Feature Descriptor: LBP\_ri

1. Feature Selection: CFS

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.659 | 0.634 | 0.634 | 0.638 | 0.639 | 0.633 | 0 |
| J48 binary tree | 0.734 | 0.679 | 0.679 | 0.678 | 0.679 | 0.679 | 0 |
| AODE | 0.724 | 0.672 | 0.672 | 0.677 | 0.679 | 0.67 | 0 |
| Bayes network | 0.724 | 0.687 | 0.687 | 0.69 | 0.69 | 0.687 | 0 |
| Naïve bay | 0.726 | 0.702 | 0.702 | 0.706 | 0.706 | 0.702 | 0 |
| SVM | 0.67 | 0.672 | 0.672 | 0.669 | 0.672 | 0.671 | 0.02 |
| Logistic | 0.621 | 0.626 | 0.626 | 0.625 | 0.626 | 0.626 | 0.03 |
| SMO | 0.663 | 0.664 | 0.664 | 0.662 | 0.664 | 0.664 | 0.03 |
| Muti layer | 0.663 | 0.649 | 0.649 | 0.652 | 0.653 | 0.649 | 1.36 |

1. Feature Selection: Chi-Square

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.374 | 0.405 | 0.405 | 0.402 | 0.404 | 0.404 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.513 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.41 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.631 | 0.573 | 0.573 | 0.572 | 0.573 | 0.573 | 78.85 |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.374 | 0.405 | 0.405 | 0.402 | 0.404 | 0.404 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.513 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.41 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.631 | 0.573 | 0.573 | 0.572 | 0.573 | 0.573 | 78.85 |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.374 | 0.405 | 0.405 | 0.402 | 0.404 | 0.404 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.513 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.41 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.631 | 0.573 | 0.573 | 0.572 | 0.573 | 0.573 | 78.85 |

K=36

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.374 | 0.405 | 0.405 | 0.402 | 0.404 | 0.404 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.513 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.35 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.631 | 0.573 | 0.573 | 0.572 | 0.573 | 0.573 | 78.85 |

1. Feature Selection: Gain Ratio

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.374 | 0.397 | 0.397 | 0.395 | 0.397 | 0.397 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.513 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.35 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.64 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 64.88 |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.374 | 0.397 | 0.397 | 0.395 | 0.397 | 0.397 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.513 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.35 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.64 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 64.88 |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.374 | 0.397 | 0.397 | 0.395 | 0.397 | 0.397 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.513 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.35 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.64 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 64.88 |

K=36

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.374 | 0.397 | 0.397 | 0.395 | 0.397 | 0.397 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.513 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.35 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.64 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 64.88 |

1. Feature Selection: Information Gain

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.425 | 0.45 | 0.45 | 0.448 | 0.45 | 0.45 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.513 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.35 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.628 | 0.565 | 0.565 | 0.563 | 0.565 | 0.565 | 64.88 |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.425 | 0.45 | 0.45 | 0.448 | 0.45 | 0.45 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.513 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.35 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.628 | 0.565 | 0.565 | 0.563 | 0.565 | 0.565 | 64.88 |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.425 | 0.45 | 0.45 | 0.448 | 0.45 | 0.45 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.513 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.35 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.628 | 0.565 | 0.565 | 0.563 | 0.565 | 0.565 | 64.88 |

K=36

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.425 | 0.45 | 0.45 | 0.448 | 0.45 | 0.45 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.513 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.35 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.628 | 0.565 | 0.565 | 0.563 | 0.565 | 0.565 | 64.88 |

1. Feature Selection: Relief

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.482 | 0.496 | 0.496 | 0.497 | 0.497 | 0.496 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.514 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.31 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.624 | 0.55 | 0.55 | 0.547 | 0.549 | 0.549 | 85.98 |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.482 | 0.496 | 0.496 | 0.497 | 0.497 | 0.496 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.514 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.31 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.624 | 0.55 | 0.55 | 0.547 | 0.549 | 0.549 | 85.98 |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.482 | 0.496 | 0.496 | 0.497 | 0.497 | 0.496 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.514 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.31 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.624 | 0.55 | 0.55 | 0.547 | 0.549 | 0.549 | 85.98 |

K=36

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.6 | 0.603 | 0.603 | 0.608 | 0.608 | 0.602 | 0 |
| J48 binary tree | 0.482 | 0.496 | 0.496 | 0.497 | 0.497 | 0.496 | 0 |
| AODE | 0.598 | 0.595 | 0.595 | 0.598 | 0.598 | 0.595 | 0 |
| Bayes network | 0.567 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| Naïve bay | 0.569 | 0.595 | 0.595 | 0.601 | 0.601 | 0.594 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.514 | 0.496 | 0.496 | 0.496 | 0.497 | 0.496 | 0.31 |
| SMO | 0.525 | 0.527 | 0.527 | 0.524 | 0.526 | 0.526 | 0.02 |
| Muti layer | 0.624 | 0.55 | 0.55 | 0.547 | 0.549 | 0.549 | 85.98 |