Feature Descriptor: LBP\_ri

1. Feature Selection: CFS

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.696 | 0.679 | 0.679 | 0.687 | 0.691 | 0.677 | 0 |
| J48 binary tree | 0.707 | 0.679 | 0.679 | 0.683 | 0.684 | 0.679 | 0 |
| AODE | 0.778 | 0.725 | 0.725 | 0.733 | 0.738 | 0.723 | 0 |
| Bayes network | 0.812 | 0.718 | 0.718 | 0.723 | 0.726 | 0.716 | 0 |
| Naïve bay | 0.81 | 0.725 | 0.725 | 0.733 | 0.738 | 0.723 | 0 |
| SVM | 0.715 | 0.718 | 0.718 | 0.711 | 0.72 | 0.715 | 0.02 |
| Logistic | 0.727 | 0.687 | 0.687 | 0.687 | 0.687 | 0.687 | 0.03 |
| SMO | 0.763 | 0.763 | 0.763 | 0.762 | 0.763 | 0.763 | 0.03 |
| Muti layer | 0.8 | 0.771 | 0.771 | 0.77 | 0.771 | 0.771 | 4.01 |

1. Feature Selection: Chi-Square

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.711 | 0.679 | 0.679 | 0.683 | 0.684 | 0.679 | 0 |
| J48 binary tree | 0.57 | 0.55 | 0.55 | 0.544 | 0.548 | 0.547 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.27 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer |  |  |  |  |  |  |  |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.711 | 0.679 | 0.679 | 0.683 | 0.684 | 0.679 | 0 |
| J48 binary tree | 0.57 | 0.55 | 0.55 | 0.544 | 0.548 | 0.547 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.27 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer |  |  |  |  |  |  |  |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.711 | 0.679 | 0.679 | 0.683 | 0.684 | 0.679 | 0 |
| J48 binary tree | 0.57 | 0.55 | 0.55 | 0.544 | 0.548 | 0.547 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.27 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer |  |  |  |  |  |  |  |

K=36

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.711 | 0.679 | 0.679 | 0.683 | 0.684 | 0.679 | 0 |
| J48 binary tree | 0.57 | 0.55 | 0.55 | 0.544 | 0.548 | 0.547 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.23 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer |  |  |  |  |  |  |  |

1. Feature Selection: Gain Ratio

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.718 | 0.687 | 0.687 | 0.691 | 0.692 | 0.686 | 0 |
| J48 binary tree | 0.571 | 0.557 | 0.557 | 0.552 | 0.556 | 0.556 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.41 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer |  |  |  |  |  |  |  |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.718 | 0.687 | 0.687 | 0.691 | 0.692 | 0.686 | 0 |
| J48 binary tree | 0.571 | 0.557 | 0.557 | 0.552 | 0.556 | 0.556 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.41 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer |  |  |  |  |  |  |  |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.718 | 0.687 | 0.687 | 0.691 | 0.692 | 0.686 | 0 |
| J48 binary tree | 0.571 | 0.557 | 0.557 | 0.552 | 0.556 | 0.556 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.41 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer |  |  |  |  |  |  |  |

K=36

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.718 | 0.687 | 0.687 | 0.691 | 0.692 | 0.686 | 0 |
| J48 binary tree | 0.571 | 0.557 | 0.557 | 0.552 | 0.556 | 0.556 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.41 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer |  |  |  |  |  |  |  |

1. Feature Selection: Information Gain

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.711 | 0.679 | 0.679 | 0.683 | 0.684 | 0.679 | 0 |
| J48 binary tree | 0.571 | 0.557 | 0.557 | 0.554 | 0.556 | 0.556 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.26 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer | 0.651 | 0.603 | 0.603 | 0.601 | 0.603 | 0.603 | 71.04 |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.711 | 0.679 | 0.679 | 0.683 | 0.684 | 0.679 | 0 |
| J48 binary tree | 0.571 | 0.557 | 0.557 | 0.554 | 0.556 | 0.556 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.26 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer | 0.651 | 0.603 | 0.603 | 0.601 | 0.603 | 0.603 | 71.04 |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.711 | 0.679 | 0.679 | 0.683 | 0.684 | 0.679 | 0 |
| J48 binary tree | 0.571 | 0.557 | 0.557 | 0.554 | 0.556 | 0.556 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.26 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer | 0.651 | 0.603 | 0.603 | 0.601 | 0.603 | 0.603 | 71.04 |

K=36

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.711 | 0.679 | 0.679 | 0.683 | 0.684 | 0.679 | 0 |
| J48 binary tree | 0.571 | 0.557 | 0.557 | 0.554 | 0.556 | 0.556 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.24 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer | 0.651 | 0.603 | 0.603 | 0.601 | 0.603 | 0.603 | 62.06 |

1. Feature Selection: Relief

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.736 | 0.695 | 0.695 | 0.7 | 0.701 | 0.694 | 0 |
| J48 binary tree | 0.576 | 0.55 | 0.55 | 0.544 | 0.548 | 0.547 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.26 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer | 0.647 | 0.588 | 0.588 | 0.584 | 0.588 | 0.587 | 68.93 |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.736 | 0.695 | 0.695 | 0.7 | 0.701 | 0.694 | 0 |
| J48 binary tree | 0.576 | 0.55 | 0.55 | 0.544 | 0.548 | 0.547 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.26 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer | 0.647 | 0.588 | 0.588 | 0.584 | 0.588 | 0.587 | 68.93 |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.736 | 0.695 | 0.695 | 0.7 | 0.701 | 0.694 | 0 |
| J48 binary tree | 0.576 | 0.55 | 0.55 | 0.544 | 0.548 | 0.547 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.26 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer | 0.647 | 0.588 | 0.588 | 0.584 | 0.588 | 0.587 | 68.93 |

K=36

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.736 | 0.695 | 0.695 | 0.7 | 0.701 | 0.694 | 0 |
| J48 binary tree | 0.576 | 0.55 | 0.55 | 0.544 | 0.548 | 0.547 | 0 |
| AODE | 0.667 | 0.603 | 0.603 | 0.611 | 0.613 | 0.599 | 0 |
| Bayes network | 0.635 | 0.611 | 0.611 | 0.618 | 0.62 | 0.607 | 0 |
| Naïve bay | 0.638 | 0.603 | 0.603 | 0.612 | 0.616 | 0.598 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.591 | 0.595 | 0.595 | 0.597 | 0.597 | 0.595 | 0.27 |
| SMO | 0.609 | 0.611 | 0.611 | 0.608 | 0.61 | 0.61 | 0.02 |
| Muti layer | 0.647 | 0.588 | 0.588 | 0.584 | 0.587 | 0.587 | 64.37 |