

## IRWNRLMF OUTPUT SUMMARY

RW parameters:  $W_q=0.8, W_u=0.4, r_q=0.8, r_u=0.4$

NRLMF parameters:  $r=20, c=5, K_1=5, \lambda_1=2, \lambda_p=2, \alpha=1, \beta=1, \gamma=0.01, K_2=5$

**CVS-1:** 10-fold cross validation on rows(represents RNAs) in the interaction matrix. The rows were randomly split into 10 equal sets. For each such set:

1. Entries of rows in that set are made 0
2. IRWNRLMF is performed with this set of RNAs as the negative RNA set
3. ROC curve and PR curve are drawn taking the negative RNA set as the test set

[Jump to CVS-1 average results](#)

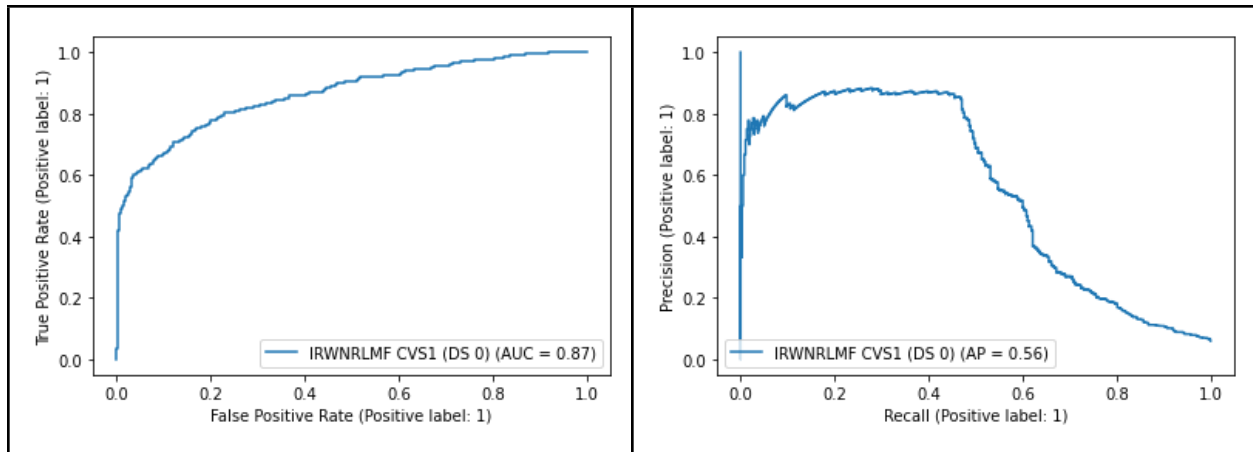
+++ IRWNRLMF CVS-1: Dataset-0 +++

Negative RNA set=

[41, 795, 648, 51, 314, 555, 85, 115, 548, 90, 805, 675, 279, 133, 636, 662, 79, 768, 868, 606, 345, 739, 579, 855, 881, 682, 14, 230, 127, 853, 355, 383, 39, 922, 244, 113, 236, 568, 501, 275, 488, 669, 329, 680, 55, 700, 178, 421, 538, 298, 981, 495, 181, 444, 740, 418, 285, 296, 45, 604, 420, 630, 760, 741, 765, 796, 534, 325, 558, 754, 608, 882, 778, 242, 451, 129, 524, 158, 409, 303, 823, 511, 40, 553, 121, 626, 138, 820, 717, 185, 223, 38, 428, 977, 144, 476, 153, 60, 482]

AUROC=0.8663847994160181

AUPR=0.5562158822828673



ROC Curve DS-0

PR Curve DS-0

+++ IRWNRLMF CVS-1: Dataset-1 +++

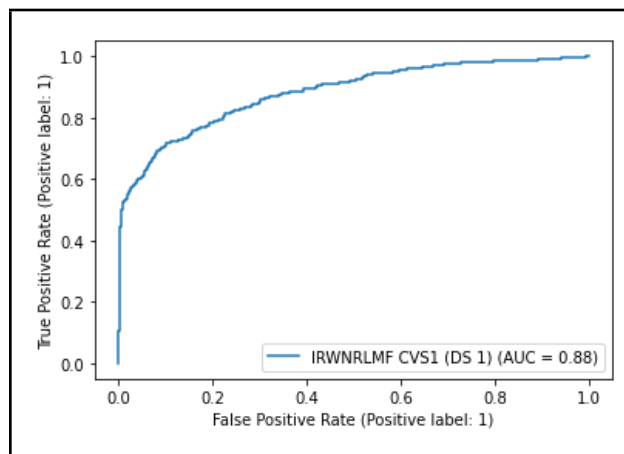
Negative RNA set=

[59, 78, 797, 893, 491, 99, 632, 318, 52, 199, 905, 519, 749, 635, 123, 753, 179, 381, 446, 126, 767, 17, 356, 622, 215, 156, 175, 205, 137, 657, 132, 416, 824, 667, 970, 987, 845, 423, 769, 114, 592, 429, 200, 88, 932,

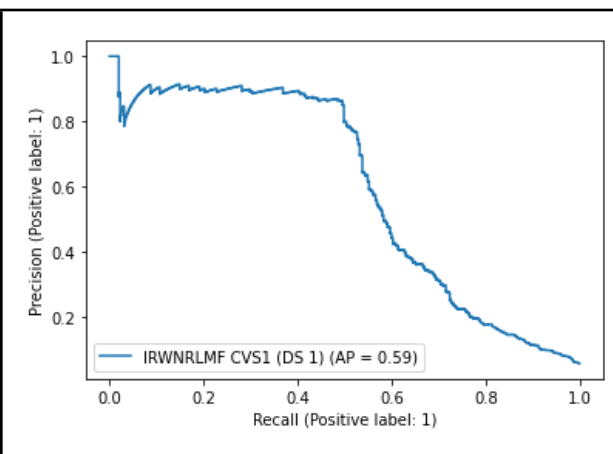
426, 928, 436, 260, 707, 150, 500, 980, 344, 589, 33, 320, 98, 730, 983,  
798, 278, 645, 417, 697, 763, 521, 168, 918, 266, 453, 629, 770, 956, 874,  
209, 352, 16, 74, 371, 163, 456, 889, 317, 673, 292, 503, 340, 312, 725,  
110, 29, 419, 706, 595, 574, 986, 44, 396]

AUROC=0.8819114990898408

AUPR=0.5926651889498512



ROC Curve DS-1



PR Curve DS-1

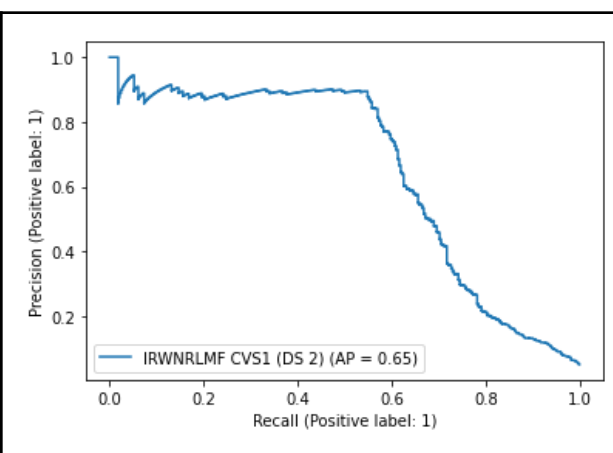
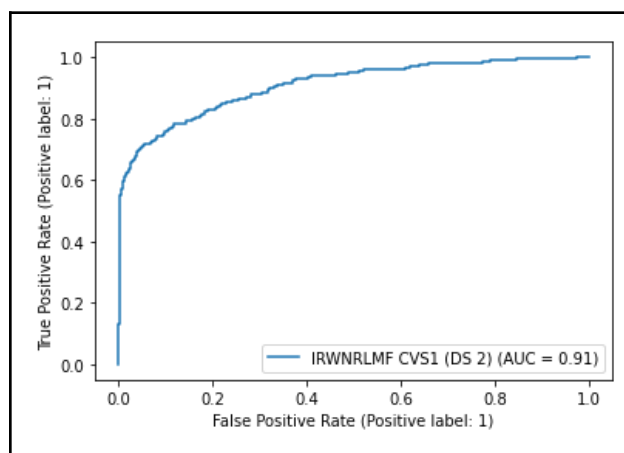
+++ IRWNRLMF CVS-1: Dataset-2 +++

Negative RNA set=

[910, 294, 257, 527, 935, 672, 478, 985, 427, 390, 406, 591, 148, 972,  
134, 929, 391, 369, 880, 231, 50, 342, 87, 497, 26, 698, 290, 597, 750,  
614, 844, 357, 618, 164, 48, 670, 336, 452, 508, 118, 393, 483, 644, 6,  
224, 170, 439, 968, 651, 399, 580, 687, 807, 225, 842, 718, 964, 830, 576,  
313, 712, 61, 627, 962, 378, 238, 270, 624, 886, 557, 167, 676, 77, 346,  
546, 349, 119, 896, 879, 745, 375, 904, 139, 960, 600, 963, 210, 808, 734,  
726, 384, 794, 339, 198, 737, 875, 777, 898, 971]

AUROC=0.9089748170227534

AUPR=0.6490160220979847



ROC Curve DS-2

PR Curve DS-2

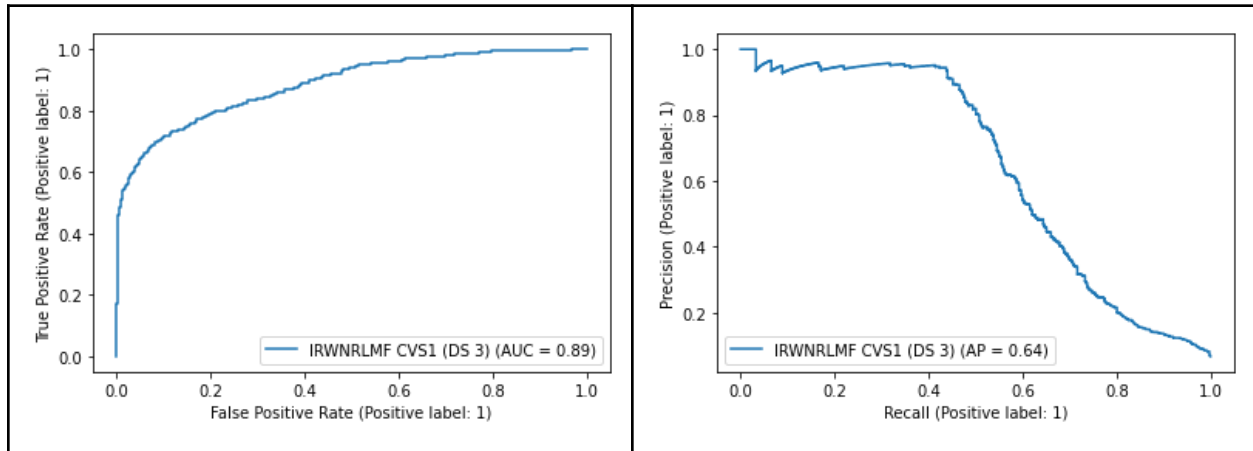
+++ IRWNRLMF CVS-1: Dataset-3 +++

Negative RNA set=

[908, 713, 177, 58, 18, 36, 654, 316, 510, 665, 322, 887, 191, 561, 442, 68, 64, 81, 793, 817, 291, 828, 738, 227, 268, 540, 974, 685, 490, 723, 463, 748, 773, 402, 188, 596, 686, 293, 319, 184, 530, 642, 564, 825, 404, 337, 76, 485, 496, 368, 701, 392, 756, 517, 911, 489, 160, 509, 920, 659, 832, 803, 702, 533, 289, 736, 385, 850, 601, 714, 333, 71, 3, 693, 410, 57, 751, 20, 347, 380, 75, 407, 678, 364, 897, 360, 477, 136, 683, 10, 719, 869, 650, 398, 274, 258, 955, 923, 967]

AUROC=0.8865851043718093

AUPR=0.6401208833953368



ROC Curve DS-3

PR Curve DS-3

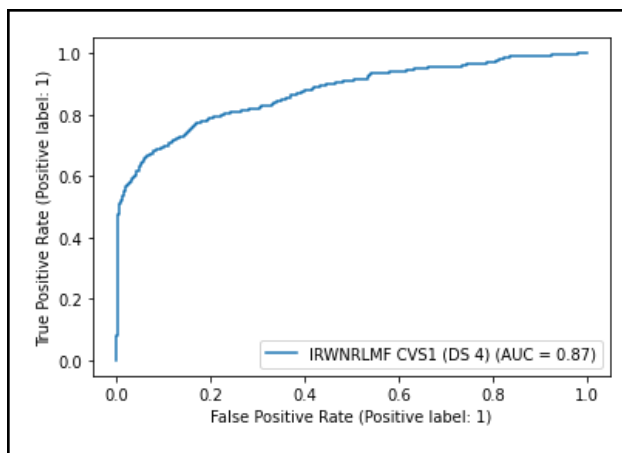
+++ IRWNRLMF CVS-1: Dataset-4 +++

Negative RNA set=

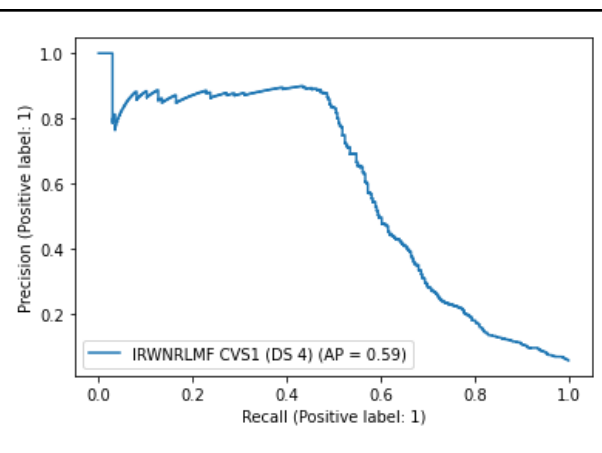
[906, 162, 512, 916, 359, 716, 598, 628, 166, 762, 152, 27, 934, 901, 467, 810, 565, 806, 379, 186, 502, 790, 699, 400, 473, 552, 663, 72, 666, 942, 708, 780, 433, 228, 688, 480, 23, 633, 696, 21, 822, 124, 157, 273, 247, 102, 264, 927, 173, 171, 776, 2, 250, 338, 771, 569, 457, 567, 249, 382, 843, 394, 220, 689, 913, 572, 722, 206, 15, 811, 846, 363, 47, 255, 812, 865, 69, 13, 131, 438, 728, 373, 189, 324, 479, 387, 514, 232, 374, 958, 447, 315, 469, 671, 7, 425, 226, 265, 321]

AUROC=0.872447925632639

AUPR=0.5916930333556554



ROC Curve DS-4



PR Curve DS-4

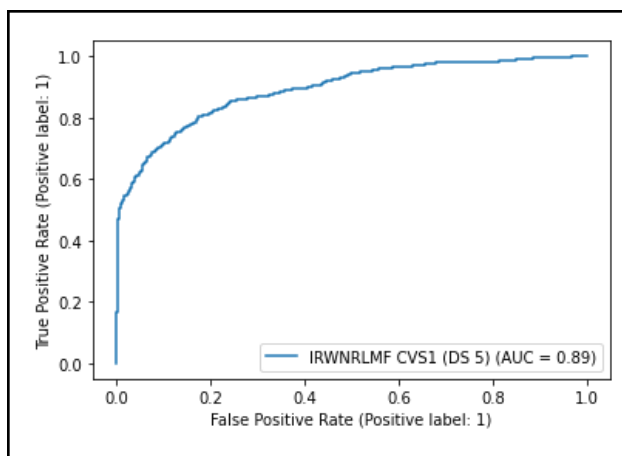
+++ IRWNRLMF CVS-1: Dataset-5 +++

Negative RNA set=

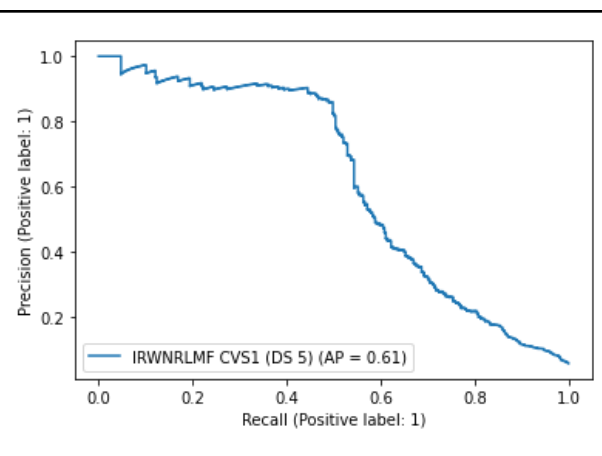
[612, 775, 610, 570, 755, 839, 306, 938, 193, 656, 103, 826, 358, 801, 590, 108, 422, 1, 116, 703, 24, 341, 89, 613, 30, 554, 251, 833, 891, 646, 494, 705, 563, 125, 207, 802, 197, 243, 621, 562, 222, 783, 903, 233, 281, 376, 142, 543, 141, 464, 603, 877, 940, 212, 262, 208, 545, 924, 70, 311, 239, 900, 731, 520, 412, 930, 348, 791, 945, 631, 607, 878, 836, 180, 829, 952, 19, 800, 254, 176, 989, 86, 544, 899, 787, 195, 466, 155, 885, 652, 461, 586, 299, 328, 766, 437, 245, 715, 435]

AUROC=0.8923836279674368

AUPR=0.6148617776393579



ROC Curve DS-5



PR Curve DS-5

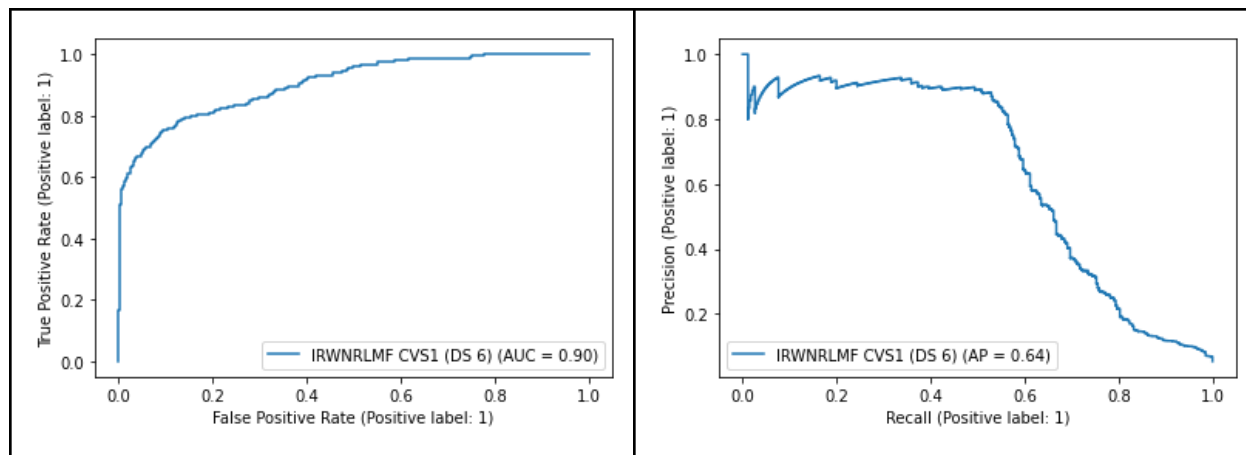
+++ IRWNRLMF CVS-1: Dataset-6 +++

Negative RNA set=

[0, 513, 895, 440, 909, 792, 764, 484, 12, 190, 335, 581, 735, 744, 605, 458, 747, 403, 786, 863, 277, 547, 757, 367, 411, 733, 804, 174, 269, 535, 710, 308, 276, 943, 487, 187, 902, 936, 742, 784, 684, 498, 531, 861, 252, 388, 815, 42, 594, 5, 984, 625, 821, 873, 122, 146, 493, 84, 862, 106, 858, 841, 104, 949, 235, 256, 472, 819, 470, 246, 386, 194, 213, 743, 661, 37, 31, 432, 370, 172, 272, 660, 301, 165, 53, 25, 101, 912, 550, 196, 532, 253, 107, 602, 83, 840, 240, 468, 504]

AUROC=0.9047325668092453

AUPR=0.6414861080646395



ROC Curve DS-6

PR Curve DS-6

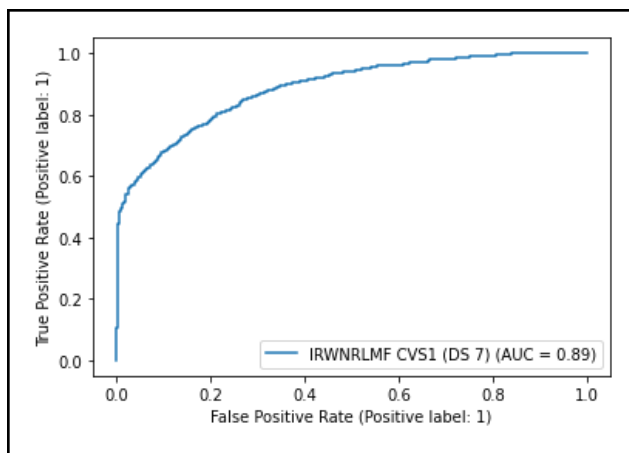
+++ IRWNRLMF CVS-1: Dataset-7 +++

Negative RNA set=

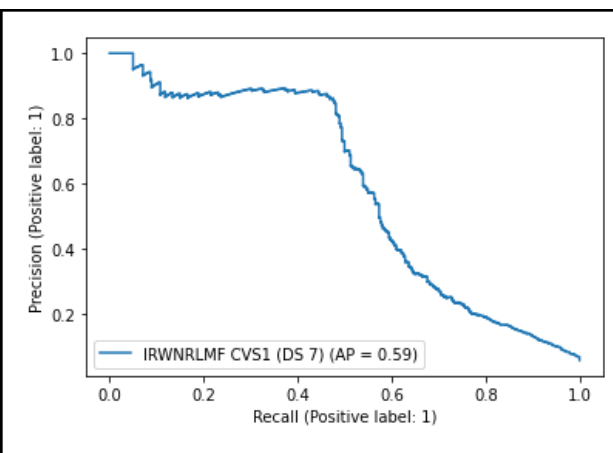
[837, 692, 523, 831, 818, 761, 720, 46, 681, 785, 690, 691, 577, 639, 587, 413, 838, 183, 921, 56, 588, 854, 976, 192, 111, 234, 507, 82, 516, 219, 655, 377, 105, 332, 888, 637, 323, 54, 724, 649, 859, 926, 695, 947, 876, 782, 334, 870, 448, 397, 539, 948, 286, 975, 809, 857, 248, 263, 529, 408, 933, 515, 35, 599, 727, 63, 431, 326, 62, 471, 302, 159, 573, 851, 182, 860, 414, 424, 395, 154, 443, 582, 241, 455, 327, 653, 449, 445, 522, 259, 11, 94, 151, 8, 944, 774, 872, 218, 732]

AUROC=0.8870493266409814

AUPR=0.5881875885594052



ROC Curve DS-7



PR Curve DS-7

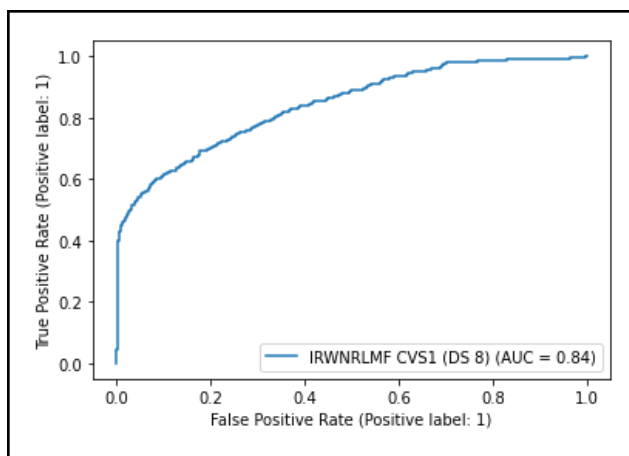
+++ IRWNRLMF CVS-1: Dataset-8 +++

Negative RNA set=

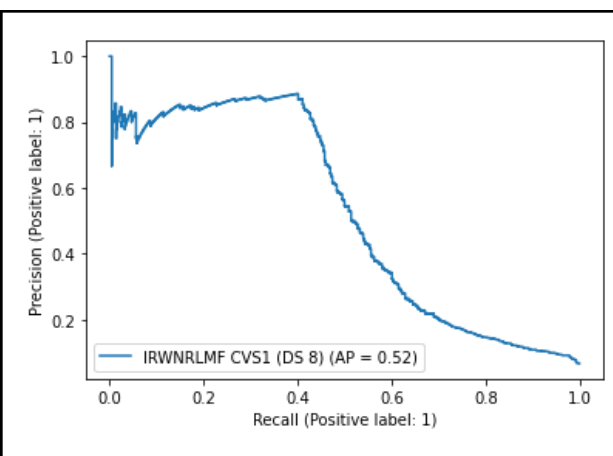
[145, 640, 267, 475, 309, 372, 465, 288, 961, 620, 161, 434, 430, 641, 729, 638, 931, 287, 282, 280, 100, 362, 616, 867, 204, 43, 95, 835, 583, 330, 93, 350, 34, 135, 366, 890, 950, 295, 361, 759, 969, 499, 946, 73, 307, 907, 450, 441, 169, 526, 609, 575, 486, 221, 283, 214, 459, 140, 894, 49, 67, 405, 847, 551, 973, 866, 619, 149, 979, 117, 988, 305, 611, 623, 849, 571, 584, 271, 143, 566, 201, 746, 300, 128, 454, 474, 941, 788, 9, 351, 506, 541, 401, 664, 536, 643, 66, 109, 556]

AUROC=0.8416251598706737

AUPR=0.5188277669127906



ROC Curve DS-8



PR Curve DS-8

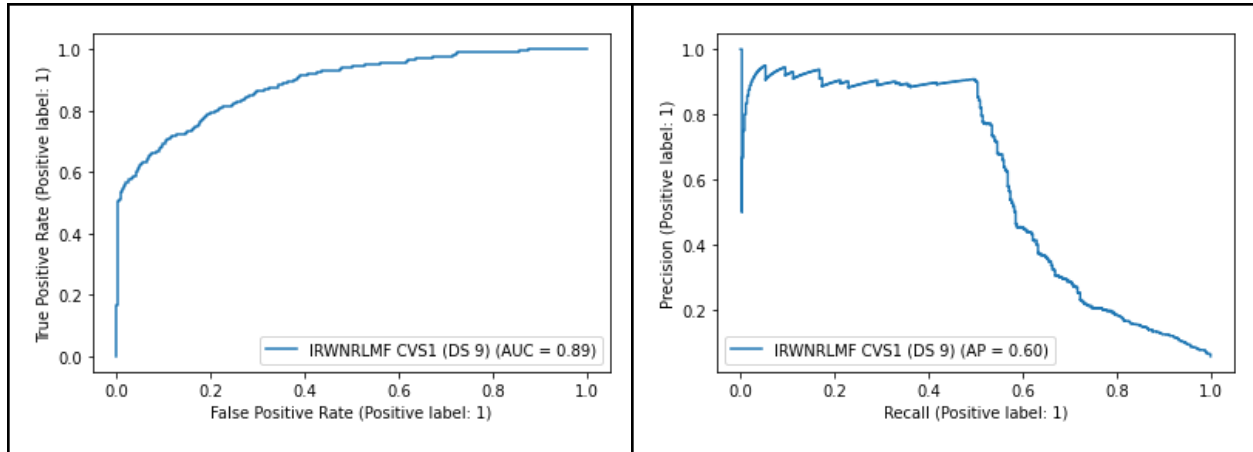
+++ IRWNRLMF CVS-1: Dataset-9 +++

Negative RNA set=

[677, 593, 92, 704, 965, 462, 112, 147, 816, 310, 389, 549, 96, 304, 647, 848, 559, 585, 721, 615, 120, 937, 284, 97, 957, 709, 91, 978, 22, 674, 752, 827, 814, 492, 202, 4, 884, 799, 966, 871, 856, 331, 217, 481, 237, 919, 28, 953, 528, 537, 216, 864, 883, 211, 668, 542, 578, 525, 415, 353, 261, 915, 982, 617, 758, 65, 781, 789, 365, 658, 460, 779, 959, 925, 917, 694, 939, 229, 834, 679, 343, 518, 711, 203, 297, 634, 914, 951, 130, 892, 772, 560, 852, 505, 813, 80, 354, 954, 32]

AUROC=0.8879397217994073

AUPR=0.600955102151874



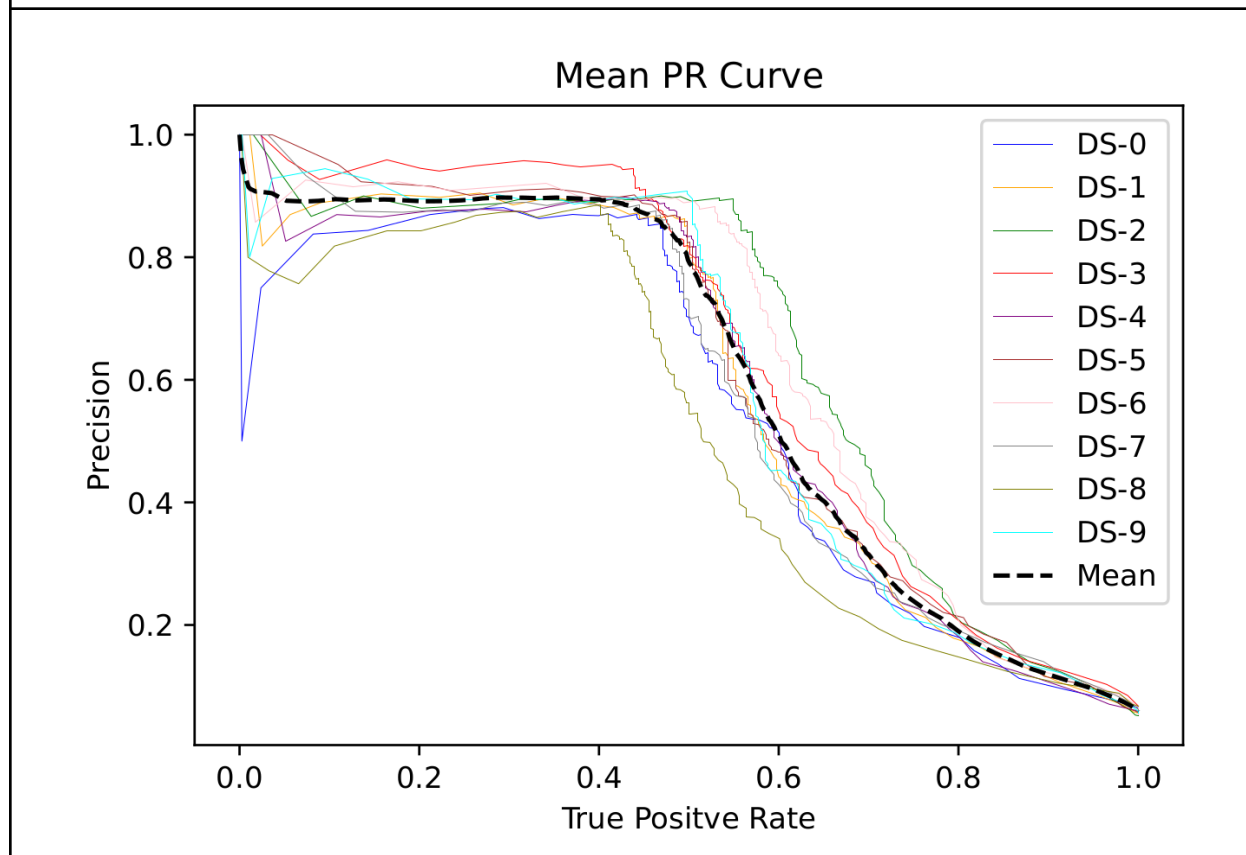
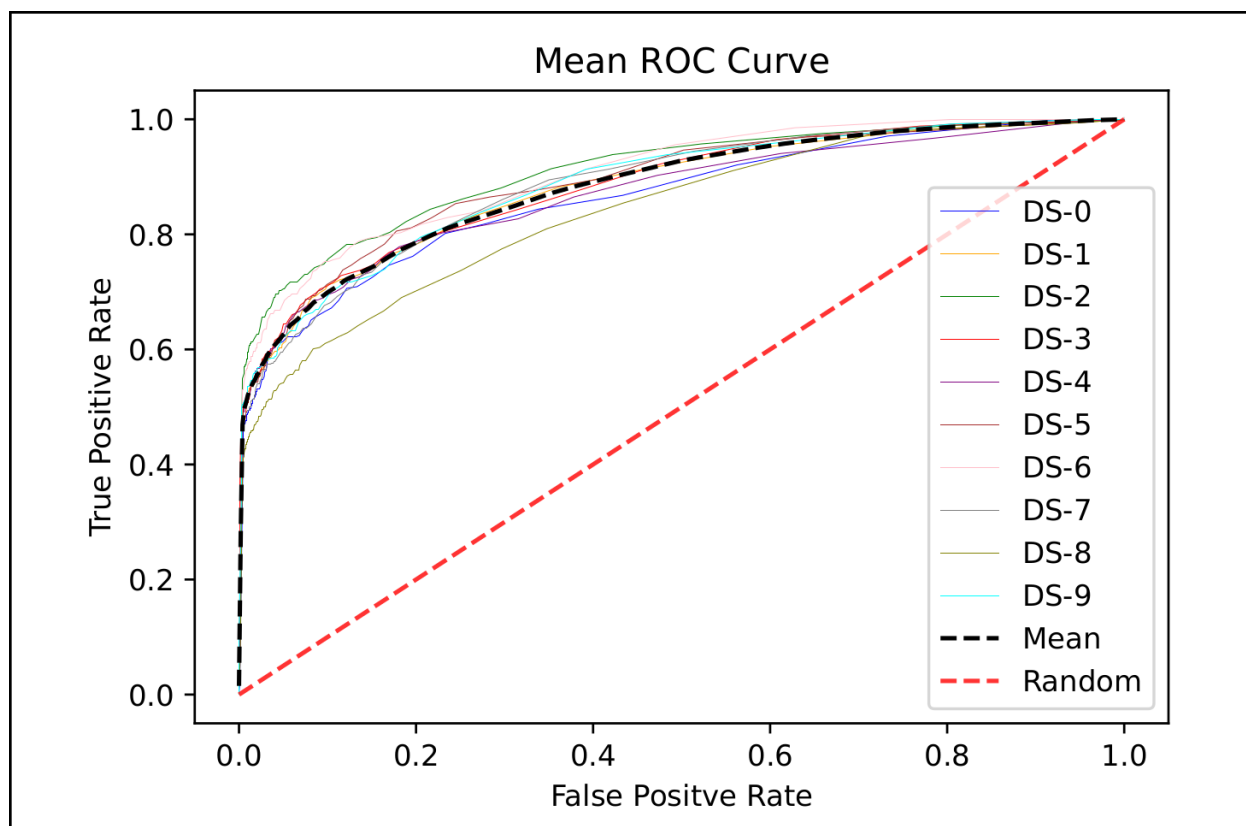
ROC Curve DS-9

PR Curve DS-9

AVERAGE RESULTS CVS-1:

AUROC (arithmetic mean) = **0.8830034548620805**

AUPR (arithmetic mean) = **0.5994029353409763**





**CVS-2:** 16-fold cross validation on columns(represents Proteins) in the interaction matrix. The columns were randomly split into 16 equal sets(took 16 for ease of division since the total number of proteins taken is 64). For each such set:

1. Entries of columns in that set are made 0
2. IRWNRLMF is performed with this set of proteins as the negative protein set (Since RW cannot be performed on proteins in the negative protein set,  $S_r$  values for those proteins are uniformly set to  $1/\text{rna\_cnt}(=1/990)$ )
3. ROC curve and PR curve are drawn taking the negative protein set as the test set

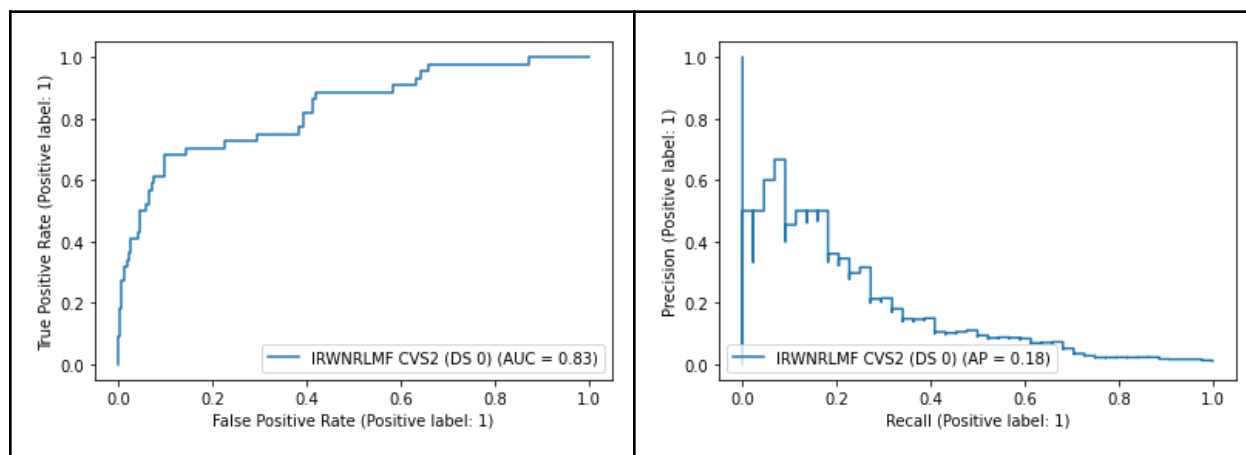
[Jump to CVS-2 average results](#)

+++ IRWNRLMF CVS-2: Dataset-0 +++

Negative protein set= [26, 32, 60, 27]

AUROC=0.8313446002414338

AUPR=0.18177575749349448



ROC Curve DS-0

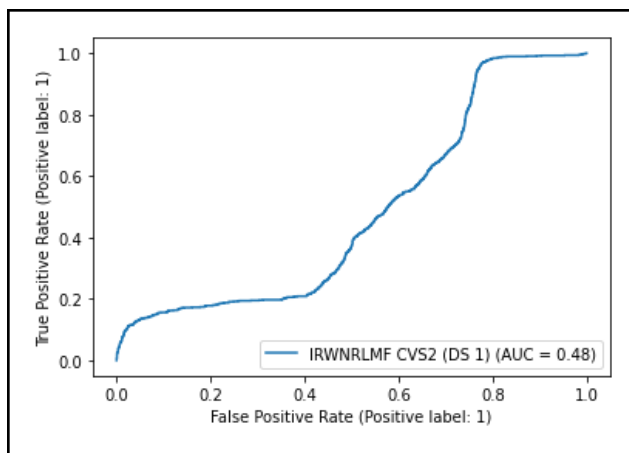
PR Curve DS-0

+++ IRWNRLMF CVS-2: Dataset-1 +++

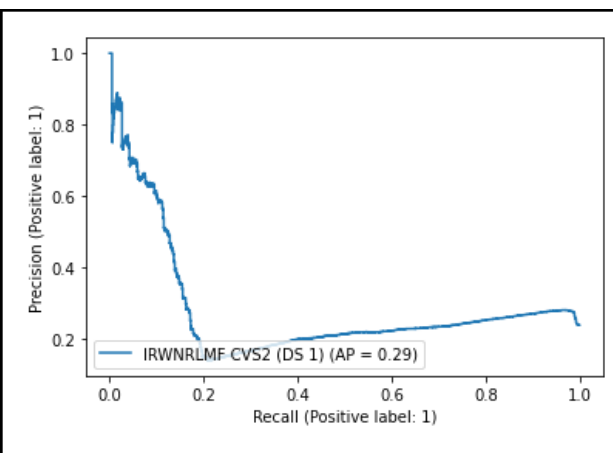
Negative protein set= [16, 8, 4, 48]

AUROC=0.4817600621543856

AUPR=0.28620904837324557

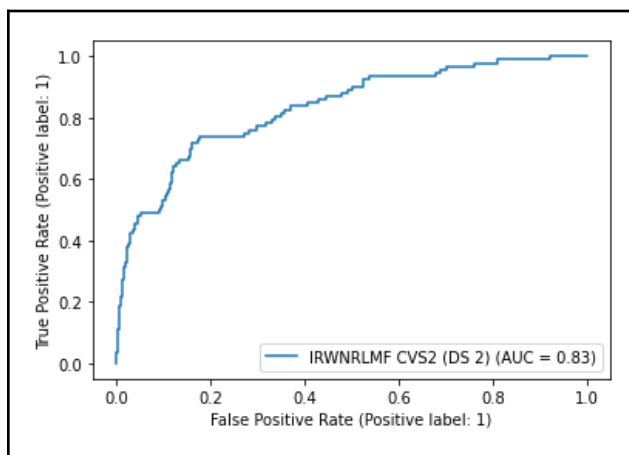


ROC Curve DS-1

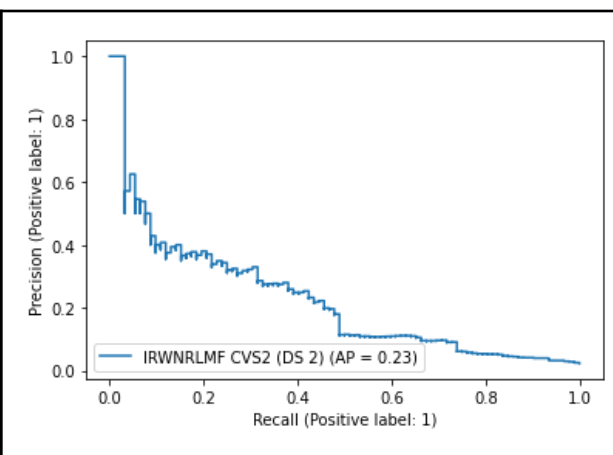


PR Curve DS-1

+++ IRWNRLMF CVS-2: Dataset-2 +++  
 Negative protein set= [15, 55, 42, 51]  
 AUROC=0.8321006249718987  
 AUPR=0.22584042058808942

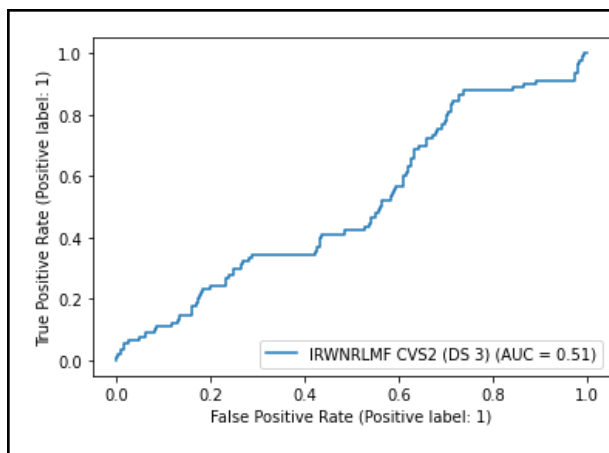


ROC Curve DS-2

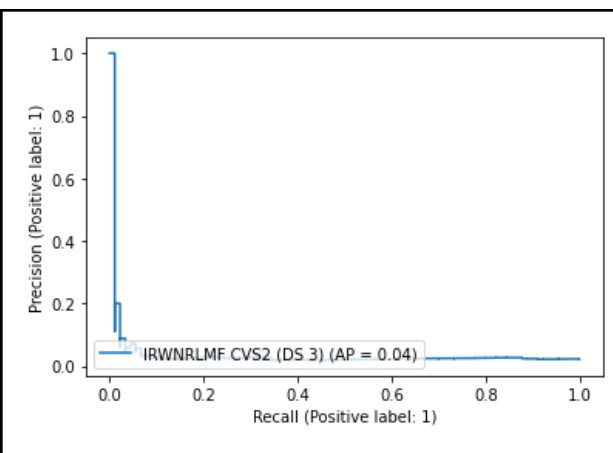


PR Curve DS-2

+++ IRWNRLMF CVS-2: Dataset-3 +++  
 Negative protein set= [36, 47, 41, 14]  
 AUROC=0.5098105081826012  
 AUPR=0.03873266050845152

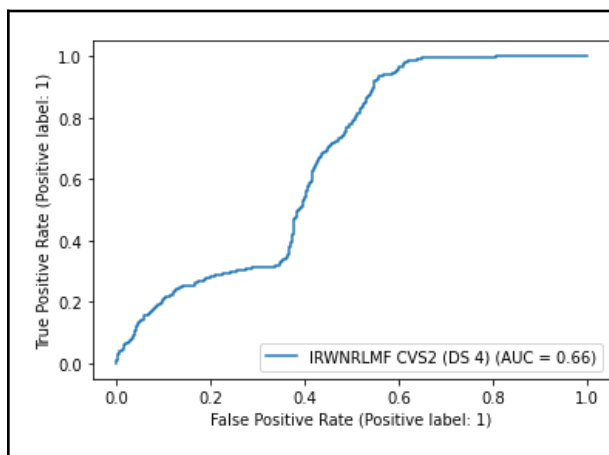


ROC Curve DS-3

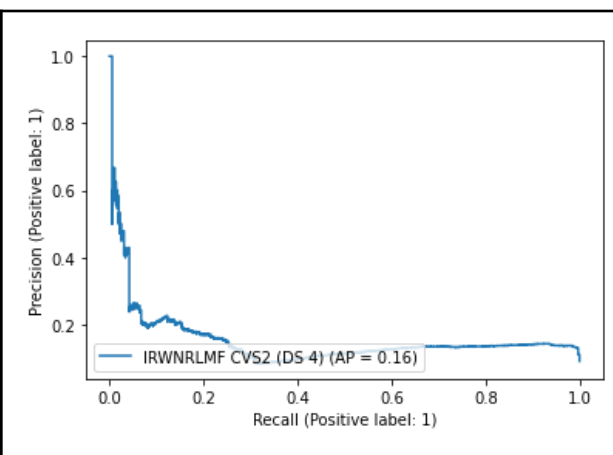


PR Curve DS-3

+++ IRWNRLMF CVS-2: Dataset-4 +++  
 Negative protein set= [35, 63, 6, 17]  
 AUROC=0.6600934017792518  
 AUPR=0.15719849574274217

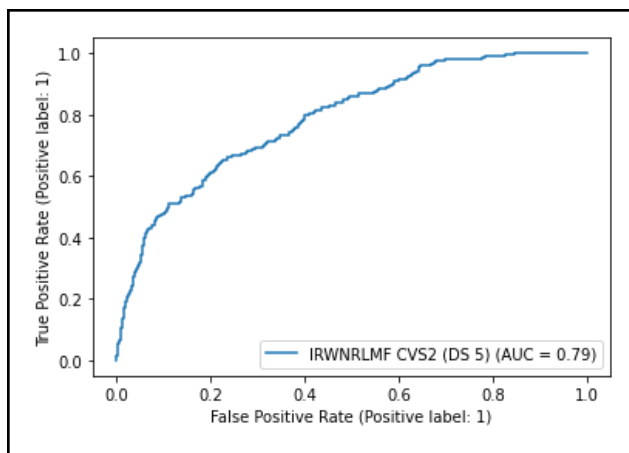


ROC Curve DS-4

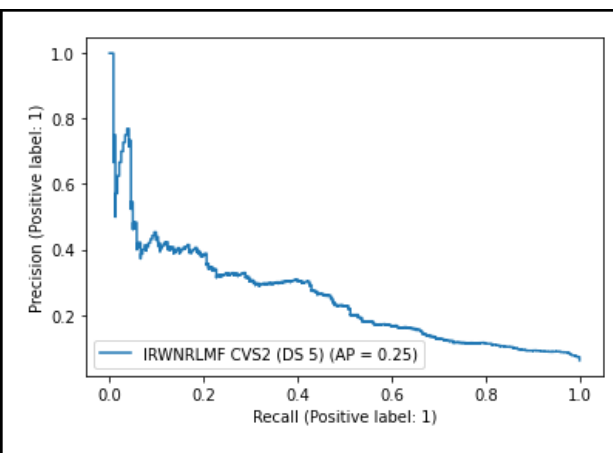


PR Curve DS-4

+++ IRWNRLMF CVS-2: Dataset-5 +++  
 Negative protein set= [0, 61, 40, 10]  
 AUROC=0.7876679899883968  
 AUPR=0.2526058824994711

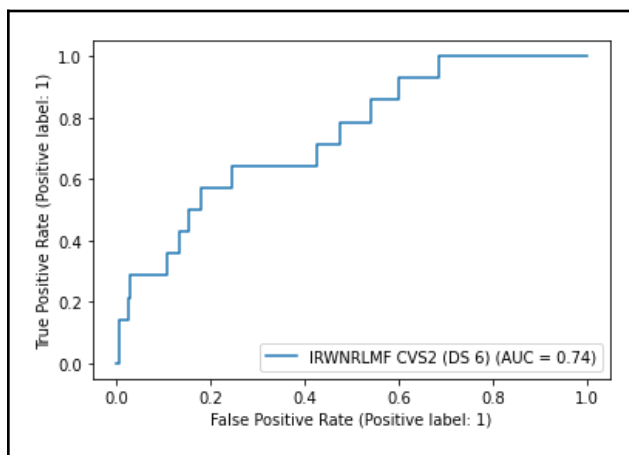


ROC Curve DS-5

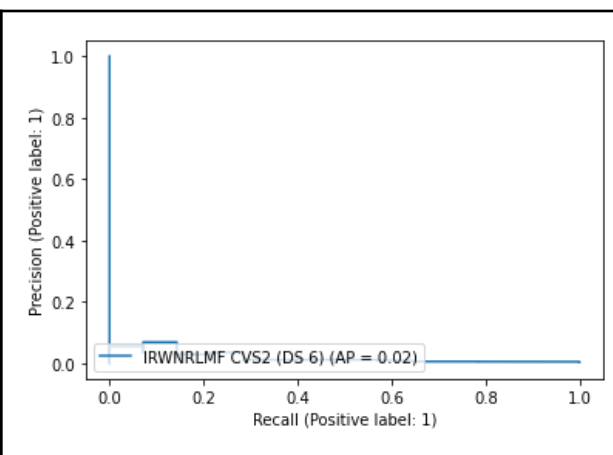


PR Curve DS-5

+++ IRWNRLMF CVS-2: Dataset-6 +++  
 Negative protein set= [62, 58, 50, 52]  
 AUROC=0.7423068568532329  
 AUPR=0.019402066384377633

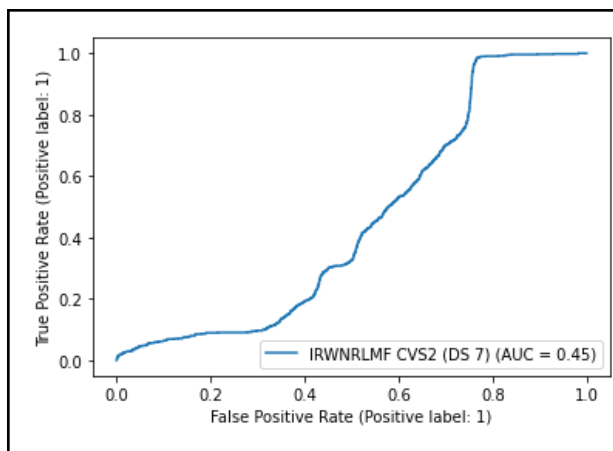


ROC Curve DS-6

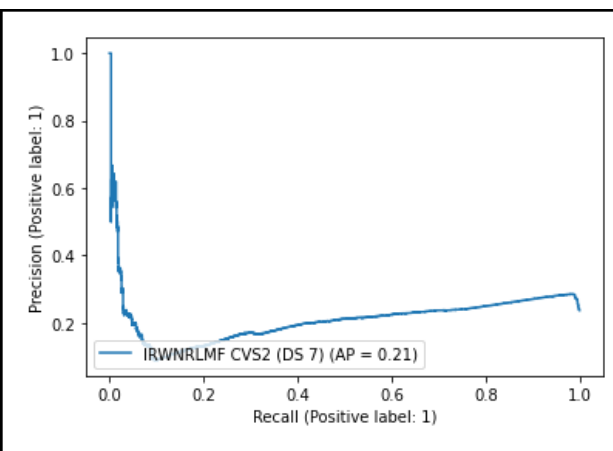


PR Curve DS-6

+++ IRWNRLMF CVS-2: Dataset-7 +++  
 Negative protein set= [38, 34, 39, 1]  
 AUROC=0.45173596679826233  
 AUPR=0.21486759328037752

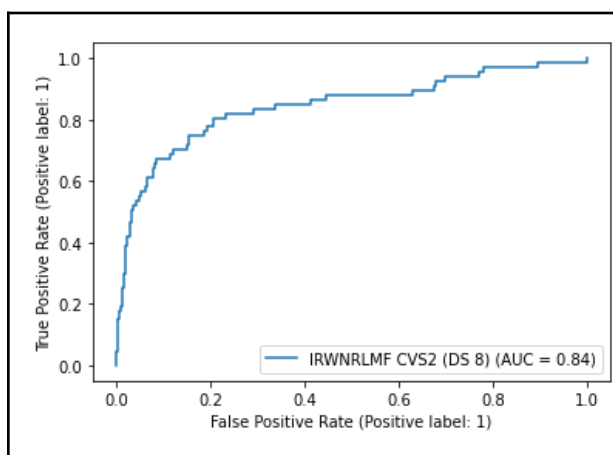


ROC Curve DS-7

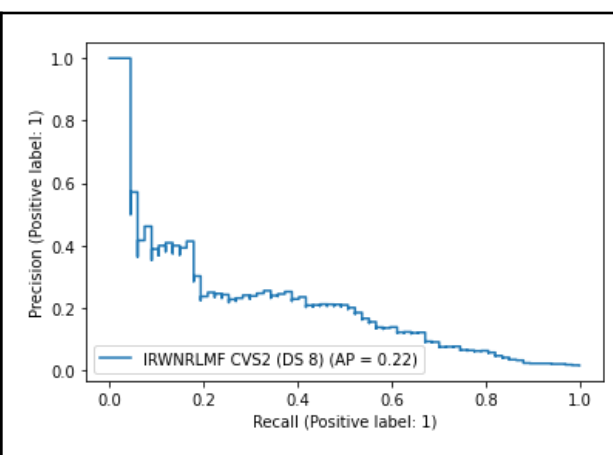


PR Curve DS-7

+++ IRWNRLMF CVS-2: Dataset-8 +++  
 Negative protein set= [19, 25, 22, 5]  
 AUROC=0.8434081838431782  
 AUPR=0.2194671685887401

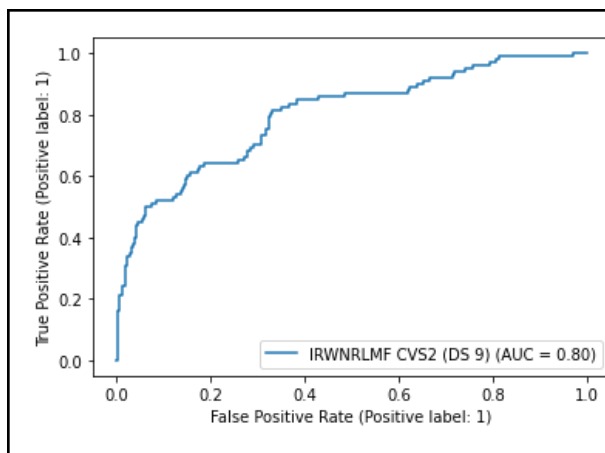


ROC Curve DS-8

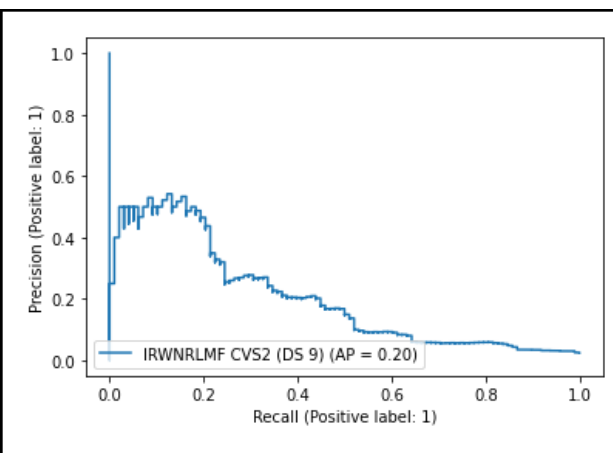


PR Curve DS-8

+++ IRWNRLMF CVS-2: Dataset-9 +++  
 Negative protein set= [3, 54, 7, 44]  
 AUROC=0.7991761696910767  
 AUPR=0.20165941725467798

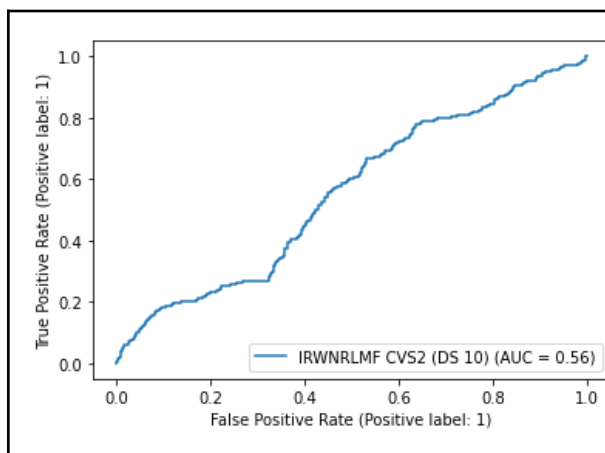


ROC Curve DS-9

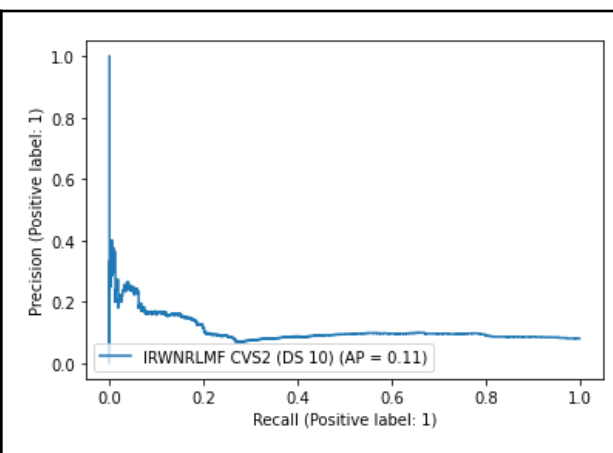


PR Curve DS-9

```
+++ IRWNRLMF CVS-2: Dataset-10 +++
Negative protein set= [11, 24, 28, 18]
AUROC=0.556124659608717
AUPR=0.11026049875296538
```

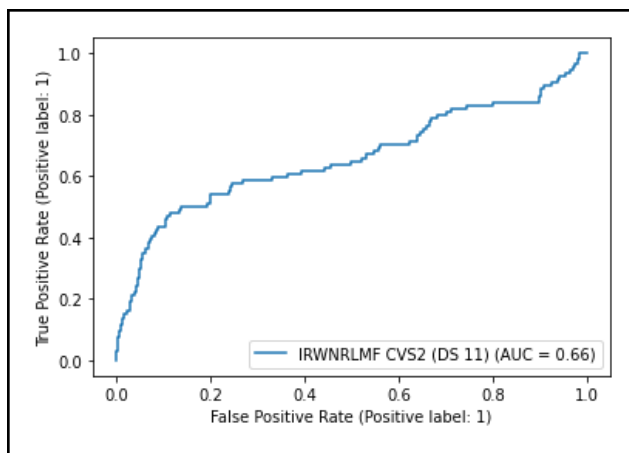


ROC Curve DS-10

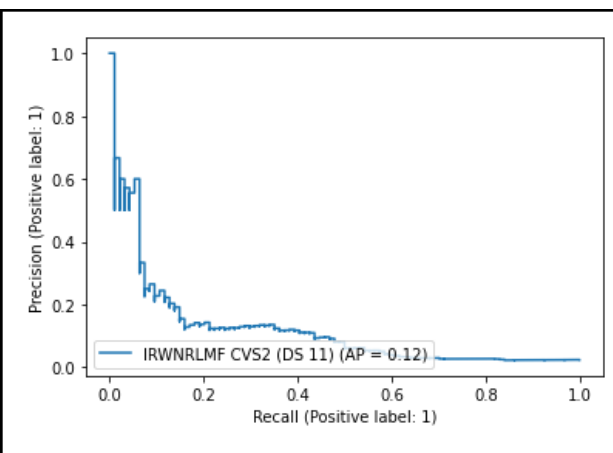


PR Curve DS-10

```
+++ IRWNRLMF CVS-2: Dataset-11 +++
Negative protein set= [9, 56, 53, 12]
AUROC=0.6584765164940397
AUPR=0.12159164211872703
```

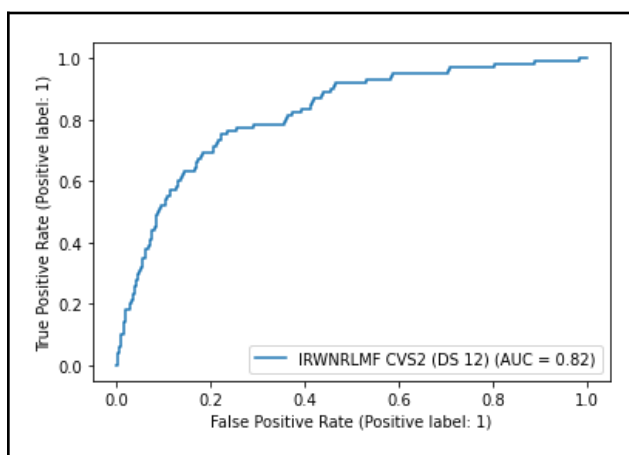


ROC Curve DS-11

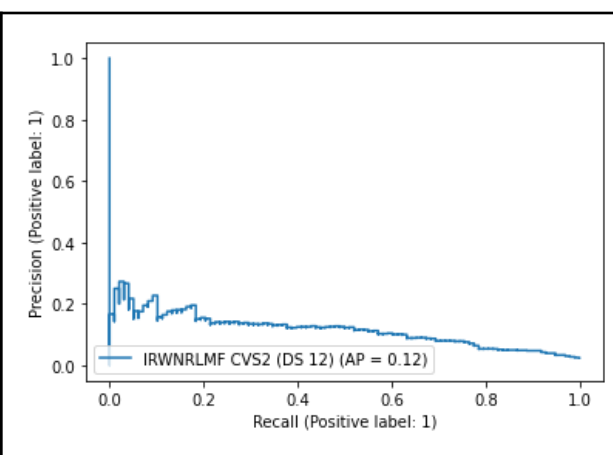


PR Curve DS-11

+++ IRWNRLMF CVS-2: Dataset-12 +++  
 Negative protein set= [43, 21, 37, 31]  
 AUROC=0.8183213730857439  
 AUPR=0.11539629485154565

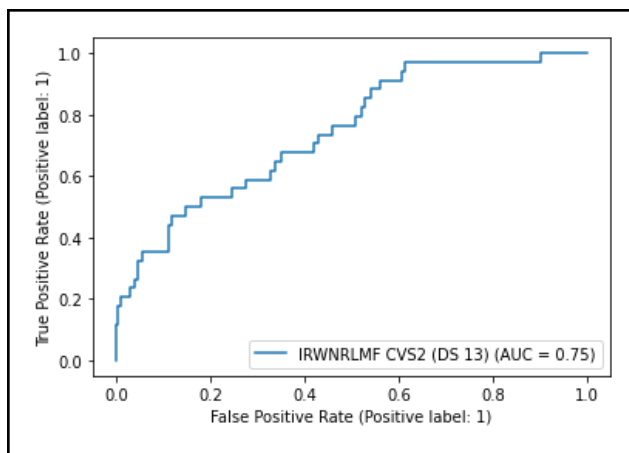


ROC Curve DS-12

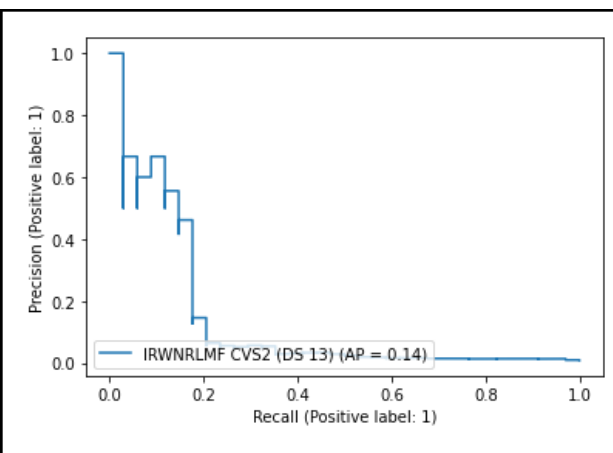


PR Curve DS-12

+++ IRWNRLMF CVS-2: Dataset-13 +++  
 Negative protein set= [59, 20, 57, 29]  
 AUROC=0.745849689850469  
 AUPR=0.14099552718907526

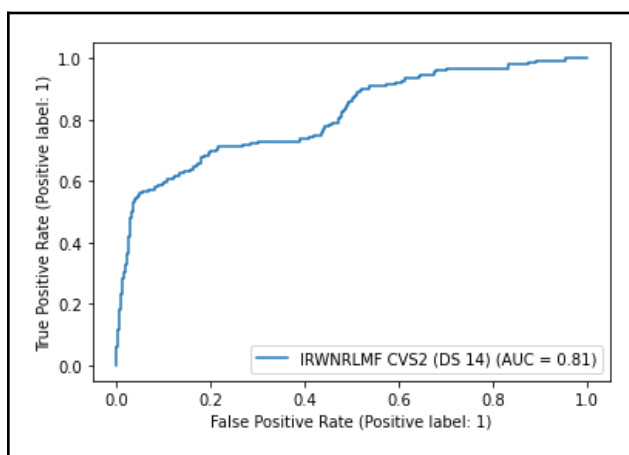


ROC Curve DS-13

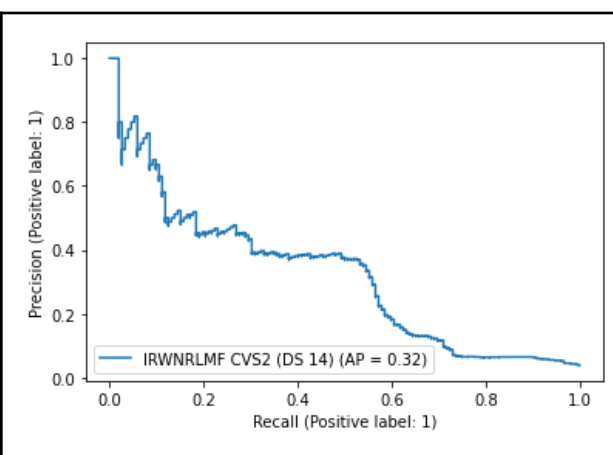


PR Curve DS-13

+++ IRWNRLMF CVS-2: Dataset-14 +++  
 Negative protein set= [23, 33, 30, 13]  
 AUROC=0.8123566038257407  
 AUPR=0.31799878396929454



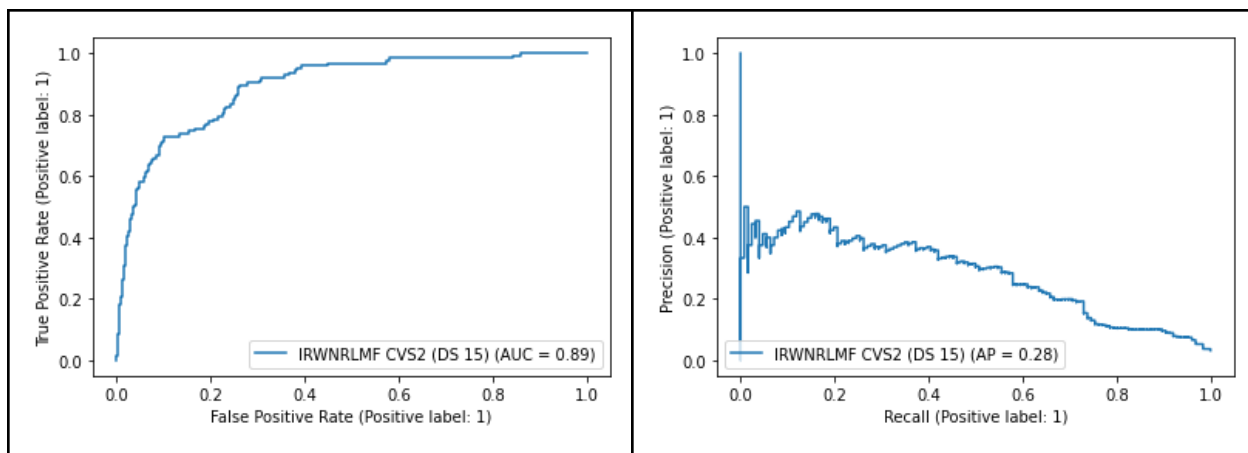
ROC Curve DS-14



PR Curve DS-14

+++ IRWNRLMF CVS-2: Dataset-15 +++  
 Negative protein set= [45, 46, 2, 49]  
 AUROC=0.8924596964503068  
 AUPR=0.27833121019553125





ROC Curve DS-15

PR Curve DS-15

#### AVERAGE RESULTS CVS-2:

AUROC (arithmetic mean) = **0.7139370564886709**

AUPR (arithmetic mean) = **0.1801457792369254**

