**Table 1. AUC under different Initial Population and Mutation under C4.5 Classifier**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Dataset** | **P4-M1** | **P4-M3** | **P4- M5** | **P8- M1** | **P8- M3** | **P8-M5** | **P12-M1** | **P12-M3** | **P12-M5** | **P16-M1** | **P16-M3** | **P16-M5** |
| Abalone9-18 | 0.69 | 0.75 | **0.752** | 0.573 | 0.655 | 0.592 | 0.715 | 0.739 | 0.729 | 0.657 | 0.686 | 0.684 |
| Ecoli0vs1 | 0.833 | 0.86 | 0.833 | 0.636 | 0.893 | **0.958** | **0.958** | 0.958 | 0.86 | 0.803 | 0.936 | 0.803 |
| Ecoli1 | 0.836 | 0.84 | 0.867 | 0.696 | 0.727 | 0.858 | 0.84 | 0.874 | 0.863 | **0.891** | 0.847 | 0.867 |
| Ecoli2 | 0.868 | 0.868 | 0.85 | 0.859 | 0.85 | **0.87** | 0.868 | 0.846 | 0.859 | 0.846 | 0.86 | 0.854 |
| Glass016vs2 | 0.539 | 0.514 | 0.45 | 0.528 | 0.528 | **0.607** | 0.55 | 0.471 | 0.464 | 0.457 | 0.593 | 0.45 |
| Glass1 | 0.664 | 0.761 | 0.633 | 0.719 | 0.662 | **0.767** | 0.679 | 0.723 | 0.716 | 0.679 | 0.717 | 0.681 |
| Glass2 | 0.618 | 0.586 | **0.676** | 0.579 | 0.56 | 0.592 | 0.502 | 0.586 | 0.617 | 0.573 | 0.58 | 0.669 |
| Haberman | 0.63 | **0.644** | 0.595 | 0.58 | 0.607 | 0.597 | 0.561 | 0.571 | 0.59 | 0.553 | 0.608 | 0.566 |
| New-Thyroid1 | 0.915 | 0.886 | 0.866 | 0.879 | 0.866 | **0.979** | 0.886 | 0.915 | 0.852 | 0.943 | 0.915 | 0.773 |
| New-Thyroid2 | 0.886 | 0.934 | 0.937 | 0.794 | 0.787 | **0.956** | 0.951 | 0.947 | 0.894 | 0.934 | 0.934 | 0.839 |
| Page-blocks0 | 0.909 | 0.908 | 0.924 | 0.917 | 0.904 | **0.93** | 0.921 | 0.899 | 0.897 | 0.907 | 0.924 | 0.888 |
| Pima | 0.667 | 0.677 | 0.685 | 0.665 | 0.614 | **0.711** | 0.655 | 0.656 | 0.604 | 0.656 | 0.68 | 0.633 |
| Shuttlec0vsc4 | **1** | **1** | 0.991 | 0.986 | 0.991 | **1** | **1** | **1** | 0.991 | **1** | **1** | 0.989 |
| Vehicle0 | 0.901 | 0.88 | 0.868 | 0.819 | 0.885 | **0.909** | 0.904 | 0.908 | 0.897 | 0.903 | 0.904 | 0.863 |
| Vehicle1 | 0.69 | 0.674 | 0.706 | 0.663 | 0.645 | 0.687 | 0.703 | 0.685 | 0.678 | **0.714** | 0.707 | 0.681 |
| Vehicle3 | 0.68 | 0.662 | 0.679 | 0.691 | 0.687 | **0.746** | 0.705 | 0.713 | 0.681 | 0.689 | 0.744 | 0.728 |
| Vowel0 | 0.958 | 0.879 | 0.895 | 0.926 | 0.912 | 0.929 | 0.958 | 0.924 | 0.902 | 0.936 | **0.96** | 0.923 |
| Wisconsinlmb | 0.933 | 0.936 | 0.922 | 0.917 | 0.951 | **0.952** | 0.933 | 0.923 | 0.922 | 0.92 | 0.944 | 0.941 |
| Yeast05679vs4 | 0.717 | 0.73 | 0.718 | 0.685 | 0.71 | **0.782** | 0.678 | 0.703 | 0.738 | 0.71 | 0.761 | 0.74 |
| Yeast1 | 0.651 | 0.647 | 0.649 | 0.646 | 0.641 | 0.64 | 0.641 | **0.667** | 0.645 | 0.643 | 0.636 | 0.65 |
| Yeast1vs7 | 0.763 | 0.719 | 0.693 | 0.798 | 0.718 | **0.83** | 0.698 | 0.754 | 0.715 | 0.739 | 0.742 | 0.75 |
| Yeast1289vs7 | 0.512 | 0.713 | 0.562 | 0.604 | 0.562 | **0.716** | 0.59 | 0.553 | 0.515 | 0.548 | 0.563 | 0.56 |
| Yeast2vs4 | 0.834 | 0.889 | 0.858 | 0.883 | 0.861 | 0.884 | 0.77 | 0.884 | 0.861 | 0.834 | **0.926** | 0.858 |
| Yeast4 | 0.671 | 0.678 | **0.683** | 0.662 | 0.662 | 0.676 | 0.643 | 0.631 | 0.66 | 0.66 | 0.641 | 0.654 |

**Table 2. AUC under different Initial Population and Mutation under SVM Classifier**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Dataset** | **P4-M1** | **P4-M3** | **P4-M5** | **P8-M1** | **P8-M3** | **P8-M5** | **P12-M1** | **P12-M3** | **P12-M5** | **P16-M1** | **P16-M3** | **P16-M5** |
| Abalone9-18 | 0.558 | 0.588 | **0.717** | 0.5 | 0.607 | 0.588 | 0.588 | 0.588 | 0.57 | 0.588 | 0.588 | 0.593 |
| Ecoli0vs1 | **0.984** | 0.969 | 0.924 | 0.893 | 0.9 | **0.984** | **0.984** | **0.984** | 0.878 | **0.984** | 0.969 | 0.848 |
| Ecoli1 | 0.89 | 0.901 | 0.839 | 0.893 | 0.818 | **0.906** | 0.895 | 0.89 | 0.828 | 0.895 | 0.895 | 0.828 |
| Ecoli2 | 0.934 | **0.939** | 0.88 | 0.851 | 0.864 | **0.939** | **0.939** | **0.939** | 0.829 | **0.939** | **0.939** | 0.842 |
| Glass016vs2 | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** |
| Glass1 | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** |
| Glass2 | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** | **0.5** |
| Haberman | 0.618 | 0.612 | 0.5 | 0.5 | **0.65** | 0.612 | 0.612 | 0.618 | 0.5 | 0.612 | 0.618 | 0.5 |
| New-Thyroid1 | 0.678 | 0.678 | **0.866** | 0.513 | 0.52 | 0.678 | 0.678 | 0.678 | 0.506 | 0.678 | 0.678 | 0.506 |
| New-Thyroid2 | **0.678** | **0.678** | 0.506 | 0.513 | 0.541 | **0.678** | **0.678** | **0.678** | 0.506 | **0.678** | **0.678** | 0.5 |
| Page-blocks0 | 0.523 | 0.523 | 0.547 | 0.593 | 0.596 | 0.523 | 0.525 | 0.525 | **0.61** | 0.526 | 0.521 | 0.609 |
| Pima | **0.699** | 0.695 | 0.552 | 0.502 | 0.51 | **0.699** | 0.694 | **0.699** | 0.515 | **0.699** | 0.696 | 0.505 |
| Shuttlec0vsc4 | **0.999** | **0.999** | 0.997 | 0.995 | 0.994 | **0.999** | **0.999** | **0.999** | 0.996 | **0.999** | **0.999** | 0.994 |
| Vehicle0 | 0.822 | 0.813 | 0.679 | 0.681 | 0.673 | 0.815 | 0.812 | **0.826** | 0.667 | 0.82 | 0.774 | 0.669 |
| Vehicle1 | 0.651 | 0.647 | 0.567 | 0.527 | 0.53 | **0.654** | 0.652 | 0.652 | 0.516 | 0.642 | 0.646 | 0.526 |
| Vehicle3 | 0.695 | 0.695 | 0.532 | 0.537 | 0.537 | 0.685 | **0.701** | 0.693 | 0.525 | 0.685 | 0.693 | 0.533 |
| Vowel0 | 0.902 | 0.901 | 0.78 | 0.792 | 0.846 | **0.908** | 0.906 | 0.905 | 0.821 | 0.902 | 0.901 | 0.852 |
| Wisconsinlmb | 0.97 | 0.97 | 0.963 | 0.957 | 0.96 | **0.973** | 0.97 | 0.97 | 0.946 | 0.97 | 0.97 | 0.949 |
| Yeast05679vs4 | 0.773 | **0.779** | 0.628 | 0.613 | 0.564 | 0.776 | **0.779** | **0.779** | 0.611 | 0.776 | **0.779** | 0.607 |
| Yeast1 | 0.691 | 0.691 | 0.594 | 0.594 | 0.594 | **0.703** | 0.692 | 0.688 | 0.58 | 0.689 | 0.691 | 0.597 |
| Yeast1vs7 | 0.541 | 0.541 | 0.484 | 0.479 | 0.624 | 0.583 | **0.625** | 0.583 | 0.573 | 0.541 | **0.625** | 0.583 |
| Yeast1289vs7 | **0.5** | **0.5** | 0.395 | 0.382 | 0.412 | **0.5** | **0.5** | **0.5** | 0.453 | **0.5** | **0.5** | 0.477 |
| Yeast2vs4 | 0.716 | **0.722** | 0.553 | 0.542 | 0.593 | **0.722** | **0.722** | 0.719 | 0.564 | 0.719 | 0.719 | 0.547 |
| Yeast4 | 0.722 | 0.723 | 0.638 | 0.627 | 0.602 | **0.727** | 0.715 | 0.72 | 0.611 | 0.723 | 0.723 | 0.617 |