Feature Descriptor: LBP\_ri

1. Feature Selection: CFS

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.666 | 0.603 | 0.603 | 0.605 | 0.605 | 0.603 | 0 |
| J48 binary tree | 0.667 | 0.603 | 0.603 | 0.607 | 0.606 | 0.602 | 0 |
| AODE | 0.735 | 0.687 | 0.687 | 0.693 | 0.694 | 0.686 | 0 |
| Bayes network | 0.774 | 0.695 | 0.695 | 0.703 | 0.71 | 0.692 | 0 |
| Naïve bay | 0.772 | 0.687 | 0.687 | 0.698 | 0.712 | 0.681 | 0 |
| SVM | 0.668 | 0.672 | 0.672 | 0.664 | 0.675 | 0.668 | 0.02 |
| Logistic | 0.703 | 0.656 | 0.656 | 0.656 | 0.657 | 0.657 | 0.03 |
| SMO | 0.651 | 0.649 | 0.649 | 0.652 | 0.653 | 0.648 | 0 |
| Muti layer | 0.743 | 0.695 | 0.695 | 0.696 | 0.696 | 0.695 | 3.98 |

1. Feature Selection: Chi-Square

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.671 | 0.641 | 0.641 | 0.634 | 0.643 | 0.637 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.58 | 0.573 | 0.573 | 0.571 | 0.573 | 0.573 | 0.3 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer | 0.62 | 0.573 | 0.573 | 0.574 | 0.574 | 0.573 | 83.61 |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.671 | 0.641 | 0.641 | 0.634 | 0.643 | 0.637 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.58 | 0.573 | 0.573 | 0.571 | 0.573 | 0.573 | 0.3 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.671 | 0.641 | 0.641 | 0.634 | 0.643 | 0.637 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.58 | 0.573 | 0.573 | 0.571 | 0.573 | 0.573 | 0.3 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |

K=36

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.671 | 0.641 | 0.641 | 0.634 | 0.643 | 0.637 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.58 | 0.573 | 0.573 | 0.571 | 0.573 | 0.573 | 0.3 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |

1. Feature Selection: Gain Ratio

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.709 | 0.679 | 0.679 | 0.617 | 0.683 | 0.676 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.578 | 0.565 | 0.565 | 0.563 | 0.565 | 0.565 | 0.3 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.709 | 0.679 | 0.679 | 0.617 | 0.683 | 0.676 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.578 | 0.565 | 0.565 | 0.563 | 0.565 | 0.565 | 0.3 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.709 | 0.679 | 0.679 | 0.617 | 0.683 | 0.676 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.578 | 0.565 | 0.565 | 0.563 | 0.565 | 0.565 | 0.3 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |

K=36

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.709 | 0.679 | 0.679 | 0.617 | 0.683 | 0.676 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.578 | 0.565 | 0.565 | 0.563 | 0.565 | 0.565 | 0.3 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |

1. Feature Selection: Information Gain

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.692 | 0.656 | 0.656 | 0.648 | 0.66 | 0.652 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.58 | 0.573 | 0.573 | 0.571 | 0.573 | 0.573 | 0.05 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.692 | 0.656 | 0.656 | 0.648 | 0.66 | 0.652 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.58 | 0.573 | 0.573 | 0.571 | 0.573 | 0.573 | 0.05 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.692 | 0.656 | 0.656 | 0.648 | 0.66 | 0.652 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.58 | 0.573 | 0.573 | 0.571 | 0.573 | 0.573 | 0.05 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |

K=36

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.692 | 0.656 | 0.656 | 0.648 | 0.66 | 0.652 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.58 | 0.573 | 0.573 | 0.571 | 0.573 | 0.573 | 0.24 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |

1. Feature Selection: Relief

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.618 | 0.603 | 0.603 | 0.598 | 0.603 | 0.602 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.577 | 0.565 | 0.565 | 0.563 | 0.565 | 0.565 | 0.25 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.618 | 0.603 | 0.603 | 0.598 | 0.603 | 0.602 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.577 | 0.565 | 0.565 | 0.563 | 0.565 | 0.565 | 0.25 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.618 | 0.603 | 0.603 | 0.598 | 0.603 | 0.602 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.577 | 0.565 | 0.565 | 0.563 | 0.565 | 0.565 | 0.25 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |

K=36

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.589 | 0.588 | 0.588 | 0.591 | 0.591 | 0.587 | 0 |
| J48 binary tree | 0.618 | 0.603 | 0.603 | 0.598 | 0.603 | 0.602 | 0 |
| AODE | 0.622 | 0.58 | 0.58 | 0.588 | 0.588 | 0.576 | 0 |
| Bayes network | 0.611 | 0.58 | 0.588 | 0.588 | 0.588 | 0.576 | 0 |
| Naïve bay | 0.607 | 0.557 | 0.557 | 0.566 | 0.567 | 0.551 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.577 | 0.565 | 0.565 | 0.563 | 0.565 | 0.565 | 0.25 |
| SMO | 0.535 | 0.534 | 0.535 | 0.535 | 0.535 | 0.535 | 0.02 |
| Muti layer |  |  |  |  |  |  | 83.61 |