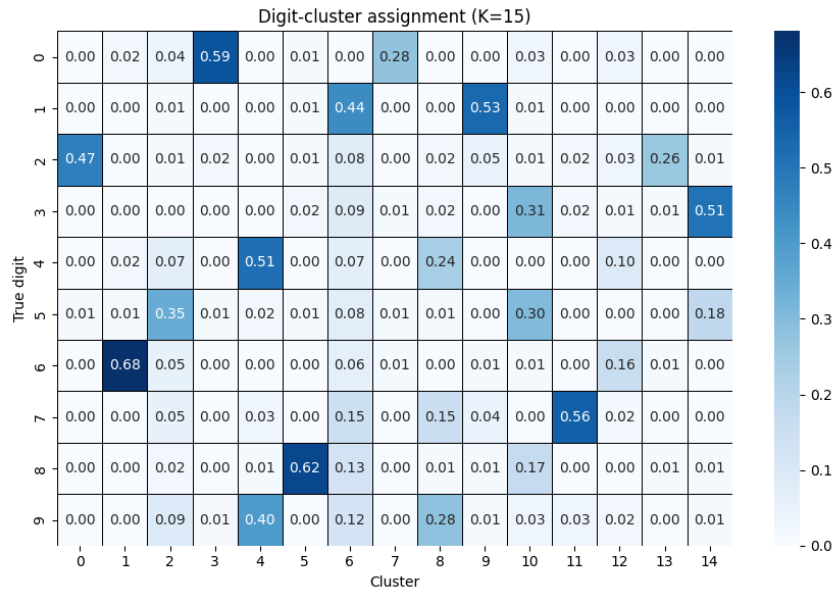
1 Zadanie

```
(venv) pawked@pawkedcomp:~/Pulpit/lab4/zad1$ python zad1.py
K=10 - Best inertia: 6622.91
K=15 - Best inertia: 5928.53
K=20 - Best inertia: 5541.90
K=30 - Best inertia: 5078.98
```

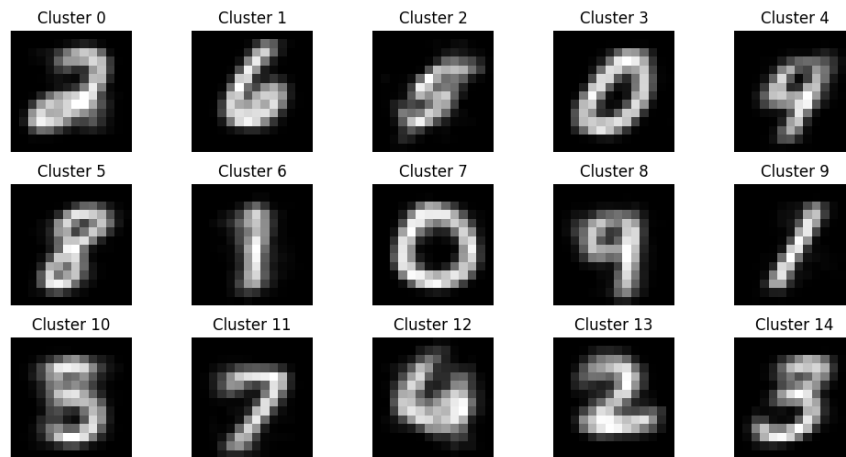


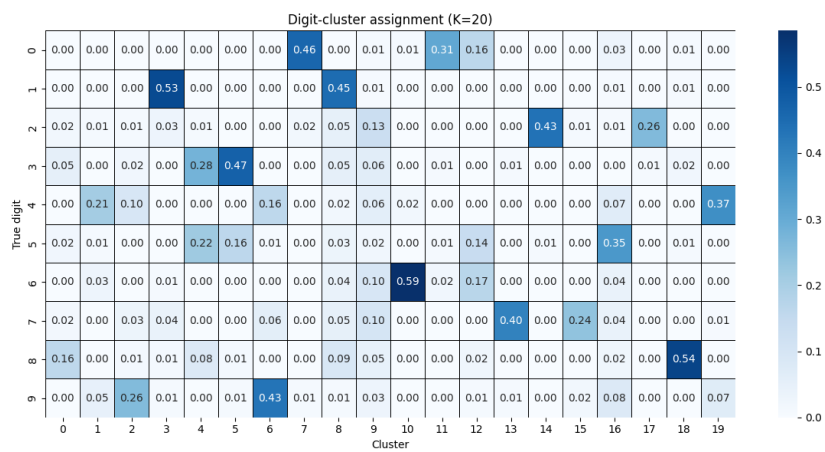
Centroids (K=10)



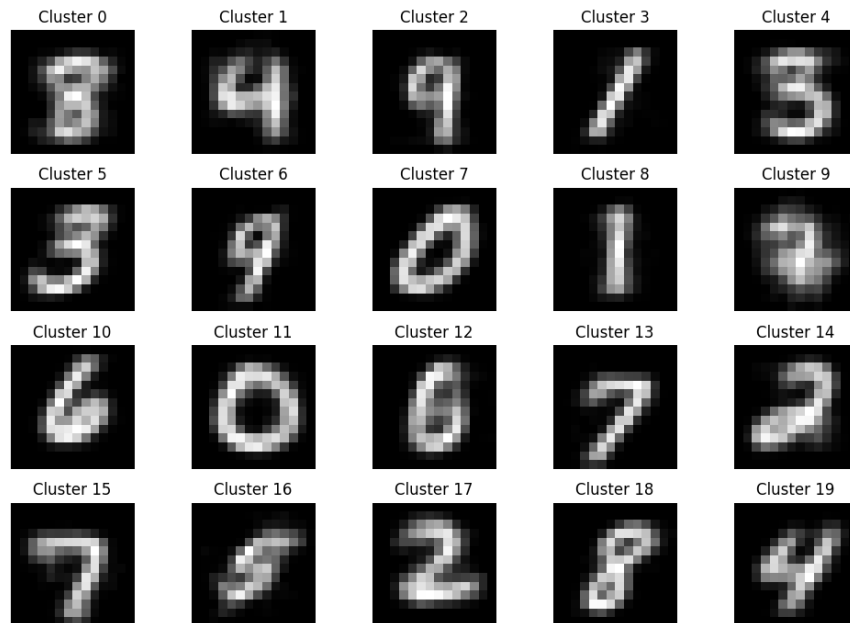


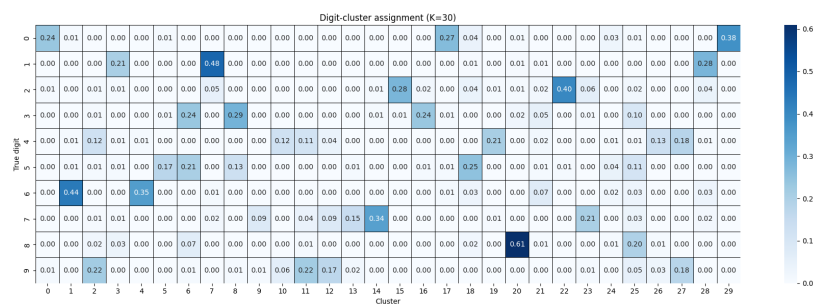
Centroids (K=15)



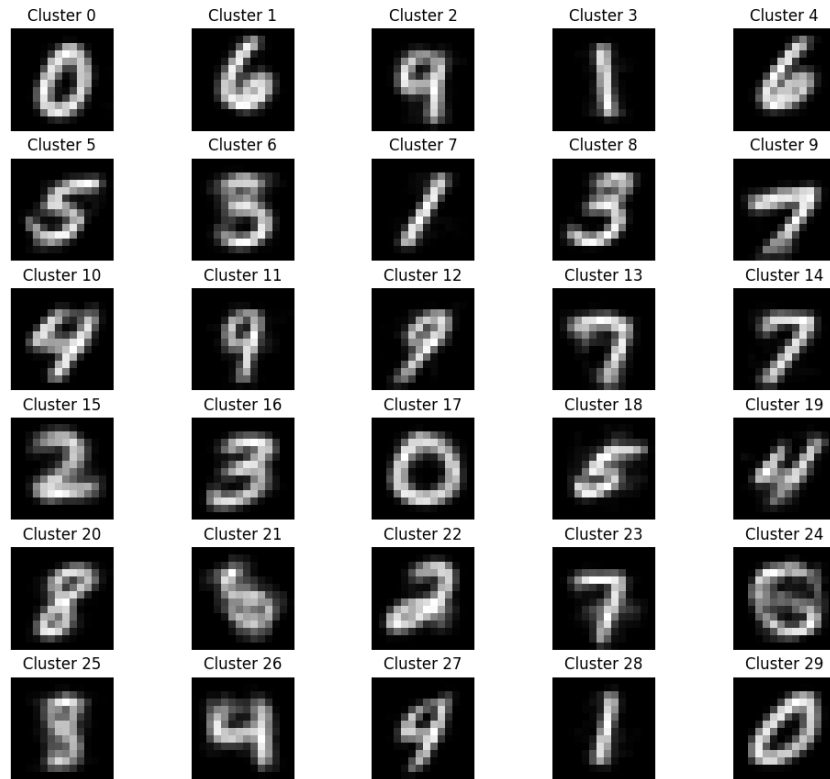


Centroids (K=20)





Centroids (K=30)



2 Zadanie

```
avg_pooling_test_parameters = [  
    (9, 1.1), (9, 1.15), (9, 1.22),  
    (9, 1.4), (9, 1.45), (9, 1.5),  
    (14, 1.2), (14, 1.28), (14, 1.32),  
    (14, 1.65), (14, 1.7), (14, 1.74),  
    (22, 1.28), (22, 1.33), (22, 1.39),  
    (22, 1.85), (22, 1.92), (22, 1.98),  
    (28, 1.3), (28, 1.38), (28, 1.43),  
    (28, 2.1), (28, 2.18), (28, 2.26),  
    (48, 1.35), (48, 1.43), (48, 1.48),  
    (48, 2.2), (48, 2.35), (48, 2.45),  
    (70, 1.42), (70, 1.48), (70, 1.53),  
    (70, 2.3), (70, 2.48), (70, 2.58),  
    (98, 1.48), (98, 1.52), (98, 1.58),  
    (98, 2.55), (98, 2.65), (98, 2.75)  
]  
max_pooling_test_parameters = [  
    (11, 1.25), (11, 1.33), (11, 1.42),  
    (11, 1.6), (11, 1.68), (11, 1.76),  
    (16, 1.35), (16, 1.43), (16, 1.52),  
    (16, 1.9), (16, 2.0), (16, 2.08),  
    (21, 1.45), (21, 1.53), (21, 1.62),  
    (21, 2.12), (21, 2.2), (21, 2.28),  
    (32, 1.6), (32, 1.68), (32, 1.76),  
    (32, 2.35), (32, 2.45), (32, 2.55),  
    (52, 1.82), (52, 1.9), (52, 1.98),  
    (52, 2.65), (52, 2.75), (52, 2.85),  
    (72, 1.95), (72, 2.05), (72, 2.15),  
    (72, 2.88), (72, 2.95), (72, 3.05),  
    (98, 2.1), (98, 2.18), (98, 2.26),  
    (98, 3.0), (98, 3.1), (98, 3.2)  
]
```

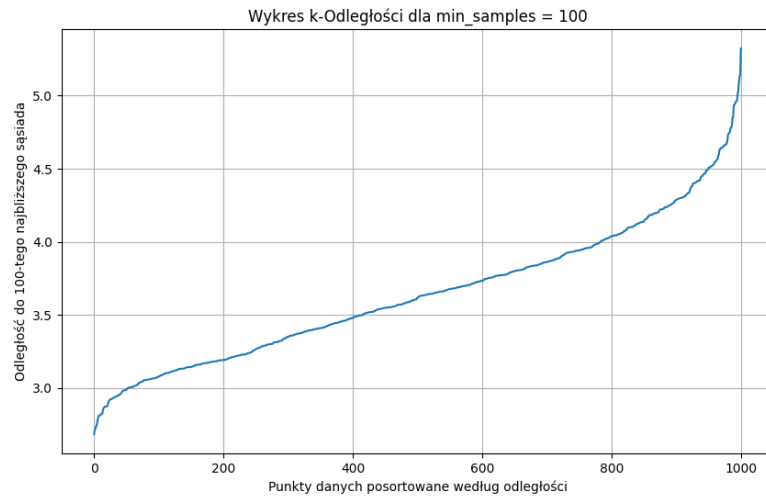
```
(venv) pawked@pawkedcomp:~/Pulpit/lab4/zad2$ python zad2.py  
  
--- Running DBSCAN for min_samples=9, eps=1.10 ---  
--- Running DBSCAN for min_samples=9, eps=1.15 ---  
--- Running DBSCAN for min_samples=9, eps=1.22 ---  
--- Running DBSCAN for min_samples=9, eps=1.40 ---  
--- Running DBSCAN for min_samples=9, eps=1.45 ---  
--- Running DBSCAN for min_samples=9, eps=1.50 ---
```

```
--- Running DBSCAN for min_samples=14, eps=1.20 ---  
--- Running DBSCAN for min_samples=14, eps=1.28 ---  
--- Running DBSCAN for min_samples=14, eps=1.32 ---  
--- Running DBSCAN for min_samples=14, eps=1.65 ---  
--- Running DBSCAN for min_samples=14, eps=1.70 ---  
--- Running DBSCAN for min_samples=14, eps=1.74 ---  
--- Running DBSCAN for min_samples=22, eps=1.28 ---  
--- Running DBSCAN for min_samples=22, eps=1.33 ---  
--- Running DBSCAN for min_samples=22, eps=1.39 ---  
--- Running DBSCAN for min_samples=22, eps=1.85 ---  
--- Running DBSCAN for min_samples=22, eps=1.92 ---  
--- Running DBSCAN for min_samples=22, eps=1.98 ---  
--- Running DBSCAN for min_samples=28, eps=1.30 ---  
--- Running DBSCAN for min_samples=28, eps=1.38 ---  
--- Running DBSCAN for min_samples=28, eps=1.43 ---  
--- Running DBSCAN for min_samples=28, eps=2.10 ---  
--- Running DBSCAN for min_samples=28, eps=2.18 ---  
--- Running DBSCAN for min_samples=28, eps=2.26 ---
```

```
--- Running DBSCAN for min_samples=48, eps=1.35 ---  
--- Running DBSCAN for min_samples=48, eps=1.43 ---  
--- Running DBSCAN for min_samples=48, eps=1.48 ---  
--- Running DBSCAN for min_samples=48, eps=2.20 ---  
--- Running DBSCAN for min_samples=48, eps=2.35 ---  
--- Running DBSCAN for min_samples=48, eps=2.45 ---  
--- Running DBSCAN for min_samples=70, eps=1.42 ---
```

```
--- Running DBSCAN for min_samples=70, eps=1.48 ---  
--- Running DBSCAN for min_samples=70, eps=1.53 ---  
--- Running DBSCAN for min_samples=70, eps=2.30 ---  
--- Running DBSCAN for min_samples=70, eps=2.48 ---  
--- Running DBSCAN for min_samples=70, eps=2.58 ---  
--- Running DBSCAN for min_samples=98, eps=1.48 ---  
--- Running DBSCAN for min_samples=98, eps=1.52 ---  
--- Running DBSCAN for min_samples=98, eps=1.58 ---  
--- Running DBSCAN for min_samples=98, eps=2.55 ---  
--- Running DBSCAN for min_samples=98, eps=2.65 ---  
--- Running DBSCAN for min_samples=98, eps=2.75 ---
```

min	eps	n_clusters	%_noise	Time (s)
9	1.1	2	96.2	0.19
9	1.15	2	95.6	0.18
9	1.22	2	94.6	0.17
9	1.4	3	91.1	0.18
9	1.45	2	90.7	0.17
9	1.5	1	90.2	0.18
14	1.2	1	97.2	0.18
14	1.28	1	95.8	0.18
14	1.32	1	95.6	0.17
14	1.65	1	90.2	0.17
14	1.7	1	89.7	0.18
14	1.74	1	89.6	0.18
22	1.28	1	97.2	0.17
22	1.33	1	96.6	0.18
22	1.39	1	96.6	0.17
22	1.85	1	89.3	0.18
22	1.92	1	89.1	0.18
22	1.98	1	88.5	0.18
28	1.3	0	100	0.17
28	1.38	1	96.9	0.17
28	1.43	1	96.8	0.18
28	2.1	1	87.7	0.18
28	2.18	1	87.2	0.18
28	2.26	1	86.5	0.18
48	1.35	0	100	0.17
48	1.43	0	100	0.17
48	1.48	0	100	0.17
48	2.2	1	92.6	0.18
48	2.35	1	86.5	0.17
48	2.45	1	85.4	0.18
70	1.42	0	100	0.17
70	1.48	0	100	0.17
70	1.53	0	100	0.17
70	2.3	0	100	0.17
70	2.48	1	90.4	0.18
70	2.58	1	85.5	0.17
98	1.48	0	100	0.17
98	1.52	0	100	0.18
98	1.58	0	100	0.18
98	2.55	0	100	0.18
98	2.65	1	90.2	0.18
98	2.75	1	80.7	0.2



Cluster Centroids (After Average Pooling)

