

Coursework Projects

Software Engineer

Signal processing/Machine learning/Acoustic engineering /Optimization problems/Blind Source Separation/Auditory Scene Analysis

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Mechanical System Design Engineering
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Coursework Projects

✂ Journal implementation & analysis

Intelligent System

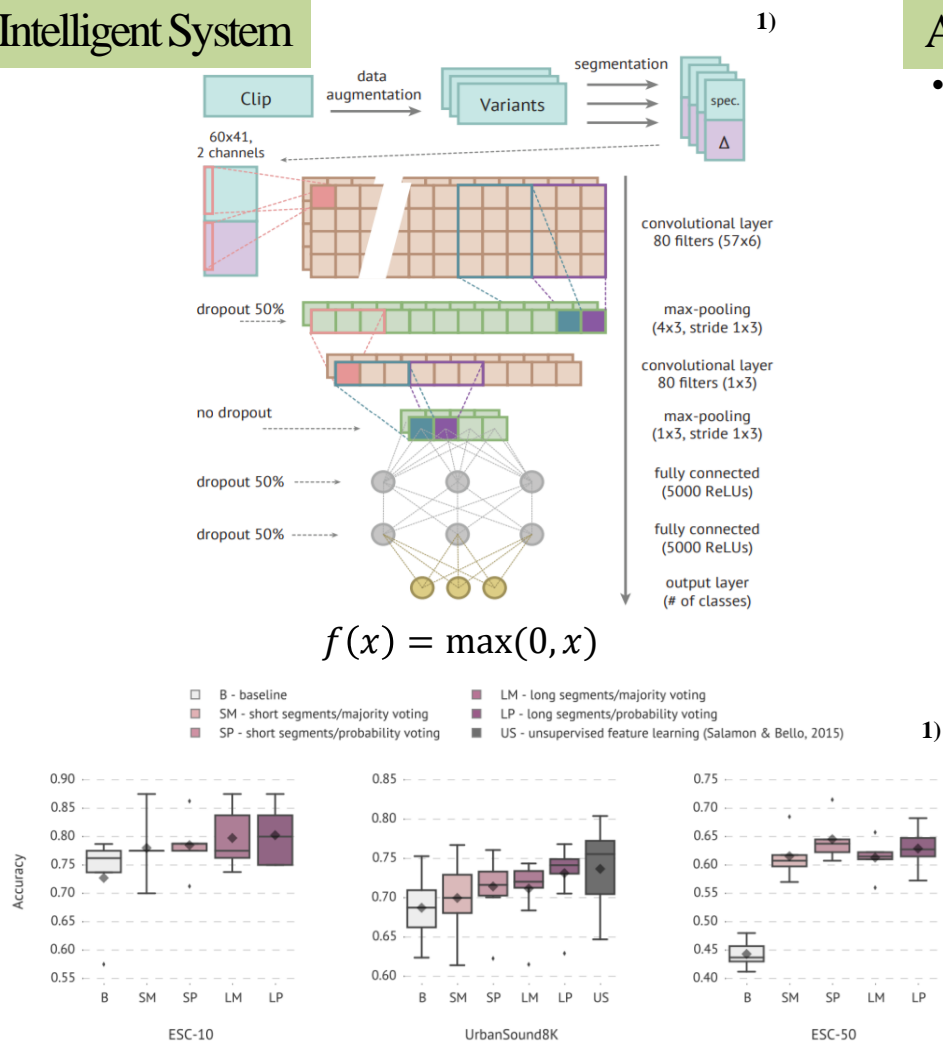
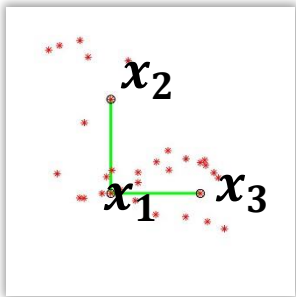


Fig. 4. Comparison of classification accuracy on the evaluated datasets.

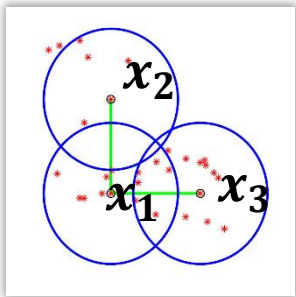
Advanced Machine Learning

- Neighborhood Information and It's Influence
- Datasets



Euclidean Distance

$$d(x_1, x_2) = d(x_1, x_3)$$



Distance Using

Neighborhood Information

$$d(x_1, x_2) \geq d(x_1, x_3)$$

2)

Dataset	Samples	Features	Classes
Dermatology	366	34	6
Glass	214	9	7
Heart	270	13	2
Hepatitis	155	19	2
ICU	200	20	3
Spam	4601	57	2
Srbct	63	2308	4

❖ From UCI datasets

2)

Dataset	$k=1$		$k=5$		$k=9$	
	k NN	FNk NN	k NN	FNk NN	k NN	FNk NN
Dermatology	96.11	96.59	97.14	97.76	96.03	97.94
Glass	66.33	64.27	65.95	67.24	59.36	64.38
Heart	76.67	75.93	81.85	82.22	82.96	83.33
Hepatitis	82.50	83.50	87.17	86.33	85.33	87.33
ICU	86.82	86.89	93.13	93.08	92.61	92.62
Spam	88.57	86.77	88.16	88.62	88.00	88.12
Srbct	89.00	93.33	84.67	96.67	85.33	94.00

Dataset	FNk NN	NEC	CART	LSVM	NBC	C4.5	LMNN
Dermatology	97.38	96.07	92.26	96.55	<u>97.54</u>	95.90	97.94
Glass	64.72	57.61	43.62	57.11	49.64	68.80	68.17
Heart	85.19	80.00	74.07	83.33	<u>84.07</u>	76.30	81.48
Hepatitis	86.83	85.00	91.00	86.17	88.39	<u>89.68</u>	85.33
ICU	<u>92.61</u>	86.29	79.40	92.56	90.50	91.50	93.13
Spam	87.85	81.00	<u>90.55</u>	89.79	79.29	92.91	89.57
Srbct	95.00	87.00	80.33	98.33	<u>95.20</u>	74.00	84.67
Average	87.08	81.85	78.75	86.26	83.51	84.16	85.76

- Datasets : ESC-50 dataset, ESC-10 dataset, UrbanSound8K

1) Karol J. Piczak., "Environmental Sound Classification With Convolutional Neural Networks,"2015 IEEE INTERNATIONAL WORKSHOP ON MACHINE LEARNING FOR SIGNAL PROCESSING, SEPT. 17–20, 2015, BOSTON, USA

2) Lin, Yaojin & li, Jinjin & Lin, Menglei & Chen, Jinkun. (2014). A new nearest neighbor classifier via fusing neighborhood information. Neurocomputing. 143. 164–169.