|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SMOTEWB-Nearmiss | BBO | DE | SAB | whale | ANT | ZOA | SMOTEWB-SUSD | BBO | DE | SAB | whale | ANT | ZOA |
| abalone-21-vs-8 | 0.9135 | 0.9109 | 0.8614 | **0.9171** | 0.9083 | 0.9042 | abalone-21-vs-8 | 0.885 | 0.885 | **0.8868** | 0.8842 | 0.8784 | 0.8858 |
| abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 | abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 |
| car-good | 0.8809 | 0.8934 | 0.9108 | 0.9053 | 0.8928 | **0.9154** | car-good | 0.9741 | **0.975** | 0.9597 | 0.9429 | 0.9523 | 0.9705 |
| dermatology-6 | 0.9985 | 0.9985 | 0.9985 | 0.9985 | 0.9985 | 0.9985 | dermatology-6 | 0.9985 | 0.9985 | 0.9985 | 0.9985 | 0.9985 | 0.9985 |
| ecoli1 | 0.8865 | 0.8824 | 0.8912 | 0.8884 | **0.9033** | 0.8856 | ecoli1 | 0.9012 | **0.9126** | 0.9103 | 0.8966 | 0.8957 | 0.9101 |
| ecoli2 | 0.9036 | 0.9024 | 0.886 | **0.9115** | 0.8953 | 0.8951 | ecoli2 | 0.9045 | 0.9138 | **0.9212** | 0.9139 | 0.9123 | 0.9127 |
| ecoli3 | 0.8142 | 0.8358 | 0.8262 | 0.8242 | 0.8242 | **0.835** | ecoli3 | 0.8992 | 0.8938 | 0.8921 | 0.8921 | 0.9004 | 0.8954 |
| flare-F | **0.6951** | 0.6937 | 0.659 | 0.6825 | 0.6822 | 0.6829 | flare-F | 0.8463 | 0.8452 | 0.8552 | 0.8414 | 0.8498 | **0.8587** |
| glass-0-1-2-3-vs-4-5-6 | 0.9329 | 0.9381 | 0.936 | 0.9216 | 0.9345 | **0.9460** | glass-0-1-2-3-vs-4-5-6 | 0.9464 | 0.9528 | 0.9496 | 0.9432 | 0.9532 | **0.9532** |
| glass0 | 0.8214 | 0.826 | 0.8388 | **0.8462** | 0.815 | 0.8347 | glass0 | 0.8408 | 0.8362 | 0.8347 | 0.839 | 0.829 | **0.8419** |
| glass1 | 0.8186 | 0.8284 | 0.8285 | 0.7966 | 0.8424 | **0.8403** | glass1 | 0.8014 | 0.797 | 0.8004 | **0.8069** | 0.7582 | 0.7868 |
| glass6 | 0.9506 | 0.9531 | 0.9496 | 0.9449 | **0.9558** | 0.9532 | glass6 | 0.937 | 0.9362 | 0.933 | 0.933 | 0.9341 | **0.945** |
| haberman | 0.6474 | 0.6448 | 0.6304 | 0.6305 | **0.6517** | 0.6466 | haberman | 0.6413 | 0.6453 | 0.6495 | 0.619 | 0.6349 | **0.646** |
| kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 | kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 |
| new-thyroid1 | 0.9859 | 0.9859 | 0.9829 | 0.9859 | 0.9806 | 0.9805 | new-thyroid1 | 0.9832 | 0.9802 | **0.9915** | 0.9888 | 0.9832 | 0.9888 |
| pima | 0.7211 | 0.7181 | 0.698 | **0.7338** | 0.7109 | 0.7205 | pima | 0.7277 | 0.7259 | **0.7433** | 0.7309 | 0.7302 | 0.7215 |
| vehicle0 | 0.9398 | **0.9468** | 0.9338 | 0.9446 | 0.9429 | 0.9408 | vehicle0 | 0.9523 | 0.9519 | 0.9455 | 0.947 | 0.951 | 0.9466 |
| winequality-red-8-vs-6 | **0.814** | 0.7997 | 0.752 | 0.7717 | 0.808 | 0.7835 | winequality-red-8-vs-6 | **0.8506** | 0.8397 | 0.8491 | 0.8086 | 0.7763 | 0.8167 |
| winequality-white-3-vs-7 | 0.8072 | 0.8278 | 0.771 | **0.8369** | 0.8329 | 0.8260 | winequality-white-3-vs-7 | 0.6635 | **0.8432** | 0.7675 | 0.6983 | 0.6674 | 0.7924 |
| wisconsin | 0.9568 | 0.9598 | 0.952 | 0.9582 | 0.9589 | 0.9556 | wisconsin | 0.9658 | 0.965 | 0.9639 | 0.9606 | 0.9647 | 0.9651 |
| yeast6 | 0.8161 | 0.8102 | 0.7869 | 0.8181 | **0.8204** | 0.8007 | yeast6 | 0.8908 | 0.8899 | 0.8897 | 0.8813 | 0.8943 | **0.896** |
| OREM-SUSD | BBO | DE | SAB | whale | ANT | ZOA | OREM-Nearmiss | BBO | DE | SAB | whale | ANT | ZOA |
| abalone-21-vs-8 | 0.9109 | 0.8596 | 0.8614 | 0.8464 | 0.8469 | **0.9224** | abalone-21-vs-8 | 0.8535 | 0.8686 | 0.8605 | 0.8623 | 0.8578 | **0.8797** |
| abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 | abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 |
| car-good | 0.8874 | **0.9235** | 0.9147 | 0.9217 | 0.8844 | 0.9032 | car-good | 0.9146 | **0.9179** | 0.9117 | 0.9075 | 0.9018 | 0.9124 |
| dermatology-6 | 0.9985 | 0.9985 | 0.9985 | 0.9985 | 0.9985 | 0.9985 | dermatology-6 | 0.9985 | 0.9985 | 0.9985 | 0.9985 | 0.9985 | 0.9985 |
| ecoli1 | 0.8825 | 0.9018 | 0.8922 | 0.895 | **0.9023** | 0.8877 | ecoli1 | 0.8972 | **0.9058** | 0.8957 | 0.8957 | 0.8957 | 0.8961 |
| ecoli2 | **0.8953** | 0.886 | 0.886 | 0.8613 | 0.8909 | 0.8911 | ecoli2 | 0.8768 | 0.8803 | 0.8843 | **0.8854** | 0.8701 | 0.8792 |
| ecoli3 | 0.775 | 0.7836 | **0.7986** | 0.7936 | 0.7657 | 0.7817 | ecoli3 | 0.8324 | 0.8357 | 0.8221 | 0.8407 | 0.8257 | **0.85** |
| flare-F | 0.628 | 0.6489 | 0.6482 | 0.6331 | 0.6525 | **0.6661** | flare-F | 0.6521 | **0.6693** | 0.6591 | 0.6664 | 0.6244 | 0.6606 |
| glass-0-1-2-3-vs-4-5-6 | 0.9235 | 0.9428 | 0.9296 | 0.9334 | **0.9423** | 0.9329 | glass-0-1-2-3-vs-4-5-6 | 0.952 | 0.9529 | 0.9523 | 0.9491 | 0.9391 | **0.9562** |
| glass0 | 0.8248 | 0.8287 | 0.8205 | 0.8381 | 0.8211 | **0.8464** | glass0 | 0.8077 | **0.8358** | 0.8336 | 0.829 | 0.8118 | 0.816 |
| glass1 | 0.8089 | 0.8155 | 0.7956 | 0.8073 | 0.7617 | **0.8403** | glass1 | 0.7998 | 0.8192 | 0.7956 | 0.7942 | 0.8202 | **0.8224** |
| glass6 | **0.9506** | 0.9333 | 0.933 | 0.9303 | 0.9504 | 0.9478 | glass6 | 0.9413 | 0.9469 | 0.9413 | 0.9388 | 0.9473 | **0.9551** |
| haberman | 0.6395 | **0.6528** | 0.6281 | 0.648 | 0.6325 | 0.6489 | haberman | 0.6416 | **0.6417** | 0.6158 | 0.6099 | 0.6271 | 0.6272 |
| kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 | kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 |
| new-thyroid1 | 0.9806 | 0.9802 | 0.9829 | 0.9773 | 0.9793 | 0.9806 | new-thyroid1 | 0.9829 | 0.9829 | 0.9802 | 0.9829 | 0.9829 | 0.9829 |
| pima | **0.7198** | 0.7185 | 0.7096 | 0.7032 | 0.703 | 0.715 | pima | 0.7191 | 0.71 | 0.7174 | 0.7056 | 0.7196 | **0.7205** |
| vehicle0 | 0.9434 | 0.9271 | 0.9335 | 0.945 | 0.9326 | **0.954** | vehicle0 | 0.9379 | 0.9325 | 0.9321 | 0.9338 | 0.9327 | 0.9403 |
| winequality-red-8-vs-6 | 0.7523 | **0.8251** | 0.7644 | 0.8009 | 0.7893 | 0.7812 | winequality-red-8-vs-6 | 0.7941 | 0.7774 | 0.7636 | **0.7957** | 0.7784 | 0.794 |
| winequality-white-3-vs-7 | 0.7647 | **0.8123** | 0.7789 | 0.7238 | 0.7314 | 0.7738 | winequality-white-3-vs-7 | 0.7954 | 0.8 | 0.8131 | 0.8215 | 0.8011 | **0.8307** |
| wisconsin | 0.9597 | 0.9564 | 0.9565 | 0.959 | 0.9558 | **0.9599** | wisconsin | 0.958 | 0.958 | 0.9512 | 0.9569 | 0.9585 | 0.9589 |
| yeast6 | 0.7757 | 0.7614 | 0.7729 | 0.7573 | 0.7989 | **0.8095** | yeast6 | 0.8264 | 0.8264 | 0.8245 | 0.8087 | 0.8277 | **0.8284** |

Table GNB算法下的启发式算法比较

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SMOTEWB-Nearmiss | BBO | DE | SAB | whale | ANT | ZOA | SMOTEWB-SUSD | BBO | DE | SAB | whale | ANT | ZOA |
| abalone-21-vs-8 | 0.9198 | **0.9207** | 0.8933 | 0.9181 | 0.9163 | 0.9198 | abalone-21-vs-8 | **0.9198** | 0.8912 | 0.8983 | 0.8921 | 0.8866 | 0.8851 |
| abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 | abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 |
| car-good | 0.9577 | **0.9606** | 0.9593 | 0.9581 | 0.9577 | 0.9599 | car-good | 0.9587 | 0.9594 | 0.9606 | 0.96 | 0.9606 | 0.9604 |
| dermatology-6 | 0.9852 | 0.9852 | 0.9792 | 0.9837 | 0.9852 | 0.9852 | dermatology-6 | 0.9717 | 0.9748 | 0.9748 | 0.9778 | 0.9763 | 0.9748 |
| ecoli1 | 0.9011 | 0.9138 | 0.9149 | 0.9127 | 0.9122 | 0.9150 | ecoli1 | **0.9363** | 0.9233 | 0.9306 | 0.9318 | 0.9162 | 0.9251 |
| ecoli2 | 0.9554 | 0.9546 | 0.9593 | 0.9554 | 0.9534 | 0.9559 | ecoli2 | 0.9518 | 0.9555 | 0.9577 | 0.9579 | 0.9559 | **0.9585** |
| ecoli3 | 0.925 | 0.9242 | **0.9352** | 0.9242 | 0.9236 | 0.9244 | ecoli3 | 0.9225 | 0.9257 | 0.9267 | **0.9381** | 0.9265 | 0.9253 |
| flare-F | 0.9051 | 0.908 | 0.8922 | 0.9087 | 0.9043 | 0.9071 | flare-F | 0.8788 | 0.8879 | 0.884 | 0.8849 | **0.8878** | 0.8849 |
| glass-0-1-2-3-vs-4-5-6 | 0.9625 | 0.9613 | 0.9565 | 0.9671 | 0.96 | 0.9656 | glass-0-1-2-3-vs-4-5-6 | **0.9701** | 0.9502 | 0.9665 | 0.9714 | 0.9541 | 0.9662 |
| glass0 | 0.8375 | **0.8402** | 0.8017 | 0.8463 | 0.8379 | 0.8388 | glass0 | 0.785 | 0.7968 | 0.8171 | 0.8138 | 0.8086 | **0.8249** |
| glass1 | 0.7408 | **0.7429** | 0.6995 | 0.7343 | 0.7328 | 0.7386 | glass1 | **0.7072** | 0.6935 | 0.6855 | 0.6987 | 0.6762 | 0.687 |
| glass6 | 0.9688 | **0.9707** | 0.9556 | 0.9643 | 0.9679 | 0.9669 | glass6 | 0.9623 | 0.9545 | 0.9579 | 0.9563 | 0.965 | **0.9643** |
| haberman | 0.7034 | 0.7028 | 0.6933 | 0.7016 | 0.7007 | 0.6959 | haberman | 0.6679 | 0.674 | 0.6766 | 0.6774 | **0.679** | 0.6726 |
| kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 | kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 |
| new-thyroid1 | 1 | 1 | 1 | 1 | 1 | 1 | new-thyroid1 | 1 | 1 | 1 | 1 | 1 | 1 |
| pima | 0.8212 | 0.8202 | 0.8192 | 0.8221 | 0.8199 | 0.8213 | pima | 0.8193 | 0.8192 | 0.8171 | 0.8106 | 0.815 | 0.8148 |
| vehicle0 | 0.8743 | **0.9493** | 0.9448 | 0.9298 | 0.947 | 0.9484 | vehicle0 | 0.8542 | 0.8163 | **0.8792** | 0.8723 | 0.8267 | 0.8536 |
| winequality-red-8-vs-6 | 0.8264 | 0.8421 | 0.8038 | 0.8458 | 0.8343 | **0.8459** | winequality-red-8-vs-6 | **0.872** | 0.848 | 0.8657 | 0.8576 | 0.8636 | 0.8636 |
| winequality-white-3-vs-7 | 0.8973 | **0.9002** | 0.8869 | 0.8902 | 0.8993 | 0.8970 | winequality-white-3-vs-7 | 0.884 | 0.8828 | 0.8845 | 0.8861 | 0.8822 | **0.8955** |
| wisconsin | 0.9829 | 0.983 | 0.9828 | 0.9837 | 0.9829 | 0.9836 | wisconsin | 0.9875 | 0.9915 | 0.994 | 0.9938 | 0.9915 | 0.9942 |
| yeast6 | 0.9472 | 0.9487 | 0.9511 | 0.944 | 0.9514 | **0.9517** | yeast6 | 0.9264 | 0.9456 | **0.9496** | 0.9422 | 0.939 | 0.9434 |
| OREM-SUSD | BBO | DE | SAB | whale | ANT | ZOA | OREM-Nearmiss | BBO | DE | SAB | whale | ANT | ZOA |
| abalone-21-vs-8 | 0.9136 | 0.9104 | 0.893 | 0.8939 | 0.8724 | **0.9198** | abalone-21-vs-8 | 0.8894 | 0.8939 | 0.8945 | 0.8942 | 0.8974 | 0.893 |
| abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 | abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 |
| car-good | 0.9575 | 0.9599 | 0.959 | 0.959 | 0.9589 | 0.958 | car-good | 0.9587 | 0.9577 | 0.959 | 0.959 | 0.9583 | 0.9581 |
| dermatology-6 | 0.9675 | 0.9822 | 0.9807 | 0.9359 | 0.9674 | **0.9837** | dermatology-6 | **0.9792** | 0.957 | **0.9792** | **0.9792** | 0.957 | **0.9792** |
| ecoli1 | 0.9084 | 0.9107 | 0.9104 | 0.8966 | **0.9262** | 0.9131 | ecoli1 | 0.9111 | 0.9083 | 0.9091 | 0.9125 | 0.9155 | 0.9159 |
| ecoli2 | 0.9519 | 0.9555 | 0.9588 | 0.9572 | 0.96 | 0.9525 | ecoli2 | 0.9567 | 0.9589 | 0.9586 | 0.9596 | 0.9606 | 0.9587 |
| ecoli3 | 0.9206 | 0.9314 | 0.93 | 0.9319 | **0.9377** | 0.925 | ecoli3 | 0.9305 | 0.9267 | 0.9338 | 0.931 | 0.9281 | 0.9314 |
| flare-F | 0.8635 | 0.8952 | 0.8924 | 0.8686 | 0.8582 | **0.904** | flare-F | 0.8838 | 0.8927 | **0.8999** | 0.8965 | 0.8732 | 0.8907 |
| glass-0-1-2-3-vs-4-5-6 | 0.9347 | 0.9541 | 0.9541 | 0.9595 | 0.9341 | **0.9597** | glass-0-1-2-3-vs-4-5-6 | 0.9545 | 0.9577 | 0.9584 | 0.9572 | 0.962 | 0.9632 |
| glass0 | **0.8342** | 0.8145 | 0.8102 | 0.8091 | 0.7914 | 0.8317 | glass0 | 0.8052 | 0.8052 | 0.8103 | 0.8028 | 0.8106 | 0.8102 |
| glass1 | 0.7098 | 0.7224 | 0.7133 | 0.7112 | 0.6287 | **0.7367** | glass1 | 0.7144 | 0.6919 | 0.7216 | 0.7117 | **0.7254** | 0.7233 |
| glass6 | 0.9596 | 0.9545 | 0.9497 | 0.9542 | 0.9304 | **0.968** | glass6 | 0.9604 | 0.9616 | 0.9604 | 0.9571 | 0.9555 | 0.9593 |
| haberman | 0.6884 | 0.6908 | 0.686 | 0.689 | 0.6841 | **0.7015** | haberman | 0.6902 | 0.6838 | 0.6879 | 0.6842 | 0.6916 | 0.687 |
| kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 | kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 |
| new-thyroid1 | 1 | 1 | 1 | 1 | 1 | 1 | new-thyroid1 | 1 | 1 | 1 | 1 | 1 | 1 |
| pima | 0.7913 | 0.8155 | 0.8154 | 0.819 | 0.8074 | **0.8208** | pima | 0.8207 | 0.8179 | 0.82 | 0.8218 | 0.82 | 0.8203 |
| vehicle0 | 0.9428 | 0.948 | 0.9451 | 0.9463 | 0.9448 | 0.9444 | vehicle0 | 0.9613 | 0.9589 | 0.9589 | 0.9548 | 0.9589 | 0.9608 |
| winequality-red-8-vs-6 | 0.7988 | 0.7892 | 0.7881 | 0.7818 | 0.8273 | **0.8365** | winequality-red-8-vs-6 | 0.7626 | 0.7596 | 0.7602 | 0.7731 | 0.7878 | **0.7895** |
| winequality-white-3-vs-7 | 0.8882 | 0.8823 | 0.8854 | 0.8842 | 0.885 | **0.8936** | winequality-white-3-vs-7 | 0.8851 | 0.8864 | 0.8831 | 0.8849 | 0.8857 | 0.8864 |
| wisconsin | 0.9829 | 0.983 | 0.983 | 0.983 | 0.9844 | 0.9837 | wisconsin | 0.9831 | 0.9828 | 0.9872 | 0.9831 | 0.9831 | 0.9883 |
| yeast6 | 0.9336 | 0.9438 | **0.9446** | 0.9343 | 0.9348 | 0.9393 | yeast6 | 0.9456 | 0.9443 | 0.9444 | 0.948 | 0.9513 | 0.9452 |

Talbe KNN分类方法下的启发式算法比较

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SMOTEWB-Nearmiss | BBO | DE | SAB | whale | ANT | ZOA | SMOTEWB-SUSD | BBO | DE | SAB | whale | ANT | ZOA |
| abalone-21-vs-8 | 0.917 | 0.9179 | 0.8559 | 0.9179 | 0.9166 | 0.9192 | abalone-21-vs-8 | 0.8839 | 0.8549 | 0.8536 | 0.8472 | 0.8198 | **0.8877** |
| abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 | abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 |
| car-good | 0.9876 | 0.9892 | 0.9929 | 0.9895 | 0.9891 | 0.9880 | car-good | 0.9843 | 0.9836 | 0.9835 | 0.9852 | 0.978 | 0.9781 |
| dermatology-6 | 1 | 1 | 1 | 1 | 1 | 1 | dermatology-6 | 1 | 1 | 1 | 1 | 1 | 1 |
| ecoli1 | 0.9352 | 0.944 | **0.95** | 0.9414 | 0.9315 | 0.9431 | ecoli1 | **0.9434** | 0.9385 | 0.9339 | 0.9184 | 0.9219 | 0.9379 |
| ecoli2 | 0.9392 | 0.9505 | **0.954** | 0.9505 | 0.9459 | 0.9514 | ecoli2 | 0.9268 | 0.9448 | **0.9672** | 0.9461 | 0.9446 | 0.9562 |
| ecoli3 | 0.8993 | 0.911 | 0.929 | 0.9143 | 0.9051 | **0.9111** | ecoli3 | 0.9322 | 0.9152 | 0.939 | 0.9207 | 0.9278 | **0.9394** |
| flare-F | 0.85 | **0.8505** | 0.8255 | 0.8483 | 0.8491 | 0.8475 | flare-F | **0.8709** | 0.8697 | 0.8687 | 0.8677 | 0.8543 | 0.8543 |
| glass-0-1-2-3-vs-4-5-6 | 0.9732 | 0.979 | 0.9805 | **0.9822** | 0.9757 | 0.9815 | glass-0-1-2-3-vs-4-5-6 | 0.965 | 0.9611 | **0.9756** | 0.9653 | 0.9646 | 0.9708 |
| glass0 | 0.8791 | 0.8904 | **0.8944** | 0.8861 | 0.8781 | 0.8887 | glass0 | 0.8643 | 0.8482 | 0.8759 | 0.8416 | 0.8613 | **0.8767** |
| glass1 | 0.8745 | 0.8868 | 0.8649 | 0.8793 | 0.8788 | **0.8912** | glass1 | 0.8591 | 0.8576 | 0.8582 | **0.8596** | 0.8464 | 0.8434 |
| glass6 | 0.9725 | **0.9734** | 0.954 | 0.9717 | 0.9699 | 0.9672 | glass6 | 0.963 | 0.9634 | 0.9618 | 0.9515 | 0.9619 | **0.9652** |
| haberman | 0.6624 | **0.6632** | 0.6309 | 0.6449 | 0.6479 | 0.6560 | haberman | 0.6435 | 0.6438 | 0.6536 | 0.6428 | 0.6609 | **0.664** |
| kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 | kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 |
| new-thyroid1 | 0.9944 | 0.9968 | 0.9996 | 0.9947 | 0.9949 | 0.9993 | new-thyroid1 | 0.9944 | 0.996 | 0.9972 | 0.9916 | 0.9928 | 0.9995 |
| pima | 0.7788 | **0.79** | 0.7792 | 0.7867 | 0.7764 | 0.7851 | pima | 0.7737 | 0.7729 | 0.7798 | **0.7812** | 0.7607 | 0.7775 |
| vehicle0 | 0.9712 | 0.9807 | 0.9797 | 0.9798 | 0.9762 | **0.9812** | vehicle0 | 0.9538 | **0.9666** | 0.9687 | 0.9519 | 0.948 | 0.9648 |
| winequality-red-8-vs-6 | **0.842** | 0.829 | 0.7917 | 0.8365 | 0.8239 | 0.8157 | winequality-red-8-vs-6 | 0.8289 | 0.8495 | 0.8486 | **0.8519** | 0.8099 | 0.8307 |
| winequality-white-3-vs-7 | **0.8948** | 0.8925 | 0.8375 | 0.8945 | 0.8914 | 0.8908 | winequality-white-3-vs-7 | 0.686 | 0.7294 | 0.7284 | 0.6807 | 0.7294 | **0.7326** |
| wisconsin | 0.9871 | 0.9882 | 0.9881 | 0.9869 | 0.9875 | 0.9893 | wisconsin | 0.9873 | 0.987 | 0.988 | 0.988 | 0.9867 | 0.9893 |
| yeast6 | **0.9531** | 0.9407 | 0.9153 | 0.9466 | 0.9428 | 0.9194 | yeast6 | 0.8965 | 0.9106 | 0.9123 | 0.9086 | 0.904 | **0.9155** |
| OREM-SUSD | BBO | DE | SAB | whale | ANT | ZOA | OREM-Nearmiss | BBO | DE | SAB | whale | ANT | ZOA |
| abalone-21-vs-8 | **0.9398** | 0.8884 | 0.8099 | 0.8885 | 0.8799 | 0.8706 | abalone-21-vs-8 | 0.8885 | 0.8889 | 0.8884 | 0.8879 | 0.8878 | 0.8895 |
| abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 | abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 |
| car-good | 0.986 | 0.9945 | 0.994 | 0.9943 | 0.9902 | 0.9885 | car-good | 0.9909 | 0.9932 | 0.9943 | 0.9936 | 0.9915 | 0.9915 |
| dermatology-6 | 1 | 1 | 1 | 1 | 1 | 1 | dermatology-6 | 1 | 1 | 1 | 1 | 1 | 1 |
| ecoli1 | 0.9074 | 0.9371 | 0.9372 | 0.9398 | **0.949** | 0.9336 | ecoli1 | 0.9516 | 0.954 | 0.954 | 0.9539 | 0.9434 | 0.9456 |
| ecoli2 | 0.9351 | 0.9508 | 0.95 | 0.9515 | **0.9654** | 0.9505 | ecoli2 | 0.9589 | 0.9568 | 0.9597 | 0.9597 | 0.9546 | 0.961 |
| ecoli3 | 0.8792 | 0.9217 | 0.9205 | 0.9088 | **0.9354** | 0.9057 | ecoli3 | 0.9257 | 0.9321 | 0.9314 | 0.9355 | 0.9283 | 0.926 |
| flare-F | 0.7732 | 0.7803 | 0.7785 | 0.7781 | **0.812** | 0.7919 | flare-F | 0.8323 | 0.8316 | 0.8337 | 0.8217 | 0.8273 | 0.8317 |
| glass-0-1-2-3-vs-4-5-6 | 0.9726 | 0.9785 | 0.98 | 0.9741 | 0.9773 | **0.9834** | glass-0-1-2-3-vs-4-5-6 | 0.9776 | 0.982 | 0.9826 | 0.982 | 0.9744 | 0.9775 |
| glass0 | 0.868 | 0.8897 | **0.8911** | 0.8888 | 0.877 | 0.8874 | glass0 | 0.8955 | 0.8998 | **0.9011** | 0.8999 | 0.8911 | 0.8904 |
| glass1 | 0.8682 | 0.8554 | 0.8509 | 0.8507 | 0.8195 | **0.878** | glass1 | **0.8732** | 0.8703 | 0.8712 | 0.871 | 0.863 | 0.8727 |
| glass6 | 0.9143 | 0.9218 | 0.9375 | 0.9304 | **0.9733** | 0.9582 | glass6 | 0.9689 | 0.9689 | 0.9688 | 0.9725 | 0.9649 | 0.9725 |
| haberman | 0.602 | 0.6253 | 0.6298 | 0.6068 | 0.649 | **0.6493** | haberman | 0.677 | **0.6841** | 0.6843 | 0.6845 | 0.6726 | 0.6821 |
| kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 | kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 |
| new-thyroid1 | 0.9935 | 0.9972 | 0.9964 | 0.9948 | 0.996 | 0.9984 | new-thyroid1 | 0.9968 | 1 | 1 | 0.9996 | 0.9972 | 0.9972 |
| pima | 0.7702 | 0.7734 | 0.7741 | 0.7739 | 0.7669 | **0.7888** | pima | 0.794 | 0.7951 | 0.8 | 0.7954 | 0.7911 | 0.7955 |
| vehicle0 | 0.9682 | 0.9784 | 0.9779 | 0.9781 | 0.9679 | **0.9811** | vehicle0 | 0.9808 | 0.983 | 0.9845 | 0.9865 | 0.9826 | 0.986 |
| winequality-red-8-vs-6 | 0.6439 | **0.6974** | 0.6914 | 0.6953 | 0.6514 | 0.6526 | winequality-red-8-vs-6 | 0.8047 | 0.8021 | 0.8124 | 0.8155 | 0.82 | **0.8201** |
| winequality-white-3-vs-7 | 0.7924 | 0.8398 | 0.8169 | 0.8166 | 0.7525 | **0.84** | winequality-white-3-vs-7 | 0.8825 | 0.8638 | 0.8838 | 0.863 | **0.894** | 0.8863 |
| wisconsin | 0.9861 | 0.9878 | 0.988 | 0.9865 | 0.9863 | 0.9905 | wisconsin | 0.9872 | 0.981 | 0.9889 | 0.9891 | 0.9869 | **0.9903** |
| yeast6 | 0.8918 | 0.9136 | 0.9135 | **0.9144** | 0.8966 | 0.8979 | yeast6 | **0.9473** | 0.9369 | 0.9388 | 0.9422 | 0.9374 | 0.9404 |

Table LR算法下的启发式算法比较

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SMOTEWB-Nearmiss | BBO | DE | SAB | whale | ANT | ZOA | SMOTEWB-SUSD | BBO | DE | SAB | whale | ANT | ZOA |
| abalone-21-vs-8 | 0.9866 | 0.9857 | 0.9508 | 0.9857 | 0.9857 | 0.9857 | abalone-21-vs-8 | 0.938 | 0.918 | 0.9198 | 0.905 | 0.8838 | **0.9444** |
| abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 | abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 |
| car-good | 0.9442 | 0.9429 | 0.9442 | 0.9435 | 0.9429 | 0.9442 | car-good | 0.9447 | 0.9439 | 0.9447 | 0.9448 | 0.9445 | 0.946 |
| dermatology-6 | 1 | 1 | 1 | 1 | 1 | 1 | dermatology-6 | 1 | 1 | 1 | 1 | 1 | 1 |
| ecoli1 | 0.9552 | 0.9612 | 0.9604 | 0.9559 | 0.9574 | 0.9612 | ecoli1 | 0.9525 | 0.9552 | 0.9535 | 0.9587 | 0.9554 | 0.9621 |
| ecoli2 | 0.9439 | 0.942 | 0.9407 | 0.9434 | 0.9413 | 0.9419 | ecoli2 | 0.9419 | 0.9399 | 0.9421 | 0.9406 | 0.9364 | 0.9415 |
| ecoli3 | 0.9567 | 0.9572 | 0.9543 | 0.9528 | 0.9558 | 0.9572 | ecoli3 | 0.9517 | 0.9448 | 0.9524 | 0.9519 | 0.9445 | 0.9461 |
| flare-F | 0.8904 | 0.8893 | 0.8941 | 0.8895 | 0.8874 | 0.8896 | flare-F | 0.8916 | 0.8966 | 0.8916 | 0.8946 | 0.8867 | 0.8906 |
| glass-0-1-2-3-vs-4-5-6 | 0.9851 | 0.9851 | 0.9799 | 0.9826 | 0.9842 | 0.9854 | glass-0-1-2-3-vs-4-5-6 | 0.984 | 0.9829 | 0.9837 | 0.9835 | 0.9771 | 0.9779 |
| glass0 | 0.829 | 0.83 | **0.838** | 0.8322 | 0.829 | 0.8310 | glass0 | 0.8268 | 0.8335 | 0.8345 | 0.8345 | 0.8264 | 0.8312 |
| glass1 | 0.6502 | **0.6598** | 0.6367 | 0.639 | 0.6432 | 0.6527 | glass1 | 0.6163 | 0.6287 | 0.6498 | 0.6344 | 0.5984 | **0.6325** |
| glass6 | 0.9728 | 0.9747 | 0.9722 | 0.9773 | 0.9749 | 0.9747 | glass6 | 0.9701 | 0.9721 | 0.9758 | 0.975 | 0.9695 | 0.9728 |
| haberman | 0.7045 | 0.7134 | 0.71 | 0.7094 | 0.7054 | **0.7146** | haberman | 0.6951 | 0.6962 | 0.6976 | 0.7146 | 0.7041 | **0.7165** |
| kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 | kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 |
| new-thyroid1 | 0.9963 | 0.9949 | 0.9976 | 0.9949 | 0.9949 | 0.9986 | new-thyroid1 | 0.9949 | 0.9984 | 0.9976 | 0.996 | 0.9986 | 0.9986 |
| pima | 0.8354 | 0.835 | 0.8344 | 0.8355 | 0.834 | 0.8359 | pima | 0.8319 | 0.8303 | 0.8298 | 0.8329 | 0.8241 | 0.8217 |
| vehicle0 | 0.9925 | 0.9925 | 0.9919 | 0.9923 | 0.9925 | 0.9923 | vehicle0 | 0.9855 | 0.9852 | 0.9849 | 0.9836 | 0.9837 | 0.9848 |
| winequality-red-8-vs-6 | **0.9035** | 0.9019 | 0.8764 | 0.9019 | 0.9027 | 0.9034 | winequality-red-8-vs-6 | **0.8878** | 0.8821 | 0.8873 | 0.876 | 0.8765 | 0.8796 |
| winequality-white-3-vs-7 | 0.8324 | 0.8169 | **0.8399** | 0.8146 | 0.8108 | 0.8266 | winequality-white-3-vs-7 | 0.818 | 0.8217 | **0.8274** | 0.8081 | 0.823 | 0.8248 |
| wisconsin | 0.9959 | 0.9959 | 0.9955 | 0.9958 | 0.996 | 0.9959 | wisconsin | 0.9961 | 0.9956 | 0.9957 | 0.9958 | 0.9959 | 0.9959 |
| yeast6 | 0.9403 | 0.9404 | 0.9468 | 0.9388 | 0.9399 | 0.9396 | yeast6 | 0.935 | 0.9462 | 0.9471 | **0.9476** | 0.9289 | 0.9321 |
| OREM-SUSD | BBO | DE | SAB | whale | ANT | ZOA | OREM-Nearmiss | BBO | DE | SAB | whale | ANT | ZOA |
| abalone-21-vs-8 | 0.9275 | 0.9295 | 0.9366 | 0.9292 | 0.9137 | **0.9848** | abalone-21-vs-8 | 0.9667 | 0.962 | 0.9561 | 0.9522 | 0.9638 | **0.9764** |
| abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 | abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 |
| car-good | 0.9429 | 0.9435 | 0.9435 | 0.9435 | 0.9448 | 0.9433 | car-good | 0.944 | 0.9444 | 0.9446 | 0.9444 | 0.9447 | 0.9443 |
| dermatology-6 | 1 | 1 | 1 | 1 | 1 | 1 | dermatology-6 | 1 | 1 | 1 | 1 | 1 | 1 |
| ecoli1 | 0.9547 | 0.9599 | 0.9609 | 0.9593 | 0.959 | 0.9611 | ecoli1 | 0.9607 | 0.9616 | 0.9609 | 0.9607 | 0.9604 | 0.9607 |
| ecoli2 | 0.9385 | 0.9436 | 0.9423 | 0.9402 | 0.9429 | 0.9421 | ecoli2 | 0.9433 | 0.9436 | 0.9405 | 0.9412 | 0.9436 | 0.9424 |
| ecoli3 | 0.9456 | 0.9538 | 0.9524 | 0.9452 | 0.9521 | 0.9547 | ecoli3 | 0.95 | 0.9552 | 0.9543 | 0.9495 | 0.9533 | 0.9514 |
| flare-F | 0.8793 | 0.8826 | 0.8838 | 0.859 | **0.8922** | 0.887 | flare-F | 0.8897 | 0.895 | 0.8933 | 0.8922 | 0.8875 | 0.89 |
| glass-0-1-2-3-vs-4-5-6 | 0.9802 | 0.9773 | 0.9769 | 0.9798 | 0.9786 | 0.983 | glass-0-1-2-3-vs-4-5-6 | 0.9798 | 0.9792 | 0.9798 | 0.9762 | 0.9799 | 0.9805 |
| glass0 | 0.827 | 0.8355 | 0.8369 | 0.833 | 0.8243 | 0.83 | glass0 | 0.834 | 0.8375 | 0.8375 | 0.837 | 0.835 | 0.834 |
| glass1 | 0.6308 | 0.6517 | 0.6385 | 0.6242 | 0.6285 | **0.6902** | glass1 | 0.6493 | **0.6564** | 0.6276 | 0.6274 | 0.6436 | 0.6429 |
| glass6 | 0.9712 | 0.9732 | 0.9732 | 0.9695 | 0.9677 | 0.9694 | glass6 | 0.9722 | 0.9722 | 0.9731 | 0.968 | 0.9732 | 0.973 |
| haberman | 0.6952 | 0.7093 | 0.6908 | 0.6805 | 0.6793 | **0.7091** | haberman | 0.6955 | 0.7096 | 0.7044 | 0.7053 | 0.7015 | 0.6962 |
| kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 | kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 |
| new-thyroid1 | 0.9949 | 0.9976 | 0.9976 | 0.9976 | 0.9981 | 0.9986 | new-thyroid1 | 0.9984 | 0.9992 | 0.9984 | 0.9992 | 0.9992 | 0.9992 |
| pima | 0.8332 | 0.8319 | 0.8323 | 0.832 | 0.8189 | **0.835** | pima | 0.8315 | 0.8302 | 0.8333 | 0.8329 | 0.8326 | **0.8416** |
| vehicle0 | 0.9926 | 0.9925 | 0.9923 | 0.9916 | 0.99 | 0.9923 | vehicle0 | 0.9893 | 0.9805 | 0.9899 | 0.9895 | 0.9899 | **0.99** |
| winequality-red-8-vs-6 | 0.9098 | 0.8859 | 0.8794 | 0.8769 | 0.9003 | **0.9105** | winequality-red-8-vs-6 | 0.8735 | 0.8701 | 0.8734 | 0.8736 | 0.876 | **0.8831** |
| winequality-white-3-vs-7 | 0.8191 | **0.8499** | 0.8445 | 0.8476 | 0.7928 | 0.8237 | winequality-white-3-vs-7 | **0.8374** | 0.8277 | 0.83 | 0.8345 | 0.8351 | 0.8366 |
| wisconsin | 0.9959 | 0.9956 | 0.9955 | 0.9953 | 0.9953 | 0.9959 | wisconsin | 0.9954 | 0.9954 | 0.9955 | 0.9954 | 0.9953 | 0.9953 |
| yeast6 | 0.9393 | **0.9481** | 0.948 | 0.9479 | 0.9377 | 0.9396 | yeast6 | 0.9473 | 0.9481 | 0.9474 | 0.948 | 0.9473 | 0.9479 |

Table SVC算法下的启发式算法比较

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SMOTEWB-Nearmiss | BBO | DE | SAB | whale | ANT | ZOA | SMOTEWB-SUSD | BBO | DE | SAB | whale | ANT | ZOA |
| abalone-21-vs-8 | 0.9562 | 0.9571 | 0.9112 | 0.9536 | 0.9545 | 0.9536 | abalone-21-vs-8 | 0.9528 | 0.8967 | 0.9048 | 0.862 | 0.8692 | **0.9569** |
| abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 | abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 |
| car-good | 0.9913 | 0.9913 | 0.9918 | 0.9914 | 0.9914 | 0.9912 | car-good | 0.9838 | 0.9841 | 0.985 | 0.9834 | 0.984 | 0.9853 |
| dermatology-6 | 1 | 1 | 1 | 1 | 1 | 1 | dermatology-6 | 1 | 1 | 1 | 1 | 1 | 1 |
| ecoli1 | 0.9535 | 0.9624 | **0.9657** | 0.9625 | 0.9538 | 0.9625 | ecoli1 | 0.9504 | 0.9551 | 0.9551 | 0.9543 | 0.9569 | 0.9578 |
| ecoli2 | 0.9632 | 0.9678 | 0.9691 | 0.9664 | 0.9645 | 0.9677 | ecoli2 | 0.9608 | 0.9684 | 0.9691 | 0.9704 | 0.9629 | 0.9656 |
| ecoli3 | 0.9633 | 0.9636 | 0.9624 | 0.9522 | 0.9567 | 0.9633 | ecoli3 | 0.9556 | 0.96 | 0.9595 | 0.9595 | 0.9508 | **0.9619** |
| flare-F | 0.8732 | 0.8794 | 0.865 | **0.8757** | 0.8743 | 0.8687 | flare-F | 0.8944 | 0.8973 | 0.8986 | 0.9 | 0.8936 | 0.9024 |
| glass-0-1-2-3-vs-4-5-6 | 0.9967 | 0.9967 | 0.992 | 0.9967 | 0.9942 | 0.9966 | glass-0-1-2-3-vs-4-5-6 | **0.9931** | 0.9907 | 0.9895 | 0.9895 | 0.9826 | 0.9855 |
| glass0 | 0.8407 | 0.8411 | 0.846 | 0.8432 | 0.8444 | 0.8397 | glass0 | 0.838 | 0.8341 | 0.8437 | 0.8396 | 0.8336 | **0.8487** |
| glass1 | 0.7922 | 0.7928 | 0.7844 | 0.8022 | 0.7822 | **0.8024** | glass1 | 0.7785 | **0.7927** | 0.7918 | 0.7769 | 0.7599 | 0.7814 |
| glass6 | 0.9833 | 0.987 | 0.9813 | 0.9852 | 0.9852 | 0.9870 | glass6 | 0.9852 | 0.981 | 0.9836 | 0.9818 | 0.9841 | 0.988 |
| haberman | 0.7161 | **0.7377** | 0.7264 | 0.736 | 0.7022 | 0.7359 | haberman | 0.6919 | 0.6971 | 0.7085 | 0.7059 | 0.7148 | **0.7156** |
| kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 | kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 |
| new-thyroid1 | 1 | 1 | 1 | 1 | 1 | 1 | new-thyroid1 | 1 | 1 | 1 | 1 | 0.9991 | 1 |
| pima | 0.8334 | 0.8397 | 0.8384 | 0.8378 | 0.8329 | 0.8377 | pima | 0.8383 | **0.8413** | 0.8397 | 0.836 | 0.8294 | 0.8322 |
| vehicle0 | 0.9952 | 0.9954 | 0.9951 | 0.9953 | 0.9953 | 0.9955 | vehicle0 | 0.9928 | 0.9934 | 0.9929 | 0.9914 | 0.991 | 0.9927 |
| winequality-red-8-vs-6 | **0.8759** | 0.8497 | 0.8464 | 0.8531 | 0.8616 | 0.8664 | winequality-red-8-vs-6 | 0.8901 | 0.8957 | 0.8977 | **0.9044** | 0.8623 | 0.8866 |
| winequality-white-3-vs-7 | **0.9277** | 0.9323 | 0.8828 | 0.9272 | 0.9187 | 0.9249 | winequality-white-3-vs-7 | **0.889** | 0.8666 | 0.8823 | 0.8885 | 0.8757 | 0.8682 |
| wisconsin | 0.9855 | 0.9901 | 0.9889 | 0.9884 | 0.9851 | 0.9889 | wisconsin | 0.9857 | 0.9861 | 0.9881 | 0.9867 | 0.9866 | 0.9896 |
| yeast6 | 0.9485 | 0.9497 | 0.9554 | 0.9466 | 0.9488 | 0.9491 | yeast6 | 0.9424 | 0.9506 | **0.9513** | 0.952 | 0.9338 | 0.9349 |
| OREM-SUSD | BBO | DE | SAB | whale | ANT | ZOA | OREM-Nearmiss | BBO | DE | SAB | whale | ANT | ZOA |
| abalone-21-vs-8 | **0.9438** | 0.9071 | 0.9053 | 0.9095 | 0.9034 | 0.9322 | abalone-21-vs-8 | 0.8865 | 0.8871 | **0.9094** | 0.8811 | 0.8835 | 0.8882 |
| abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 | abalone-3-vs-11 | 1 | 1 | 1 | 1 | 1 | 1 |
| car-good | 0.992 | 0.9922 | 0.9919 | 0.9922 | 0.9915 | 0.9916 | car-good | 0.9915 | 0.9912 | 0.9912 | 0.9914 | 0.9912 | 0.9912 |
| dermatology-6 | 1 | 1 | 1 | 1 | 1 | 1 | dermatology-6 | 1 | 1 | 1 | 1 | 1 | 1 |
| ecoli1 | 0.9525 | 0.9627 | 0.962 | **0.9632** | 0.9597 | 0.961 | ecoli1 | 0.9658 | 0.9652 | 0.9662 | 0.9652 | 0.9594 | 0.9601 |
| ecoli2 | 0.9617 | 0.9695 | 0.9688 | 0.9682 | 0.969 | 0.9664 | ecoli2 | 0.9694 | 0.9704 | 0.9694 | 0.9707 | 0.9688 | 0.9694 |
| ecoli3 | 0.9539 | 0.9576 | 0.9581 | 0.9552 | 0.9528 | **0.9633** | ecoli3 | 0.9543 | **0.9624** | 0.9619 | 0.9595 | 0.9524 | 0.9514 |
| flare-F | 0.8705 | 0.8631 | 0.862 | 0.8639 | 0.8642 | 0.8668 | flare-F | 0.8743 | 0.8783 | 0.8641 | 0.868 | 0.8758 | **0.8788** |
| glass-0-1-2-3-vs-4-5-6 | 0.9894 | 0.9926 | 0.992 | 0.992 | 0.988 | 0.9967 | glass-0-1-2-3-vs-4-5-6 | 0.9913 | 0.9926 | 0.992 | 0.992 | 0.992 | 0.9926 |
| glass0 | 0.8352 | 0.8443 | 0.84 | **0.8447** | 0.8282 | 0.8403 | glass0 | 0.8427 | 0.8459 | 0.844 | 0.8362 | 0.844 | **0.8457** |
| glass1 | 0.778 | 0.7807 | 0.7813 | 0.751 | 0.7266 | **0.7985** | glass1 | 0.7707 | **0.7852** | 0.78 | 0.7847 | 0.7712 | 0.7773 |
| glass6 | 0.9815 | 0.9758 | 0.9789 | 0.9753 | 0.9857 | 0.9852 | glass6 | 0.9829 | 0.984 | 0.9858 | 0.9836 | 0.9816 | 0.9859 |
| haberman | 0.6939 | 0.7106 | 0.7162 | 0.71 | 0.66 | **0.7426** | haberman | 0.6974 | 0.7235 | 0.7198 | **0.7329** | 0.693 | 0.6978 |
| kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 | kddcup-rootkit | 1 | 1 | 1 | 1 | 1 | 1 |
| new-thyroid1 | 1 | 1 | 1 | 1 | 0.9995 | 1 | new-thyroid1 | 1 | 1 | 1 | 0.9992 | 1 | 1 |
| pima | 0.8307 | 0.8391 | 0.837 | 0.8387 | 0.8225 | **0.8395** | pima | 0.8371 | 0.8351 | 0.84 | 0.8383 | 0.8369 | 0.8375 |
| vehicle0 | 0.9956 | 0.9955 | 0.9958 | 0.9957 | 0.9953 | 0.9955 | vehicle0 | 0.9943 | 0.994 | 0.9943 | 0.9944 | 0.9933 | 0.994 |
| winequality-red-8-vs-6 | 0.8451 | 0.8573 | 0.8388 | 0.8566 | 0.8665 | **0.8705** | winequality-red-8-vs-6 | 0.8302 | 0.8374 | 0.8323 | 0.8503 | 0.8292 | **0.8553** |
| winequality-white-3-vs-7 | 0.8919 | 0.9021 | 0.8902 | 0.8934 | 0.8861 | **0.9164** | winequality-white-3-vs-7 | 0.9053 | 0.8903 | 0.8948 | 0.8899 | 0.8965 | **0.9083** |
| wisconsin | 0.9845 | 0.9893 | 0.9889 | 0.9889 | 0.9859 | 0.9912 | wisconsin | 0.988 | 0.9854 | 0.9891 | 0.9892 | 0.9867 | 0.9886 |
| yeast6 | 0.9504 | **0.9557** | 0.9525 | 0.954 | 0.944 | 0.9501 | yeast6 | 0.9555 | 0.9565 | 0.9558 | 0.954 | 0.9542 | 0.9553 |