**Changing Subclustering Architecture**

* Better understanding of the code:
  + main files: DeepDPM, clusternetasmodel, classifiers
  + main args (gpus, use\_labels\_for\_eval)
  + log
* Go deep – **Clustering net**:
  + Map Supplemental Material (chapter 7):
    - input layer, a single hidden layer, and an output layer
    - The number of hidden units was always 50 in all our experiments (changing that number had little effect on the results).
    - The (changing) number of neurons in the output layer was K
* Go deep - **Subclustring net**:
  + SHAPE is input dim(from clustering net) -> Hidden\_dim \* K -> 2 \* K
  + 2 FC layes
  + Hidden\_dim = 50 is hard coded
  + detach different subclustering nets - zeroing out the weights connecting between different subnets. And also zero their gradient
  + Basic changes I done:
    - 1- Run:
      * Mnist, Initial K = 1
      * Hidden\_dim = 50
      * Add dropout layers between the Fc layers with drop = 0.5
      * ->Subclustring Params: 652
      * Result: NMI: 0.94161, ARI: 0.95366, acc: 0.9787, final K: 10
    - 2- Run:
      * Mnist, Initial K = 1
      * Hidden\_dim = 75
      * Add dropout layers between the Fc layers with drop = 0.5
      * ->Subclustring Params:977 (13 params for each additional neuron?)
      * Result: NMI: 0.94165, ARI: 0.95372, acc: 0.97873, final K: 10
    - 3- Run:
      * Fashion imbalanced, Initial K = 1
      * Hidden\_dim = 75
      * Add dropout layers between the Fc layers with drop = 0.5
      * ->Subclustring Params:977
      * NMI: 0.64168, ARI: 0.49487, acc: 0.60146, final K: 10
    - 4- Run:
      * Fashion imbalanced, Initial K = 1
      * Hidden\_dim = 75
      * Add dropout layers between the Fc layers with drop = 0.2
      * ->Subclustring Params:977
      * NMI: 0.6437, ARI: 0.49242, acc: 0.5972, final K: 9
    - 5- Run:
      * EPOCHS: 700
      * Fashion imbalanced, Initial K = 1
      * Hidden\_dim = 75
      * Add dropout layers between the Fc layers with drop = 0.2
      * ->Subclustring Params:977
      * NMI: 0.64513, ARI: 0.4967, acc: 0.61412, final K: 9
  + Advanced Changes:
    - **Adding one more layer of hidden dim neurons (updating merge and split according to that)**
    - 1 – Run:
      * Mnist, Initial K = 1
      * Epochs = 600
      * Hidden\_dim = 50
      * Drop = 0
      * >Subclustring Params: 3200
      * NMI: 0.86102, ARI: 0.69085, acc: 0.78364, final K: 8
    - 2 – Run:
      * Mnist, Initial K = 1
      * Epochs = 500
      * Hidden\_dim = 25
      * Drop = 0
      * >Subclustring Params: 3200
      * NMI: 0.94162, ARI: 0.95369, acc: 0.97871, final K: 10
    - 3 – Run:
      * Mnist, Initial K = 1
      * Epochs = 500
      * Hidden\_dim = 25
      * Drop = 0.3 (between dc1,fc2)
      * >Subclustring Params: 977
      * NMI: 0.94161, ARI: 0.95366, acc: 0.9787, final K: 10
    - 4 – Run:
      * Mnist\_IMBALANCED, Initial K = 1
      * Epochs = 500
      * Hidden\_dim = 25
      * Drop = 0.3 (between dc1,fc2)
      * >Subclustring Params: 977
      * NMI: 0.95029, ARI: 0.97132, acc: 0.98237, final K: 10
    - 5 – Run:
      * Mnist\_IMBALANCED, Initial K = 1
      * Epochs = 500
      * Hidden\_dim = 15
      * Drop = 0.4 (between dc1,fc2)
      * >Subclustring Params:437
      * NMI: 0.95024, ARI: 0.97113, acc: 0.98245, final K: 10
    - 6 – Run:
      * Fashion\_IMBALANCED, Initial K = 1
      * Epochs = 500
      * Hidden\_dim = 15
      * Drop = 0.4 (between dc1,fc2)
      * >Subclustring Params:437
      * NMI: 0.64681, ARI: 0.49417, acc: 0.60761, final K: 8
    - 7– Run:
      * Fashion\_IMBALANCED, Initial K = 1
      * Epochs = 700
      * Hidden\_dim = 25
      * Drop = 0.4 (between dc1,fc2)
      * >Subclustring Params: 977
      * 0.64645, ARI: 0.49401, acc: 0.60795, final K: 8
    - 8 – Run:
      * Mnist, Initial K = 1
      * Epochs = 500
      * Hidden\_dim = 15
      * Drop = 0
      * >Subclustring Params: 437
      * NMI: 0.94161, ARI: 0.95366, acc: 0.9787, final K: 10
    - 9 – Run:
      * Mnist, Initial K = 1
      * Epochs = 700
      * Hidden\_dim = 50
      * Tanh instead of relu
      * Drop = 0
      * >Subclustring Params: 3200
      * Problem with merge
    - 10 – Run:
      * Mnist, Initial K = 4
      * Epochs = 700
      * Hidden\_dim = 50
      * Tanh instead of relu
      * Drop = 0
      * NMI: 0.9416, ARI: 0.95366, acc: 0.9787, final K: 10
    - 11- Run:
      * Mnist, Initial K = 1
      * Epochs = 600
      * Hidden\_dim = 50
      * Hidden\_dim (clustering net) = 100
      * Drop = 0
      * NMI: 0.94161, ARI: 0.95366, acc: 0.9787, final K: 10

**Time series Data**

* Upload dl-4-tsc project to our project (branch DLProject\_iss4)
* Changing relative path in main.c
* **Upload TS MedivalImages archive to new folder: /content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages**
* **Train - 381, Test - 760, class - 10**
* First time running: !python /content/Deep\_Learning\_project/dl-4-tsc-master/main.py 'UCRArchive\_2018' 'MedicalImages' mlp \_itr\_1
  + MAP:
    - we get accuracy value (~66) less tan paper value (72.1) when using nb\_epochs=500
    - **I change (hard-coded in mlp.py) to nb\_epochs=1000** and get 71.57
  + FCN: we get similar accuracy (~78)
  + Mcnn:
    - we get similar accuracy (~51)
* Adapting DeepDPM to Time series dataset - Plan:
  + **Convert tsv files to .pt files (including samples and lables)**
    - I add function “get\_ts\_dataset” for converting tsv to pt
    - I change DeepDpm to to use “get\_ts\_dataset”
    - I add argument “archive name”
    - Changing to torch.DoubleTensor in get\_train\_data()and create TimeseriesDataset in dataset
    - Running:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM.py --dataset MedicalImages --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --gpus 0 --max\_epochs 600 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018'
  + **Each row in train.pt its now time series and not feature extractor results – we need**

**to think how to deal it with - using feature extractor**

* Few changes in deepDPM\_alternation for time series input
* Running:
* !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 10 --dataset MedicalImages --lambda\_ 0.005 --beta 0.01 --lr 0.01 --init\_k 1 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0  --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
* 1-run:
  + --lambda\_ 0.005 --beta 0.01 --lr 0.01
  + Result : NMI: 0.0, ARI: 0.0, acc: 0.51447, final K: 1
* 2- run:
  + --lambda\_ 0.05 --beta 0.01 --lr 0.01
  + result: 0.18064, ARI: 0.06393, acc: 0.37763, final K: 2
* 3-run:
  + --latent\_dim 5 --lambda\_ 0.5 --beta 0.01 --lr 0.01
  + result: NMI: 0.19425, ARI: 0.03762, acc: 0.31447, final K: 4
* 4- run:
  + --latent\_dim 5 --lambda\_ 0.5 --beta 0.1 --lr 0.01
  + result: NMI:0.10648, ARI: 0.03841, acc: 0.36316, final K: 2
* 5- run:
  + --latent\_dim 5 --lambda\_ 0.5 --beta 0.05 --lr 0.01
  + result: NMI: 0.16967, ARI: 0.06772, acc: 0.375, final K: 3
* 6- run:
  + --latent\_dim 4 --lambda\_ 0.5 --beta 0.005 --lr 0.01
  + NMI: 0.12497, ARI: 0.01414, acc: 0.33816, final K: 4
* 7 -run:
  + --latent\_dim 5 --lambda\_ 0.5 --beta 0.001 --lr 0.01
  + NMI: 0.15543, ARI: 0.01931, acc: 0.34079, final K: 3
* 8- run:
  + --latent\_dim 5 --lambda\_ 0.5 --beta 0.01 --lr 0.01 --hidden-dims 500 500 500
  + result: NMI: 0.18967, ARI: 0.01892, acc: 0.31842, final K: 3
* 9-run:
  + --latent\_dim 5 --lambda\_ 0.5 --beta 0.01 --lr 0.01 --hidden-dims 50 50 50
  + result: NMI: 0.09128, ARI: -0.01466, acc: 0.32632, final K: 2
* 10-run:
  + --latent\_dim 5 --lambda\_ 0.5 --beta 0.01 --lr 0.002 --train\_cluster\_net 300 --number\_of\_ae\_alternations 2 --hidden-dims 500 500 2000
  + result: go to infinity
* 11-run:
  + --lambda\_ 0.5 --beta 0.01 --lr 0.01 --init\_k 5
  + result: NMI: 0.20988, ARI: 0.09716, acc: 0.35395, final K: 4
* 12 - run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.0005 --beta 0.005 --lr 0.002 --init\_k 1 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --cluster\_lr 0.0002 --subcluster\_lr 0.002 --batch-size 16
  + result: NMI: 0.17076, ARI: 0.15752, acc: 0.475, final K: 2
* 13- run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.0005 --beta 0.005 --lr 0.002 --init\_k 1 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --cluster\_lr 0.002 --subcluster\_lr 0.02 --batch-size 16
  + result:NMI: 0.0, ARI: 0.0, acc: 0.51447, final K: 1
* 14-run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.0005 --beta 0.005 --lr 0.002 --init\_k 1 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --cluster\_lr 0.00002 --subcluster\_lr 0.0002 --batch-size 16
  + result:NMI: 0.0, ARI: 0.0, acc: 0.51447, final K: 1
* 15-run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.01 --lr 0.01 --init\_k 1 --train\_cluster\_net 150 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
  + result:NMI: 0.21337, ARI: 0.16755, acc: 0.45, final K: 4
* 16 -run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.01 --lr 0.01 --init\_k 1 --train\_cluster\_net 150 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --start\_computing\_params 50
  + result: NMI: 0.18443, ARI: 0.03285, acc: 0.33553, final K: 4
* 17 -run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.01 --lr 0.01 --init\_k 1 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --batch-size 32 --prior\_sigma\_choice data\_std
  + result: NMI: 0.0, ARI: 0.0, acc: 0.51447, final K: 1
* 18-run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.0005 --beta 0.005 --lr 0.002 --init\_k 7 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --cluster\_lr 0.0002 --subcluster\_lr 0.002 --batch-size 16
  + result: NMI: 0.0, ARI: 0.0, acc: 0.51447, final K: 1
* 19-run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.0005 --beta 0.005 --lr 0.002 --init\_k 7 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --cluster\_lr 0.0002 --subcluster\_lr 0.002
  + result: NMI: 0.10402, ARI: 0.04646, acc: 0.38026, final K: 2
* 20- run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.0005 --beta 0.005 --lr 0.002 --init\_k 7 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
  + result: NMI: 0.14373, ARI: 0.06496, acc: 0.38421, final K: 3
* 21 - run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 10 --dataset MedicalImages --lambda\_ 0.0005 --beta 0.005 --lr 0.002 --init\_k 7 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
  + result: NMI: 0.15465, ARI: 0.05791, acc: 0.35, final K: 3
* 22-run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.0005 --beta 0.005 --lr 0.002 --init\_k 3 --train\_cluster\_net 150 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --prior\_sigma\_choice data\_std --prior\_sigma\_scale 0.0001
  + result: NMI: 0.17423, ARI: 0.10063, acc: 0.43289, final K: 2
* 23- run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.005 --lr 0.01 --init\_k 3 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --prior\_sigma\_choice data\_std --prior\_sigma\_scale 0.01
  + result: NMI: 0.08735, ARI: 0.00451, acc: 0.33816, final K: 2
* 24-run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.005 --lr 0.01 --init\_k 3 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --prior\_sigma\_choice data\_std --prior\_sigma\_scale 0.0001
  + result: NMI: 0.21532, ARI: 0.08501, acc: 0.35921, final K: 4
* 25-run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.005 --lr 0.01 --init\_k 1 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --prior\_sigma\_choice data\_std --prior\_sigma\_scale 0.00005
  + result: NMI: 0.14791, ARI: 0.04265, acc: 0.35263, final K: 2
* 26-run:
  + !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.005 --lr 0.01 --init\_k 1 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --prior\_sigma\_choice data\_std --prior\_sigma\_scale 1
  + result: NMI: 0.13662, ARI: 0.10899, acc: 0.44474, final K: 2
* **reduce ae\_alternations + increase train\_cluster\_net**
  + 27- run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.005 --lr 0.01 --init\_k 1 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 7 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
    - result: NMI: 0.18134, ARI: 0.03979, acc: 0.33947, final K: 2
  + 28-run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.01 --lr 0.01 --init\_k 1 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
    - result: NMI: 0.20351, ARI: 0.0655, acc: 0.3, final K: 5
  + 29-run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.005 --lr 0.01 --init\_k 1 --train\_cluster\_net 300 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
    - result: NMI: 0.2043, ARI: 0.01816, acc: 0.26316, final K: 7
  + 30-run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.005 --lr 0.01 --init\_k 3 --train\_cluster\_net 300 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
    - result:NMI: 0.15534, ARI: 0.03129, acc: 0.33947, final K: 2
  + 31 -run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.001 --lr 0.01 --init\_k 1 --train\_cluster\_net 320 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
    - result: NMI: 0.21376, ARI: 0.09216, acc: 0.38158, final K: 5
  + 32-run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.005 --lr 0.01 --init\_k 1 --train\_cluster\_net 300 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --prior\_sigma\_choice data\_std --prior\_sigma\_scale 0.0005
    - result: NMI: 0.21338, ARI: 0.045, acc: 0.31184, final K: 6
  + 33- run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.005 --lr 0.01 --init\_k 1 --train\_cluster\_net 330 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --prior\_sigma\_choice data\_std --prior\_sigma\_scale 0.0001
    - result:NMI: 0.11292, ARI: 0.00492, acc: 0.33553, final K: 2
  + 34 - run
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.005 --lr 0.01 --init\_k 1 --train\_cluster\_net 330 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --prior\_sigma\_choice data\_std --prior\_sigma\_scale 0.001
    - result: NMI: 0.1856, ARI: 0.03049, acc: 0.29868, final K: 5
  + 35 - run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.005 --lr 0.01 --init\_k 1 --train\_cluster\_net 400 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --prior\_sigma\_choice data\_std --prior\_sigma\_scale 0.001
    - result: infinity
  + 36 - run:
    - python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --dataset MedicalImages --lambda\_ 0.5 --beta 0.01 --lr 0.01 --init\_k 1 --train\_cluster\_net 350 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --prior\_sigma\_choice data\_std --prior\_sigma\_scale 0.001
    - result: NMI: 0.20585, ARI: 0.06468, acc: 0.30921, final K: 4
  + 37- run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --lambda\_ 0.005 --beta 1 --lr 0.002 --dataset MedicalImages --init\_k 1 --train\_cluster\_net 350 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None' --prior\_sigma\_choice data\_std --prior\_sigma\_scale 0.001
    - result: NMI: 0.0836, ARI: 0.00253, acc: 0.31974, final K: 2
  + **Working with beta**
  + 38-run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --lambda\_ 0.5 --beta 1 --lr 0.01 --dataset MedicalImages --init\_k 1 --train\_cluster\_net 350 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
    - result: NMI: 0.0, ARI: 0.0, acc: 0.51447, final K: 1
  + 39-run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --lambda\_ 0.5 --beta 0.5 --lr 0.01 --dataset MedicalImages --init\_k 1 --train\_cluster\_net 350 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
    - result: NMI: 0.15646, ARI: 0.04608, acc: 0.35263, final K: 3
  + 40-run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --lambda\_ 0.5 --beta 0.1 --lr 0.01 --dataset MedicalImages --init\_k 1 --train\_cluster\_net 350 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
    - NMI: 0.08418, ARI: -0.0056, acc: 0.32763, final K: 2
  + 41-run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --lambda\_ 0.5 --beta 0.05 --lr 0.01 --dataset MedicalImages --init\_k 1 --train\_cluster\_net 350 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
    - result: NMI: 0.1299, ARI: -0.00407, acc: 0.25921, final K: 4
  + 42-run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --lambda\_ 0.5 --beta 0.01 --lr 0.01 --dataset MedicalImages --init\_k 1 --train\_cluster\_net 350 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
    - NMI: 0.17977, ARI: 0.09475, acc: 0.39605, final K: 4
  + 43-run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --lambda\_ 0.5 --beta 0.001 --lr 0.01 --dataset MedicalImages --init\_k 1 --train\_cluster\_net 350 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
    - result: NMI: 0.17792, ARI: 0.05236, acc: 0.26842, final K: 7
  + 44-run:
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --lambda\_ 0.5 --beta 0.0005 --lr 0.01 --dataset MedicalImages --init\_k 1 --train\_cluster\_net 350 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MedicalImages" --number\_of\_ae\_alternations 2 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
    - result: NMI: 0.15342, ARI: 0.01774, acc: 0.28947, final K: 3
* **Running on MelbournePedestrian dataset:**
  + Main changes:
    - Fix Bug in deepDPM (using latent dim)
    - Increase test\_cluster\_net and decrease number\_of\_AE\_alternations
    - Switch dataset ( **MelbournePedestrian)** to one with more samples ->improve acc
    - in read\_ts\_data function: some of the values are NaNs- So we replace with zeros in “read\_ts\_dataset” function
  + **Train - 1194, Test - 2439, class - 10**
  + runnings:
    - run -1:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --lambda\_ 0.5 --beta 0.001 --lr 0.01 --dataset MelbournePedestrian --init\_k 1 --train\_cluster\_net 350 --number\_of\_ae\_alternations 3 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MelbournePedestrian" --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
      * result: NMI: 0.39983, ARI: 0.2565, acc: 0.42148, final K: 6
      * Max K in process: 11
    - run - 2:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 10 --lambda\_ 0.5 --beta 0.001 --lr 0.01 --dataset MelbournePedestrian --init\_k 1 --train\_cluster\_net 200 --number\_of\_ae\_alternations 3 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MelbournePedestrian" --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
      * result: NMI: 0.37842, ARI: 0.23093, acc: 0.44731, final K: 7
      * Max K in process: 12
    - run - 3:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 10 --lambda\_ 0.5 --beta 0.001 --lr 0.01 --dataset MelbournePedestrian --init\_k 1 --train\_cluster\_net 200 --number\_of\_ae\_alternations 4 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MelbournePedestrian" --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
      * result:NMI: 0.37626, ARI: 0.24413, acc: 0.39729, final K: 6
      * Max K in process: 13
    - run - 4:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 10 --lambda\_ 0.5 --beta 0.005 --lr 0.01 --dataset MelbournePedestrian --init\_k 1 --train\_cluster\_net 150 --number\_of\_ae\_alternations 3 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MelbournePedestrian" --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
      * result: NMI: 0.35198, ARI: 0.21836, acc: 0.38335, final K: 6
    - run - 5:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 10 --lambda\_ 0.5 --beta 0.001 --lr 0.01 --dataset MelbournePedestrian --init\_k 3 --train\_cluster\_net 200 --number\_of\_ae\_alternations 3 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MelbournePedestrian" --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
      * result: NMI: 0.40159, ARI: 0.28821, acc: 0.47888, final K: 7
    - run - 6:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 10 --lambda\_ 0.5 --beta 0.001 --lr 0.002 --dataset MelbournePedestrian --init\_k 3 --train\_cluster\_net 200 --number\_of\_ae\_alternations 3 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MelbournePedestrian" --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
      * result: NMI: 0.37919, ARI: 0.21189, acc: 0.37638, final K: 5
    - run - 7:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 10 --lambda\_ 0.5 --beta 0.01 --lr 0.01 --dataset MelbournePedestrian --init\_k 1 --train\_cluster\_net 200 --number\_of\_ae\_alternations 3 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MelbournePedestrian" --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
      * result: NMI: 0.21905, ARI: 0.10017, acc: 0.23247, final K: 4
    - run - 8:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 5 --lambda\_ 0.05 --beta 0.001 --lr 0.01 --dataset MelbournePedestrian --init\_k 1 --train\_cluster\_net 200 --number\_of\_ae\_alternations 3 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MelbournePedestrian" --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
      * result: NMI: 0.25164, ARI: 0.13371, acc: 0.26486, final K: 3
    - run - 9:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 12 --lambda\_ 0.5 --beta 0.001 --lr 0.01 --dataset MelbournePedestrian --init\_k 1 --train\_cluster\_net 250 --number\_of\_ae\_alternations 3 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MelbournePedestrian" --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
      * result: NMI: 0.30135, ARI: 0.17563, acc: 0.32759, final K: 7
    - run - 10:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 12 --lambda\_ 0.5 --beta 0.001 --lr 0.01 --dataset MelbournePedestrian --init\_k 1 --train\_cluster\_net 250 --number\_of\_ae\_alternations 3 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MelbournePedestrian" --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
      * result:
        + 0- NMI: 0.45589, ARI: 0.3162, acc: 0.51907, final K: 9
        + 1- NMI: 0.39657, ARI: 0.27692, acc: 0.47068, final K: 7
        + 2- NMI: 0.3865, ARI: 0.22832, acc: 0.4551, final K: 9
        + 3- NMI: 0.36095, ARI: 0.22052, acc: 0.41738, final K: 8
        + 4- NMI: 0.35392, ARI: 0.21377, acc: 0.40959, final K: 7
        + 5- NMI: 0.4583, ARI: 0.27986, acc: 0.46494, final K: 7
    - run - 11:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 12 --lambda\_ 0.5 --beta 0.002 --lr 0.02 --dataset MelbournePedestrian --init\_k 1 --train\_cluster\_net 250 --number\_of\_ae\_alternations 3 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MelbournePedestrian" --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
      * result: NMI: 0.40235, ARI: 0.2871, acc: 0.50841, final K: 9
    - run - 12:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 12 --lambda\_ 0.5 --beta 0.0008 --lr 0.008 --dataset MelbournePedestrian --init\_k 1 --train\_cluster\_net 250 --number\_of\_ae\_alternations 3 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MelbournePedestrian" --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
      * result:
        + 0- NMI: 0.38237, ARI: 0.24506, acc: 0.42025, final K: 10
        + 1- NMI: 0.34551, ARI: 0.21894, acc: 0.40098, final K: 8
        + 2- NMI: 0.38428, ARI: 0.22053, acc: 0.4223, final K: 7
        + 3- NMI: 0.43056, ARI: 0.28367, acc: 0.51333, final K: 7
        + 4- NMI: 0.44546, ARI: 0.31715, acc: 0.49938, final K: 7
        + 5- NMI: 0.39655, ARI: 0.28885, acc: 0.45756, final K: 7
        + 6- NMI: 0.41714, ARI: 0.28651, acc: 0.47396, final K: 8
    - run - 13:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 6 --lambda\_ 0.5 --beta 0.0008 --lr 0.008 --dataset MelbournePedestrian --init\_k 1 --train\_cluster\_net 250 --number\_of\_ae\_alternations 3 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MelbournePedestrian" --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
      * result: NMI: 0.40951, ARI: 0.27821, acc: 0.42886, final K: 7
    - run - 14:
      * !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 24 --lambda\_ 0.5 --beta 0.0008 --lr 0.008 --dataset MelbournePedestrian --init\_k 1 --train\_cluster\_net 250 --number\_of\_ae\_alternations 3 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/MelbournePedestrian" --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
      * result: NMI: 0.40631, ARI: 0.28374, acc: 0.51169, final K: 8
      * Max K in process: 14
* **Runniung with** **NonInvasiveFetalECGThorax1 data base**:
  + **NonInvasiveFetalECGThorax1, with 1800 trainning data, with ECG type!**
  + **test with 1965.**
  + **ECG-** An electrocardiogram (ECG or EKG) is a measure of how the electrical activity of the heart changes over time as action potentials propagate throughout the heart during each cardiac cycle.
  + we note that need some changing with this data type & DeepDPM alternation with 42 latent dim instead of 10.
  + we cant point on better convergence for our loss as expected (bigger DB).
  + Running:

!python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 42 --dataset NonInvasiveFetalECGThorax1 --lambda\_ 0.005 --beta 0.01 --lr 0.01 --init\_k 1 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/NonInvasiveFetalECGThorax1" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0  --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'

* + 1-run:
    - --lambda\_ 0.005 --beta 0.01 --lr 0.01
    - Result : NMI: 0.0, ARI: 0.0, acc: 0.51447, final K: 1

Epoch 200: 100% 31/31 [04:41<00:00, 9.06s/it, loss=0.282, v\_num=]

Epoch 200: 100% 31/31 [04:41<00:00, 9.06s/it, loss=0.282, v\_num=]

Train evaluation:

NMI: 0.17617, ARI: 0.02051, acc: 0.05444, final K: 2

Validation evaluation

NMI: 0.17266, ARI: 0.02007, acc: 0.05344, final K: 2

easy to see that k is absolutely smaller than expected.

* + 2-run:
    - #Using DeepDPM\_alternations with TimeseriesDataset
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 42 --dataset NonInvasiveFetalECGThorax1 --lambda\_ 0.6 --beta 0.01 --lr 0.01 --init\_k 30 --train\_cluster\_net 200 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/NonInvasiveFetalECGThorax1" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name
    - 'UCRArchive\_2018' --pretrain\_path 'None'

========== Finished clustering ==========

Epoch 200: 65% 20/31 [06:48<03:44, 20.41s/it, loss=5.83, v\_num=]

Validating: 0it [00:00, ?it/s]

Validating: 0% 0/16 [00:00<?, ?it/s]

Epoch 200: 100% 31/31 [06:49<00:00, 13.21s/it, loss=5.73, v\_num=]

Epoch 200: 100% 31/31 [06:49<00:00, 13.21s/it, loss=5.73, v\_num=]

Train evaluation:

NMI: 0.57867, ARI: 0.20941, acc: 0.23889, final K: 10

Validation evaluation

NMI: 0.57139, ARI: 0.19713, acc: 0.2285, final K: 10

* + 3-run:
    - #Using DeepDPM\_alternations with TimeseriesDataset
    - !python /content/Deep\_Learning\_project/DeepDPM-main/DeepDPM\_alternations.py --latent\_dim 42 --dataset NonInvasiveFetalECGThorax1 --lambda\_ 0.5 --beta 0.05 --lr 1e-4 --init\_k 30 --train\_cluster\_net 1800 --alternate --init\_cluster\_net\_using\_centers --reinit\_net\_at\_alternation --dir "/content/Deep\_Learning\_project/dl-4-tsc-master/archives/UCRArchive\_2018/NonInvasiveFetalECGThorax1" --number\_of\_ae\_alternations 3 --log\_metrics\_at\_train True --gpus 0 --use\_labels\_for\_eval --archive\_name 'UCRArchive\_2018' --pretrain\_path 'None'
    - this run failed

10/9/2022

trying to change split and merge algorithms to improve convergence.