

Experiment Report

Dataset Details

FashionMNIST Dataset Experiment Overview

Name: FashionMNIST

Output Dimension: [(1, 28, 28), (1, 28, 28)]

Dataset Size: [100, 100]

Augmentation Settings: ['AugmentationSettings(dataset_name=FashionMNIST, color_jitter=False, sharpness_aug=True, horizontal_flip_aug=False, vertical_flip_aug=False, rotation_aug=True, translation_aug=True, gaussian.blur_aug=True, gaussian.noise_aug=True, auto_generated_notes=+/-15 degree rotation augmentation applied\n)', 'AugmentationSettings(dataset_name=FashionMNIST, color_jitter=False, sharpness_aug=False, horizontal_flip_aug=False, vertical_flip_aug=False, rotation_aug=False, translation_aug=False, gaussian.blur_aug=False, gaussian.noise_aug=False, auto_generated_notes=)']

Augmentation Scheme: ['WEAKLY_ROTATIONALY_INVARIANT', 'WEAKLY_ROTATIONALY_INVARIANT']

Classes: ['Ankle boot', 'T-shirt/top', 'Dress', 'Pullover', 'Sneaker', 'Sandal', 'Trouser', 'Shirt', 'Coat', 'Bag']

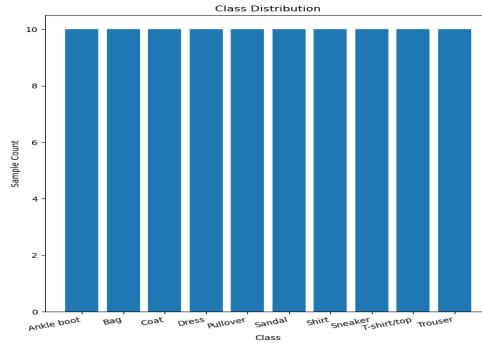
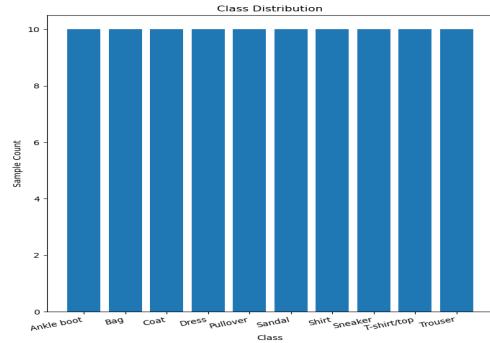
Uses DinoBloom Encoding: [False, False]

Number of Output Channels: [1, 1]

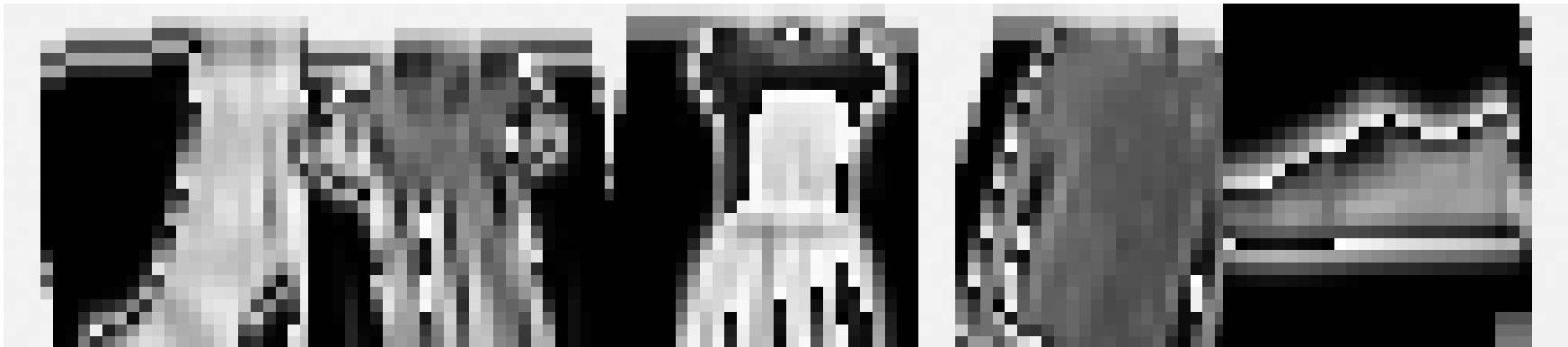
Is Multiple Instance Dataset: [False, False]

Bag Sizes: [,]

Class Distribution:



Sample Images:



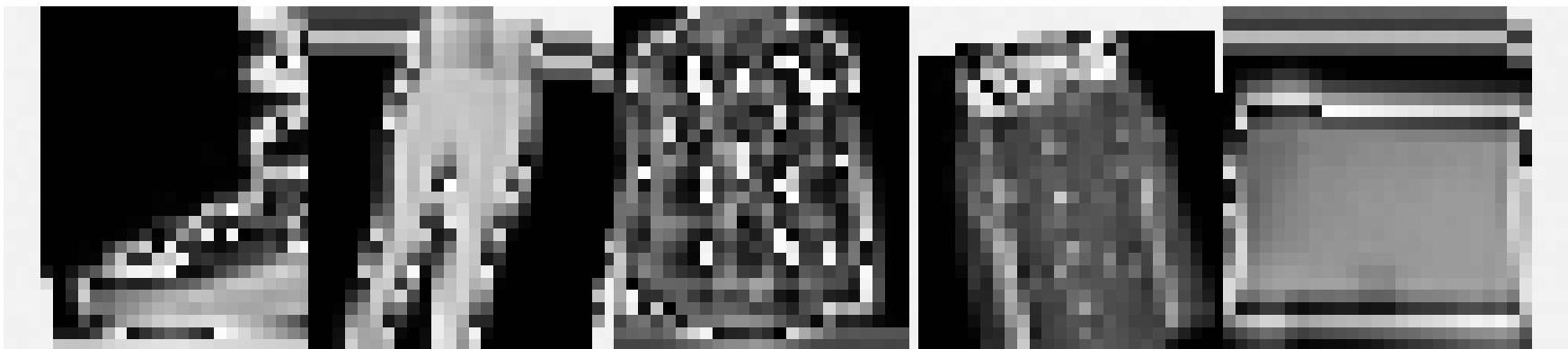
Ankle boot

T-shirt/top

Dress

Pullover

Sneaker



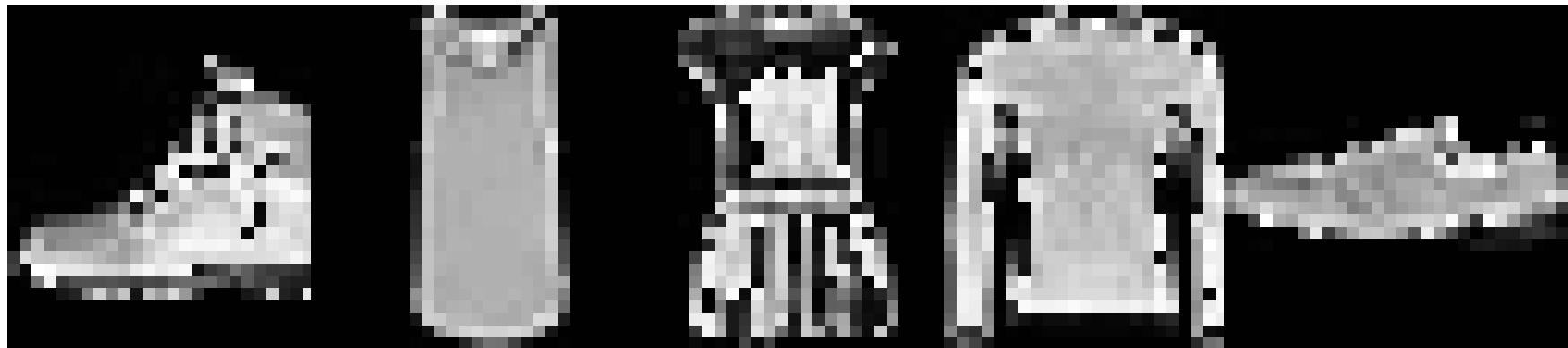
Sandal

Trouser

Shirt

Coat

Bag



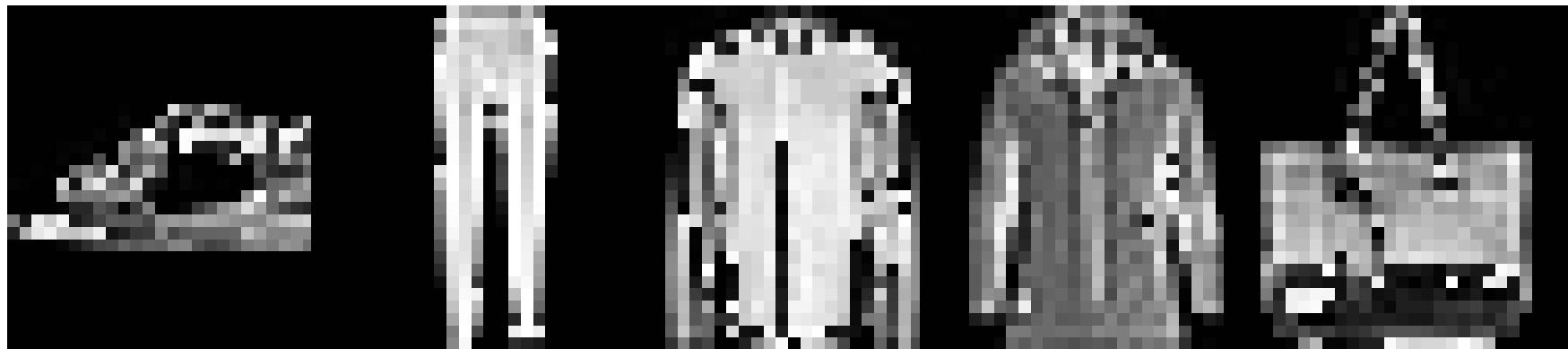
Ankle boot

T-shirt/top

Dress

Pullover

Sneaker



Sandal

Trouser

Shirt

Coat

Bag

augmentation	distance	intra_to_inter_class_distance_overall_ratio	knn_accuracy	knn_accuracy_std	loocv_knn_accuracy	loocv_knn_accuracy_std	silhouette_score
all	Isomap	0.924	0.620	0.485	0.240	0.427	-0.089
all	L1_distance	0.884	0.660	0.474	0.350	0.477	-0.040

all	PCA	0.918	0.590	0.492	0.250	0.433	-0.061
all	PHATE	0.904	0.490	0.500	0.200	0.400	-0.182
all	TSNE	0.981	0.620	0.485	0.240	0.427	-0.194
all	UMAP	0.918	0.600	0.490	0.220	0.414	-0.144
cubical_complex_distance		0.956	0.460	0.498	0.200	0.400	-0.156
all	euclidean_distance	0.927	0.600	0.490	0.280	0.449	-0.032
none	Isomap	0.580	0.780	0.414	0.620	0.485	0.100
none	L1_distance	0.668	0.810	0.392	0.640	0.480	0.057
none	PCA	0.605	0.780	0.414	0.670	0.470	0.105
none	PHATE	0.346	0.720	0.449	0.550	0.497	-0.004
none	TSNE	0.956	0.660	0.474	0.450	0.497	-0.184
none	UMAP	0.440	0.790	0.407	0.690	0.462	0.098
cubical_complex_distance		0.963	0.460	0.498	0.140	0.347	-0.175
none	euclidean_distance	0.744	0.830	0.376	0.680	0.466	0.057

SCEMILA/image_data Dataset Experiment Overview

Name: SCEMILA/image_data

Output Dimension: [(3, 144, 144), (3, 144, 144)]

Dataset Size: [100, 100]

Augmentation Settings: ['AugmentationSettings(dataset_name=SCEMILA/image_data, color_jitter=True, sharpness_aug=True, horizontal_flip_aug=True, vertical_flip_aug=True, rotation_aug=True, translation_aug=True, gaussian.blur_aug=True, gaussian.noise_aug=True, auto_generated_notes=+/-180 degree rotation augmentation applied\n'), 'AugmentationSettings(dataset_name=SCEMILA/image_data, color_jitter=False, sharpness_aug=False, horizontal_flip_aug=False, vertical_flip_aug=False, rotation_aug=False, translation_aug=False, gaussian.blur_aug=False, gaussian.noise_aug=False, auto_generated_notes=)']

Augmentation Scheme: ['COMPLETELY_ROTATIONALY_INVARIANT', 'COMPLETELY_ROTATIONALY_INVARIANT']

Classes: ['myeloblast', 'monocyte', 'typical lymphocyte', 'neutrophil granulocyte (segmented)', 'atypical promyelocyte', 'reactive lymphocyte', 'large granulated lymphocyte', 'neutrophil granulocyte (band)', 'normo', 'promonocyte']

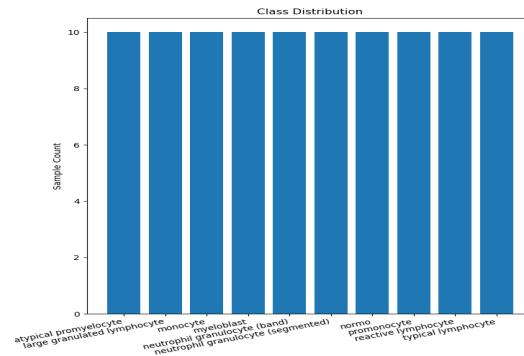
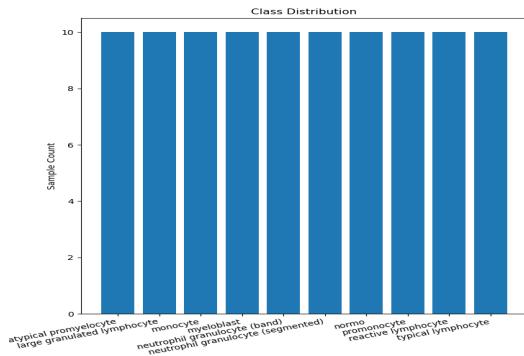
Uses DinoBloom Encoding: [False, False]

Number of Output Channels: [3, 3]

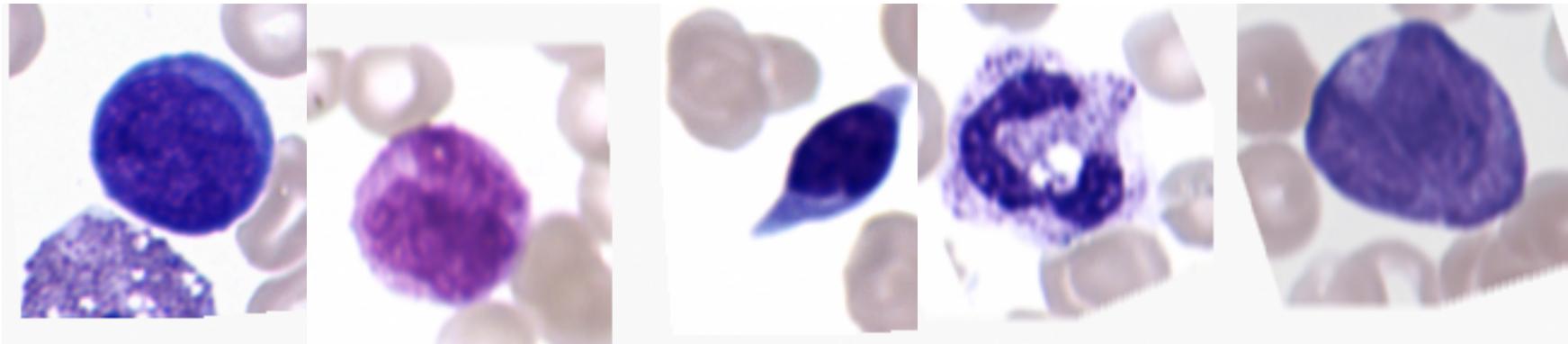
Is Multiple Instance Dataset: [False, False]

Bag Sizes: [,]

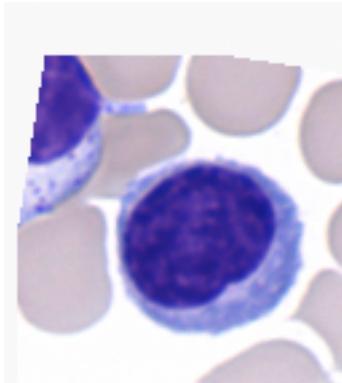
Class Distribution:



Sample Images:



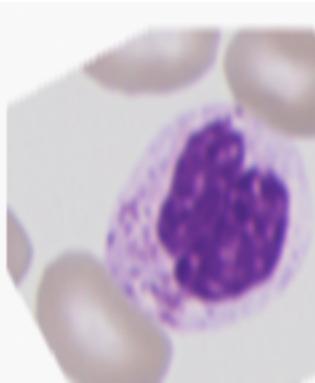
myeloblast



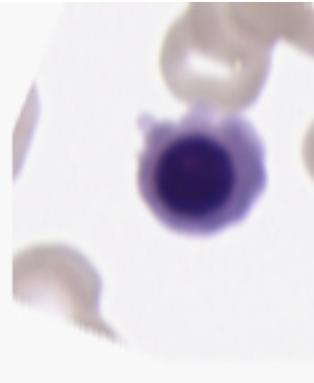
monocyte



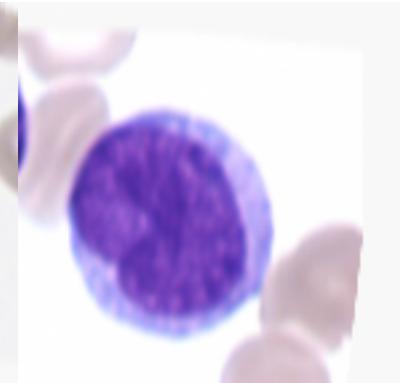
typical lymphocyte



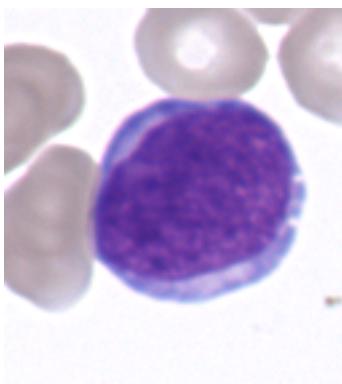
neutrophil granulocyte
(segmented)



atypical promyelocyte



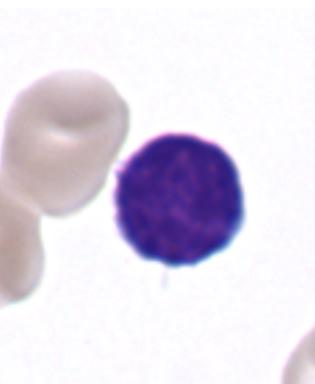
reactive lymphocyte



large granulated
lymphocyte



neutrophil granulocyte
(band)



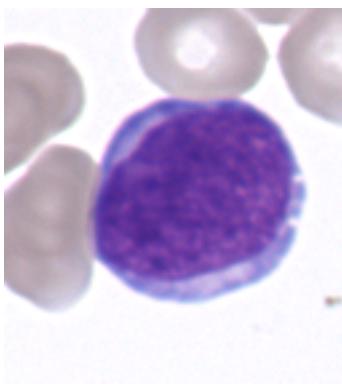
normo



promonocyte



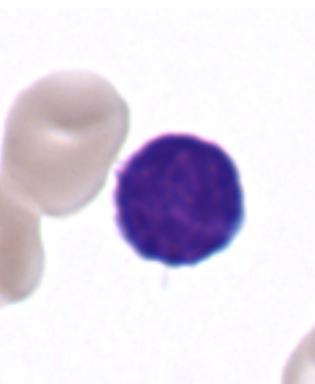
myeloblast



monocyte



typical lymphocyte

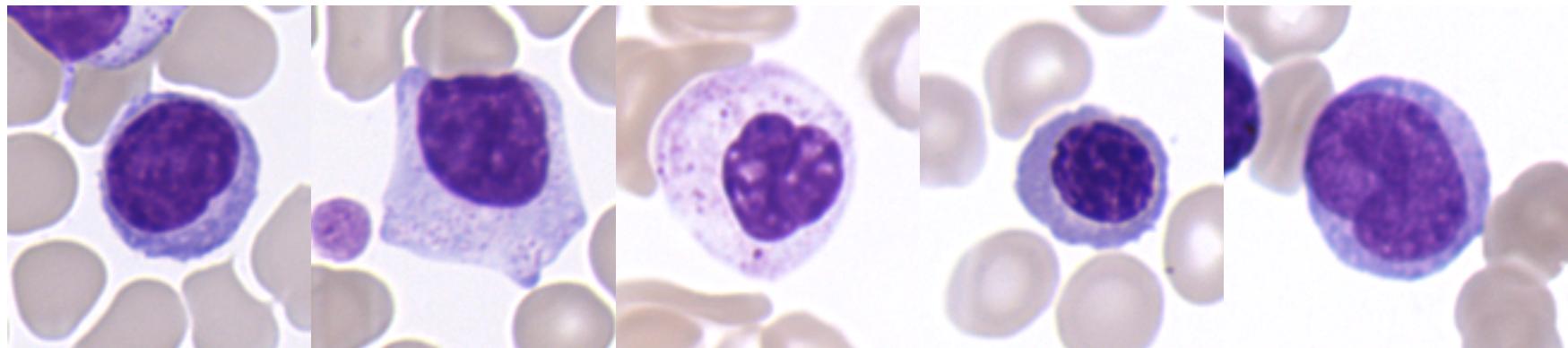


neutrophil granulocyte
(segmented)



atypical promyelocyte





reactive lymphocyte large granulated lymphocyte neutrophil granulocyte (band) normo promonocyte

augmentation	distance	intra_to_inter_class_distance_overall_ratio	knn_accuracy	knn_accuracy_std	loocv_knn_accuracy	loocv_knn_accuracy_std	silhouette_score
all	Isomap	0.924	0.500	0.500	0.170	0.376	-0.106
all	L1_distance	0.975	0.460	0.498	0.140	0.347	-0.072
all	PCA	0.918	0.530	0.499	0.180	0.384	-0.103
all	PHATE	0.930	0.460	0.498	0.120	0.325	-0.257
all	TSNE	0.993	0.470	0.499	0.110	0.313	-0.131
all	UMAP	0.911	0.510	0.500	0.130	0.336	-0.186
all	cubical_complex_distance	0.990	0.460	0.498	0.120	0.325	-0.192
	euclidean_distance						
none	Isomap	0.802	0.580	0.494	0.260	0.439	-0.066
none	L1_distance	0.910	0.540	0.498	0.360	0.480	-0.030
none	PCA	0.814	0.620	0.485	0.230	0.421	-0.060

none	PHATE	0.474	0.620	0.485	0.230	0.421	-0.179
none	TSNE	0.966	0.650	0.477	0.190	0.392	-0.133
none	UMAP	0.601	0.590	0.492	0.310	0.462	-0.087
none	cubical_complex_distance	0.935	0.600	0.490	0.200	0.400	-0.068
none	euclidean_distance	0.914	0.580	0.494	0.320	0.466	-0.025

Acevedo Dataset Experiment Overview

Name: Acevedo

Output Dimension: [(3, 360, 360), (3, 360, 360)]

Dataset Size: [80, 80]

Augmentation Settings: ['AugmentationSettings(dataset_name=Acevedo, color_jitter=True, sharpness_aug=True, horizontal_flip_aug=True, vertical_flip_aug=True, rotation_aug=True, translation_aug=True, gaussian.blur.aug=True, gaussian.noise.aug=True, auto_generated_notes=+/-180 degree rotation augmentation applied\n)', 'AugmentationSettings(dataset_name=Acevedo, color_jitter=False, sharpness.aug=False, horizontal_flip.aug=False, vertical_flip.aug=False, rotation.aug=False, translation.aug=False, gaussian.blur.aug=False, gaussian.noise.aug=False, auto_generated_notes=)']

Augmentation Scheme: ['COMPLETELY_ROTATIONALY_INVARIANT', 'COMPLETELY_ROTATIONALY_INVARIANT']

Classes: ['platelet', 'monocyte', 'ig', 'lymphocyte', 'eosinophil', 'basophil', 'neutrophil', 'erythroblast']

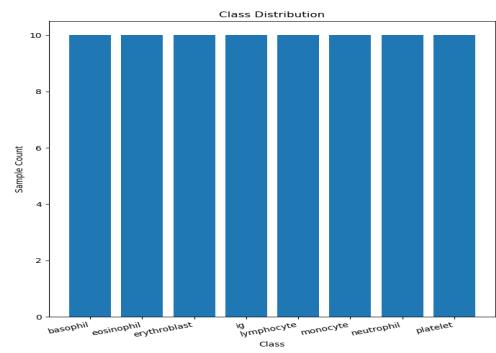
Uses DinoBloom Encoding: [False, False]

Number of Output Channels: [3, 3]

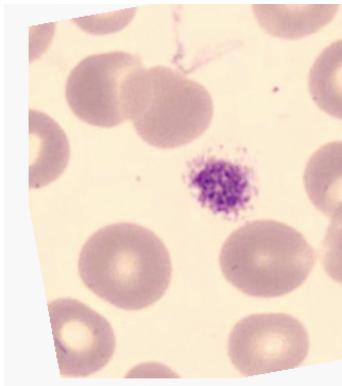
Is Multiple Instance Dataset: [False, False]

Bag Sizes: [,]

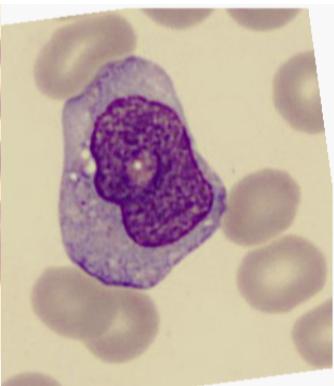
Class Distribution:



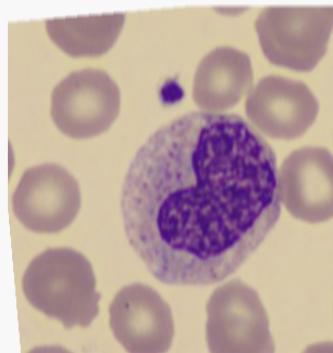
Sample Images:



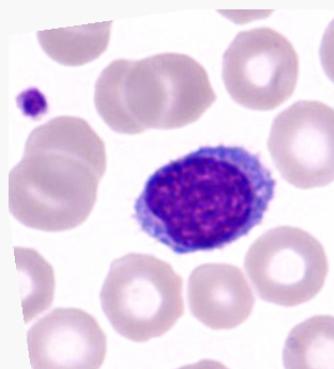
platelet



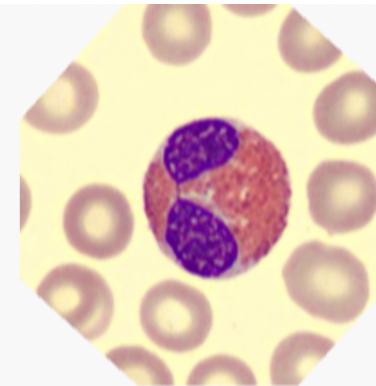
monocyte



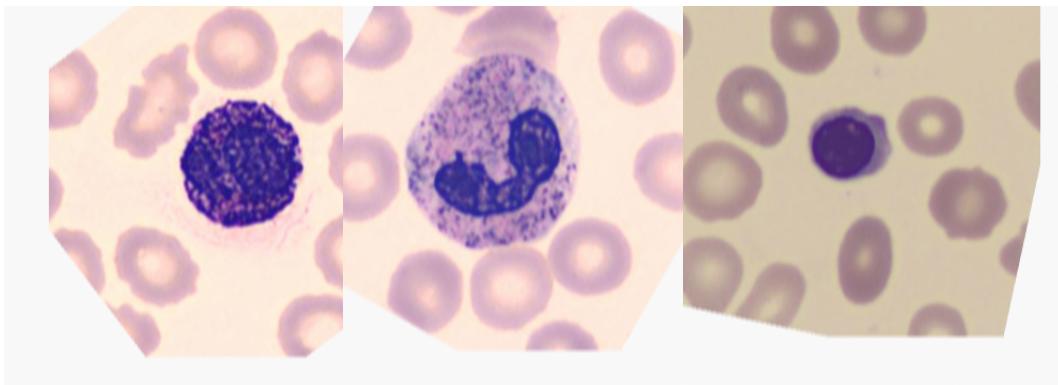
Ig



lymphocyte



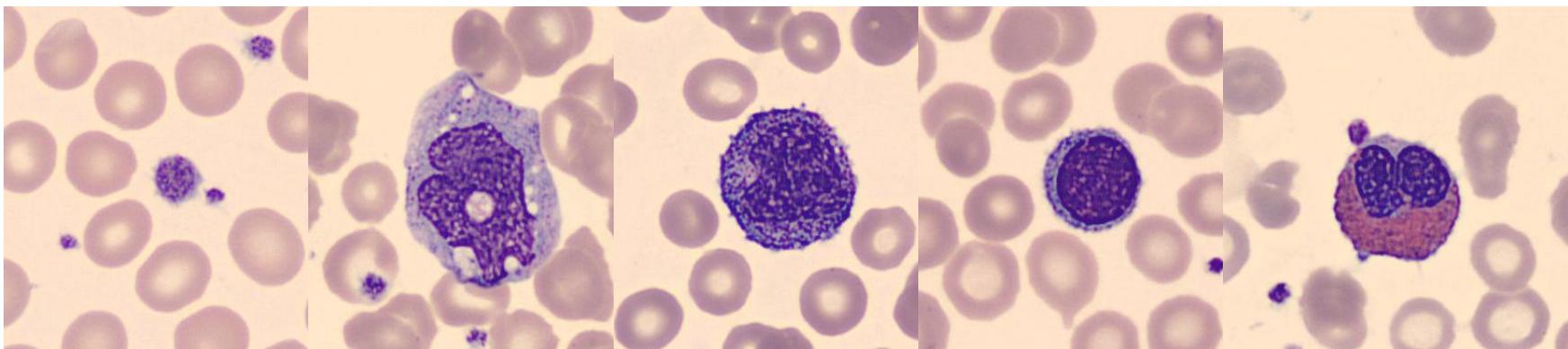
eosinophil



basophil

neutrophil

erythroblast



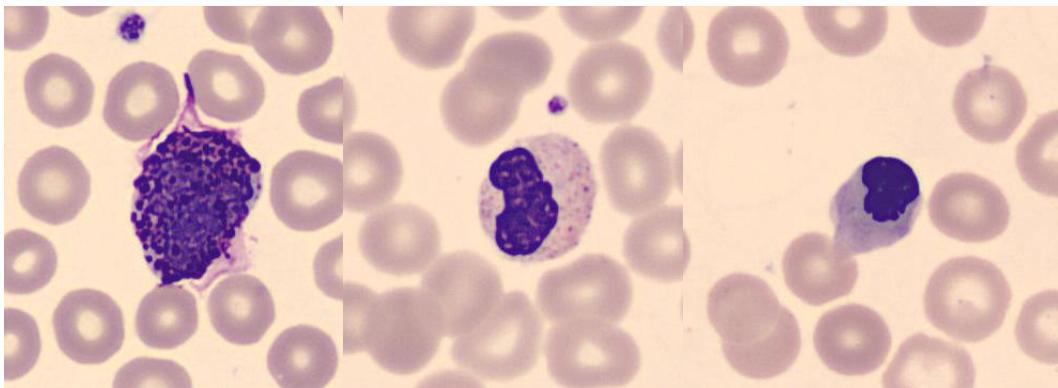
platelet

monocyte

ig

lymphocyte

eosinophil



basophil neutrophil erythroblast

augmentation	distance	intra_to_inter_class_distance_overall_ratio	knn_accuracy	knn_accuracy_std	loocv_knn_accuracy	loocv_knn_accuracy_std	silhouette_score
all	Isomap	0.986	0.512	0.500	0.150	0.357	-0.115
all	L1_distance	0.965	0.512	0.500	0.237	0.426	-0.078
all	PCA	0.966	0.588	0.492	0.250	0.433	-0.085
all	PHATE	0.994	0.500	0.500	0.138	0.344	-0.196
all	TSNE	1.005	0.463	0.499	0.188	0.390	-0.159
all	UMAP	0.991	0.512	0.500	0.188	0.390	-0.161
all	cubical_complex_distance	0.989	0.425	0.494	0.100	0.300	-0.205
all	euclidean_distance	0.966	0.537	0.499	0.200	0.400	-0.061
none	Isomap	0.727	0.650	0.477	0.338	0.473	-0.013
none	L1_distance	0.938	0.625	0.484	0.412	0.492	-0.006
none	PCA	0.754	0.650	0.477	0.487	0.500	0.010
none	PHATE	0.463	0.562	0.496	0.263	0.440	-0.175

none	TSNE	0.982	0.425	0.494	0.163	0.369	-0.231
none	UMAP	0.570	0.637	0.481	0.362	0.481	-0.061
	cubical_complex_distance						
none	tance	0.864	0.775	0.418	0.325	0.468	-0.023
none	euclidean_distance	0.926	0.600	0.490	0.362	0.481	-0.000

CIFAR10 Dataset Experiment Overview

Name: CIFAR10

Output Dimension: [(3, 32, 32), (3, 32, 32)]

Dataset Size: [100, 100]

Augmentation Settings: ['AugmentationSettings(dataset_name=CIFAR10, color_jitter=True, sharpness_aug=True, horizontal_flip_aug=False, vertical_flip_aug=False, rotation_aug=True, translation_aug=True, gaussian.blur_aug=True, gaussian.noise_aug=True, auto_generated_notes=+/-15 degree rotation augmentation applied\n)', 'AugmentationSettings(dataset_name=CIFAR10, color_jitter=False, sharpness_aug=False, horizontal_flip_aug=False, vertical_flip_aug=False, rotation_aug=False, translation_aug=False, gaussian.blur_aug=False, gaussian.noise_aug=False, auto_generated_notes=)']

Augmentation Scheme: ['WEAKLY_ROTATIONALY_INVARIANT', 'WEAKLY_ROTATIONALY_INVARIANT']

Classes: ['frog', 'truck', 'deer', 'car', 'bird', 'horse', 'ship', 'cat', 'dog', 'plane']

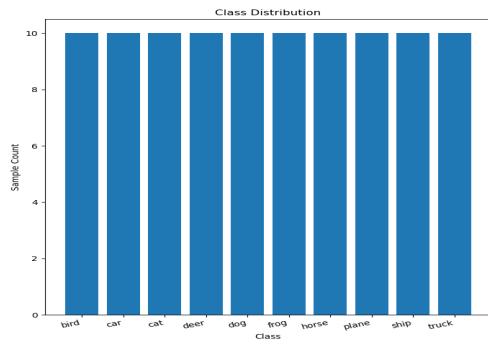
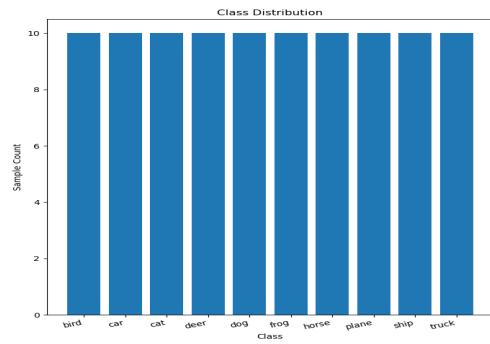
Uses DinoBloom Encoding: [False, False]

Number of Output Channels: [3, 3]

Is Multiple Instance Dataset: [False, False]

Bag Sizes: [,]

Class Distribution:



Sample Images:



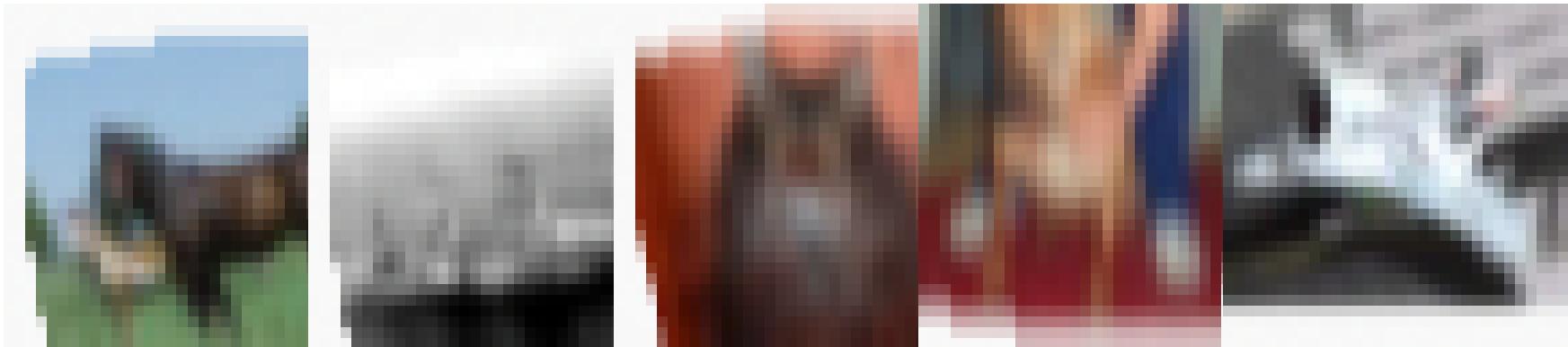
frog

truck

deer

car

bird



horse

ship

cat

dog

plane



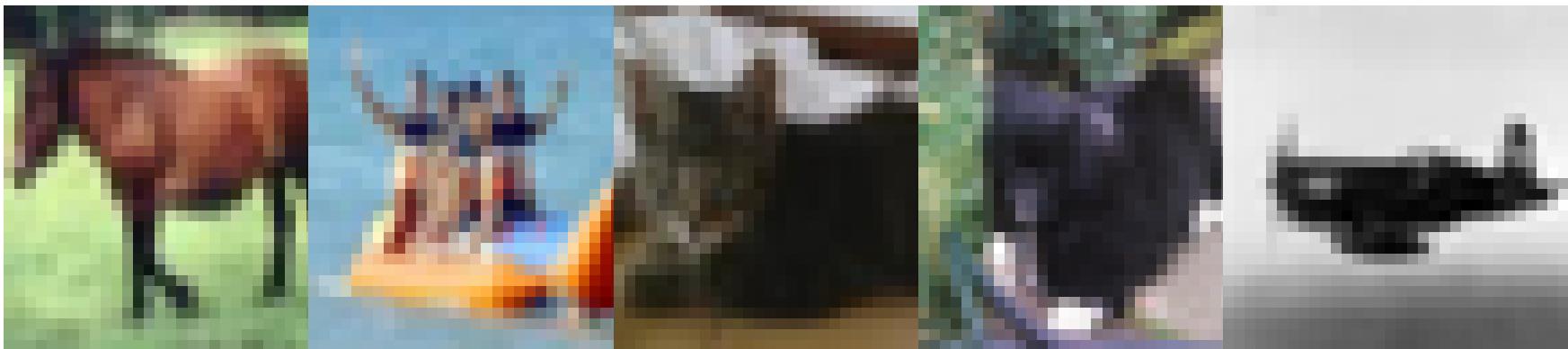
frog

truck

deer

car

bird



horse

ship

cat

dog

plane

augmentation	distance	intra_to_inter_class_distance_overall_ratio	knn_accuracy	knn_accuracy_std	loocv_knn_accuracy	loocv_knn_accuracy_std	silhouette_score
all	Isomap	0.978	0.400	0.490	0.100	0.300	-0.124
all	L1_distance	0.989	0.460	0.498	0.100	0.300	-0.096
all	PCA	0.976	0.410	0.492	0.090	0.286	-0.111
all	PHATE	0.985	0.410	0.492	0.100	0.300	-0.267
all	TSNE	0.999	0.520	0.500	0.140	0.347	-0.276
all	UMAP	0.990	0.500	0.500	0.230	0.421	-0.186
all	cubical_complex_distance	0.983	0.600	0.490	0.080	0.271	-0.170
all	euclidean_distance	0.995	0.410	0.492	0.080	0.271	-0.073
none	Isomap	0.924	0.460	0.498	0.130	0.336	-0.124
none	L1_distance	0.967	0.530	0.499	0.220	0.414	-0.095
none	PCA	0.953	0.470	0.499	0.140	0.347	-0.122
none	PHATE	0.918	0.470	0.499	0.070	0.255	-0.298

none	TSNE	0.971	0.450	0.497	0.140	0.347	-0.220
none	UMAP	0.919	0.410	0.492	0.130	0.336	-0.202
	cubical_complex_distance	0.971	0.760	0.427	0.160	0.367	-0.138
none	euclidean_distance	0.970	0.500	0.500	0.130	0.336	-0.093

MNIST Dataset Experiment Overview

Name: MNIST

Output Dimension: [(1, 28, 28), (1, 28, 28)]

Dataset Size: [100, 100]

Augmentation Settings: ['AugmentationSettings(dataset_name=MNIST, color_jitter=False, sharpness_aug=True, horizontal_flip_aug=False, vertical_flip_aug=False, rotation_aug=True, translation_aug=True, gaussian.blur_aug=True, gaussian.noise_aug=True, auto_generated_notes=+/-15 degree rotation augmentation applied\n)', 'AugmentationSettings(dataset_name=MNIST, color_jitter=False, sharpness_aug=False, horizontal_flip_aug=False, vertical_flip_aug=False, rotation_aug=False, translation_aug=False, gaussian.blur_aug=False, gaussian.noise_aug=False, auto_generated_notes=)']

Augmentation Scheme: ['WEAKLY_ROTATIONALY_INVARIANT', 'WEAKLY_ROTATIONALY_INVARIANT']

Classes: [5, 0, 4, 1, 9, 2, 3, 6, 7, 8]

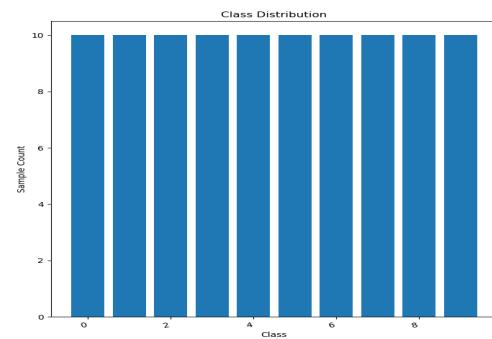
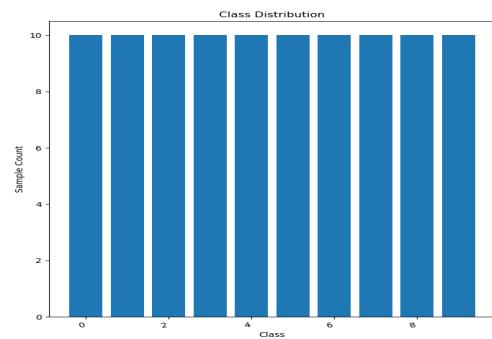
Uses DinoBloom Encoding: [False, False]

Number of Output Channels: [1, 1]

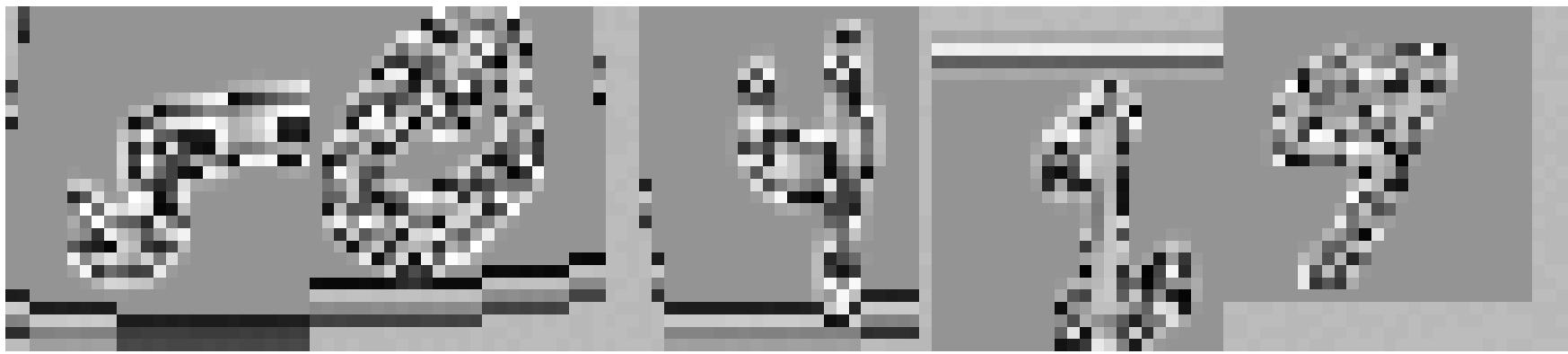
Is Multiple Instance Dataset: [False, False]

Bag Sizes: [,]

Class Distribution:



Sample Images:



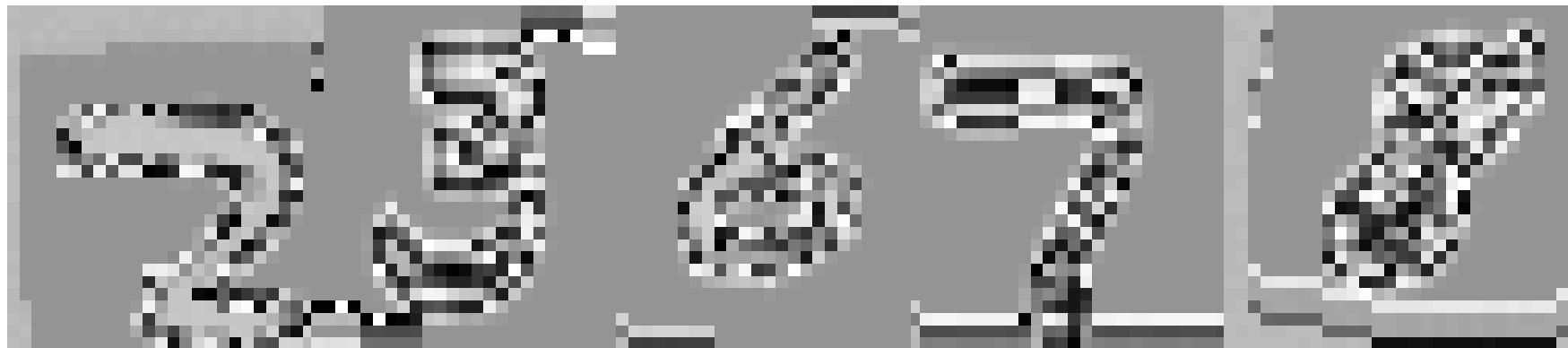
5

0

4

1

9



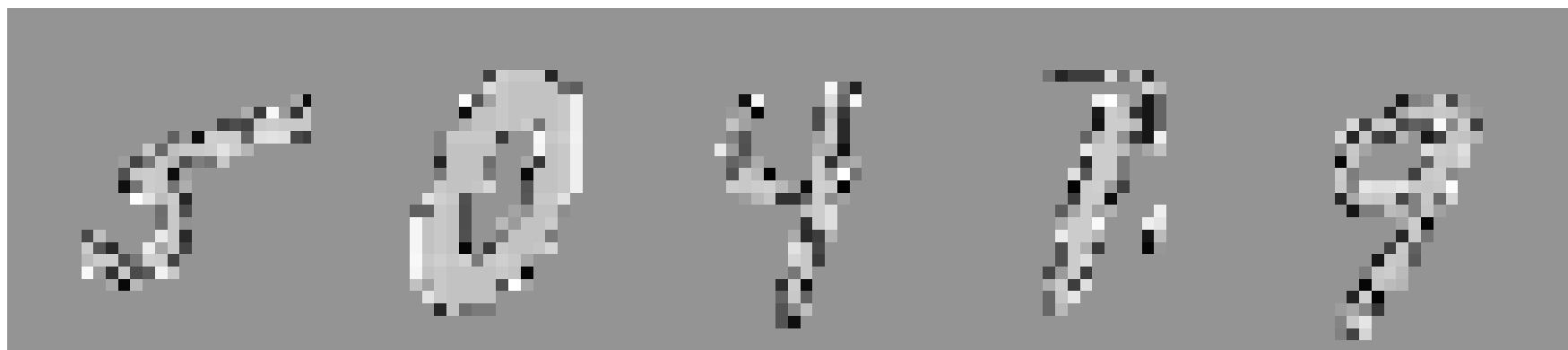
2

3

6

7

8



5

0

4

1

9



2	3	6	7	8			
augmentation	distance	intra_to_inter_class_distance_overall_ratio	knn_accuracy	knn_accuracy_std	looCV_knn_accuracy	looCV_knn_accuracy_std	silhouette_score
all	Isomap	0.984	0.530	0.499	0.180	0.384	-0.158
all	L1_distance	0.971	0.650	0.477	0.240	0.427	-0.101
all	PCA	0.968	0.560	0.496	0.110	0.313	-0.112
all	PHATE	1.038	0.370	0.483	0.060	0.237	-0.201
all	TSNE	0.997	0.430	0.495	0.160	0.367	-0.235
all	UMAP	0.981	0.500	0.500	0.150	0.357	-0.186
cubical_complex_distance		0.892	0.460	0.498	0.180	0.384	-0.105
all	euclidean_distance	0.985	0.520	0.500	0.150	0.357	-0.065
none	Isomap	0.623	0.810	0.392	0.660	0.474	0.117
none	L1_distance	0.786	0.820	0.384	0.680	0.466	0.048
none	PCA	0.688	0.880	0.325	0.730	0.444	0.118
none	PHATE	0.409	0.720	0.449	0.570	0.495	-0.048

none	TSNE	0.984	0.660	0.474	0.310	0.462	-0.253
none	UMAP	0.518	0.830	0.376	0.700	0.458	0.144
	cubical_complex_distance	0.686	0.620	0.485	0.300	0.458	-0.179
none	euclidean_distance	0.851	0.820	0.384	0.690	0.462	0.048