Feature Descriptor: LBP\_hf

1. Feature Selection: CFS

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.607 | 0.58 | 0.58 | 0.589 | 0.59 | 0.575 | 0 |
| J48 binary tree | 0.66 | 0.595 | 0.595 | 0.591 | 0.595 | 0.594 | 0 |
| AODE | 0.686 | 0.626 | 0.626 | 0.635 | 0.639 | 0.621 | 0 |
| Bayes network | 0.735 | 0.641 | 0.641 | 0.65 | 0.655 | 0.637 | 0 |
| Naïve bay | 0.729 | 0.641 | 0.641 | 0.65 | 0.655 | 0.637 | 0 |
| SVM | 0.593 | 0.603 | 0.603 | 0.582 | 0.632 | 0.569 | 0 |
| Logistic | 0.669 | 0.611 | 0.611 | 0.61 | 0.611 | 0.611 | 0 |
| SMO | 0.625 | 0.626 | 0.626 | 0.624 | 0.626 | 0.626 | 0 |
| Muti layer | 0.688 | 0.656 | 0.656 | 0.655 | 0.656 | 0.656 | 3.66 |

1. Feature Selection: Chi-Square

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.539 | 0.55 | 0.55 | 0.556 | 0.555 | 0.547 | 0 |
| J48 binary tree | 0.589 | 0.573 | 0.573 | 0.567 | 0.572 | 0.57 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.25 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.539 | 0.55 | 0.55 | 0.556 | 0.555 | 0.547 | 0 |
| J48 binary tree | 0.589 | 0.573 | 0.573 | 0.567 | 0.572 | 0.57 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.03 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.26 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.539 | 0.55 | 0.55 | 0.556 | 0.555 | 0.547 | 0 |
| J48 binary tree | 0.589 | 0.573 | 0.573 | 0.567 | 0.572 | 0.57 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.03 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.24 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

K=39

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.539 | 0.55 | 0.55 | 0.556 | 0.555 | 0.547 | 0 |
| J48 binary tree | 0.589 | 0.573 | 0.573 | 0.567 | 0.572 | 0.57 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.03 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.26 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

1. Feature Selection: Gain Ratio

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.539 | 0.55 | 0.55 | 0.556 | 0.555 | 0.547 | 0 |
| J48 binary tree | 0.549 | 0.534 | 0.534 | 0.528 | 0.533 | 0.531 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.02 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.22 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.539 | 0.55 | 0.55 | 0.556 | 0.555 | 0.547 | 0 |
| J48 binary tree | 0.549 | 0.534 | 0.534 | 0.528 | 0.533 | 0.531 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.03 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.26 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.539 | 0.55 | 0.55 | 0.556 | 0.555 | 0.547 | 0 |
| J48 binary tree | 0.549 | 0.534 | 0.534 | 0.528 | 0.533 | 0.531 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.03 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.26 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

K=39

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.539 | 0.55 | 0.55 | 0.556 | 0.555 | 0.547 | 0 |
| J48 binary tree | 0.549 | 0.534 | 0.534 | 0.528 | 0.533 | 0.531 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.03 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.26 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

1. Feature Selection: Information Gain

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.539 | 0.55 | 0.55 | 0.556 | 0.555 | 0.547 | 0 |
| J48 binary tree | 0.566 | 0.55 | 0.55 | 0.543 | 0.548 | 0.546 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.03 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.26 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.539 | 0.55 | 0.55 | 0.556 | 0.555 | 0.547 | 0 |
| J48 binary tree | 0.566 | 0.55 | 0.55 | 0.543 | 0.548 | 0.546 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.03 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.26 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.539 | 0.55 | 0.55 | 0.556 | 0.555 | 0.547 | 0 |
| J48 binary tree | 0.566 | 0.55 | 0.55 | 0.543 | 0.548 | 0.546 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.03 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.26 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

K=39

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.539 | 0.55 | 0.55 | 0.556 | 0.555 | 0.547 | 0 |
| J48 binary tree | 0.566 | 0.55 | 0.55 | 0.543 | 0.548 | 0.546 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.03 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.26 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

1. Feature Selection: Relief

K=10

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.569 | 0.565 | 0.565 | 0.57 | 0.57 | 0.563 | 0 |
| J48 binary tree | 0.594 | 0.55 | 0.55 | 0.541 | 0.548 | 0.543 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.03 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.26 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

K=20

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.569 | 0.565 | 0.565 | 0.57 | 0.57 | 0.563 | 0 |
| J48 binary tree | 0.594 | 0.55 | 0.55 | 0.541 | 0.548 | 0.543 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.03 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.26 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

K=30

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.569 | 0.565 | 0.565 | 0.57 | 0.57 | 0.563 | 0 |
| J48 binary tree | 0.594 | 0.55 | 0.55 | 0.541 | 0.548 | 0.543 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.03 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.26 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |

K=39

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Algorithm | AUC | AC | SN | SP | PR | FM | TIME |
| J48 | 0.569 | 0.565 | 0.565 | 0.57 | 0.57 | 0.563 | 0 |
| J48 binary tree | 0.594 | 0.55 | 0.55 | 0.541 | 0.548 | 0.543 | 0 |
| AODE | 0.605 | 0.55 | 0.55 | 0.558 | 0.558 | 0.544 | 0 |
| Bayes network | 0.585 | 0.557 | 0.557 | 0.569 | 0.571 | 0.547 | 0 |
| Naïve bay | 0.585 | 0.534 | 0.534 | 0.546 | 0.546 | 0.523 | 0 |
| SVM | 0.5 | 0.519 | 0.519 | 0.481 | 0.269 | 0.355 | 0.03 |
| Logistic | 0.59 | 0.588 | 0.588 | 0.589 | 0.589 | 0.588 | 0.25 |
| SMO | 0.566 | 0.565 | 0.565 | 0.567 | 0.567 | 0.565 | 0.03 |
| Muti layer |  |  |  |  |  |  |  |