Dual center based intuitionistic fuzzy plane based classifiers

Anuradha Kumari
Department of Mathematics
Indian Institute of Technology Indore
Indore, India
phd2101141007@iiti.ac.in

M. Tanveer
Department of Mathematics
Indian Institute of Technology Indore
Indore, India
mtanveer@iiti.ac.in

TABLE I: AUC with the time required for training of the proposed DC-IFSVM, DC-IFLSTSVM and baseline models over UCI datasets with RBF kernel.

Dataset	(Samples,Dim)	TWSVM [1] (AUC,time(sec))	KIFSVM [2] (AUC,time(sec))	RFLSTSVM-CIL [3] (AUC,time(sec))	IIFTWSVM [4] (AUC,time(sec))	IFTWSVM-ID [5] (AUC,time(sec))	DC-IFTBLDM [6] (AUC,time(sec))	DC-IFSVM (AUC,time(sec))	DC-IFLSTSVM (AUC,time(sec))
d1 (3.2)	(748, 4)	(0.7062, 0.0362)	(0.7001, 0.1727)	(0.6755, 0.0362)	(0.6128, 0.1791)	(0.655, 0.0455)	(0.6643, 0.6029)	(0.6652, 0.1681)	(**0.7072**, 0.0139)
d2 (1.9)	(699, 9)	(0.9655, 0.0178)	(0.9662, 0.3709)	(0.9785, 0.0351)	(0.9607, 0.0631)	(0.9525, 0.0322)	(**0.9812**, 0.2847)	(0.9699, 0.1264)	(**0.9812**, 0.0073)
d3 (3.21)	(198, 33)	(**0.5995**, 0.0031)	(0.5301, 0.0139)	(0.5452, 0.0046)	(0.5059, 0.0087)	(0.5008, 0.0047)	(0.49, 0.0244)	(0.5192, 0.0042)	(0.4356, 0.0007)
d4 (1.59)	(435, 16)	(0.5953, 0.0099)	(0.5, 0.0439)	(0.618, 0.0104)	(0.5678, 0.0186)	(**0.6356**, 0.0092)	(0.6248, 0.1229)	(0.6137, 0.0404)	(0.6178, 0.004)
d5 (1.25)	(690, 15)	(**0.8675**, 0.0151)	(0.8581, 0.1752)	(0.8533, 0.0251)	(0.8509, 0.0504)	(0.8585, 0.0233)	(0.8623, 0.1294)	(0.8581, 0.0721)	(0.8578, 0.0626)
d6 (2.05)	(131, 10)	(0.7727, 0.0011)	(0.7273, 0.0587)	(0.8003, 0.0022)	(0.6364, 0.0057)	(**0.8182**, 0.0021)	(**0.8182**, 0.0166)	(0.7273, 0.0054)	(**0.8182**, 0.0005)
d7 (2.78)	(306, 3)	(0.6516, 0.0047)	(0.5248, 0.0392)	(0.6547, 0.0046)	(0.5, 0.0109)	(**0.7162**, 0.0048)	(0.6778, 0.0355)	(0.6333, 0.0196)	(0.6593, 0.0007)
d8 (1.77)	(294, 12)	(0.8271, 0.0024)	(0.8212, 0.0148)	(0.8113, 0.0049)	(0.8212, 0.0182)	(0.7216, 0.006)	(0.858, 0.0264)	(0.8212, 0.0077)	(**0.899**, 0.0007)
d9 (3.84)	(155, 19)	(0.6875, 0.0015)	(**0.8542**, 0.0094)	(0.8417, 0.0028)	(0.8417, 0.0028)	(0.8417, 0.0054)	(0.8042, 0.031)	(**0.8542**, 0.0054)	(0.8042, 0.0003)
d10 (1.71)	(368, 25)	(0.7492, 0.004)	(0.7888, 0.014)	(0.8032, 0.007)	(0.6479, 0.029)	(0.8169, 0.0099)	(0.8032, 0.3061)	(0.7751, 0.0096)	(**0.8301**, 0.0014)
d11 (1.79)	(351, 33)	(**0.9783**, 0.0039)	(0.9014, 0.0491)	(0.9283, 0.0081)	(0.8631, 0.0195)	(0.929, 0.0094)	(0.8401, 0.1657)	(0.9085, 0.0221)	(0.9642, 0.005)
d12 (1)	(556, 6)	(0.9765, 0.0112)	(0.8118, 0.2703)	(0.953, 0.0166)	(0.7871, 0.0579)	(0.965, 0.0172)	(**0.9828**, 0.0776)	(0.878, 0.055)	(0.9688, 0.0465)
d13 (1.08)	(554, 6)	(**0.9239**, 0.0101)	(0.8657, 0.1623)	(0.9022, 0.0151)	(0.7197, 0.0637)	(0.9063, 0.021)	(0.9158, 1.273)	(0.9119, 0.066)	(0.9185, 0.0461)
d14 (1.3)	(476, 166)	(**0.9577**, 0.0066)	(0.821, 0.0124)	(0.9437, 0.0149)	(0.7062, 0.0264)	(0.93, 0.0123)	(0.9098, 0.0807)	(0.821, 0.0076)	(0.9226, 0.0076)
d15 (1.87)	(768, 8)	(0.7365, 0.0386)	(0.707, 0.2337)	(0.7273, 0.0323)	(0.5146, 0.0565)	(0.7428, 0.0285)	(0.7242, 0.2831)	(**0.7434**, 0.147)	(0.7402, 0.0339)
d16 (6.29)	(102, 7)	(0.3571, 0.0016)	(**0.744**, 0.0106)	(0.4643, 0.0013)	(0.6667, 0.0023)	(0.619, 0.0031)	(0.5, 0.0196)	(0.7083, 0.0051)	(0.6488, 0.0001)
d17 (1.41)	(265, 22)	(0.6223, 0.002)	(0.7118, 0.0183)	(0.6536, 0.0034)	(0.6137, 0.019)	(0.6579, 0.0051)	(0.6416, 0.0245)	(**0.7224**, 0.0068)	(0.7055, 0.0008)
d18 (2.11)	(690, 14)	(0.4531, 0.0298)	(**0.5247**, 0.0333)	(0.5035, 0.0264)	(0.496, 0.0459)	(0.5015, 0.0241)	(0.5188, 0.0977)	(0.5209, 0.014)	(0.5098, 0.0241)
d19 (2.1)	(2201, 3)	(0.7119, 0.1959)	(0.7117, 1.831)	(**0.7298**, 0.4686)	(0.7, 2.7331)	(0.7119, 0.3628)	(0.7119, 4.0651)	(0.7119, 0.5962)	(0.7119, 0.0409)
d20 (1.86)	(683, 9)	(0.9598, 0.3757)	(0.9524, 0.465)	(0.9598, 0.1829)	(**0.9778**, 0.173)	(**0.9778**, 0.086)	(**0.9778**, 0.253)	(0.9667, 0.1696)	(0.9741, 0.0123)
d21 (1.25)	(1372, 4)	(**1**, 0.0963)	(0.9977, 1.0136)	(0.9977, 0.4604)	(0.9977, 0.7158)	(0.9977, 0.2399)	(0.9977, 0.4304)	(**1**, 0.546)	(**1**, 0.2276)
d22 (1.02)	(7400, 20)	(0.9825, 21.6567)	(0.8818, 271.3213)	(0.9846, 21.01)	(0.8451, 31.7247)	(0.9835, 13.4319)	(0.9751, 37.163)	(0.8668, 121.1155)	(**0.9864**, 2.7862)
d23 (1)	(7400, 20)	(0.9744, 8.8872)	(0.9748, 2.6268)	(0.9263, 27.3189)	(0.974, 14.605)	(0.9748, 18.1506)	(0.9757, 43.9777)	(0.9748, 0.864)	(**0.9761**, 7.0746)
d24 (1.84)	(19020, 10)	(0.8104, 18.9714)	(0.6098, 25.1728)	(0.8066, 42.2576)	(0.7646, 92.9534)	(0.7876, 57.2607)	(0.804, 123.213)	(**0.8364**, 40.3638)	(0.7966, 38.5192)
d25 (8.03)	(48842, 14)	(0.6955, 120.2381)	(0.5, 565.7869)	(0.678, 657.9286)	(0.7767, 890.8303)	(0.7487, 318.7236)	*	(0.7705, 525.311)	(**0.7816**, 491.0077)
Avg AUC		0.78	0.76	0.79	0.73	0.8	0.79	0.79	**0.81**
Avg rank		4.28	5.38	4.28	6.5	4.14	4.04	4.1	**3.12**

* Experiment stopped as the training extended for more than 1 day.

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