***Accuracy***

|  |  |  |  |
| --- | --- | --- | --- |
| Fold | Random Forest | Logistic Regression | XGBoost |
| 1 | 0.9523 | 0.9154 | 0.9458 |
| 2 | 0.9587 | 0.9217 | 0.9587 |
| 3 | 0.9630 | 0.9283 | 0.9587 |
| 4 | 0.9609 | 0.9326 | 0.9609 |
| 5 | 0.9478 | 0.9087 | 0.9543 |
| 6 | 0.9630 | 0.9370 | 0.9565 |
| 7 | 0.9543 | 0.9348 | 0.9500 |
| 8 | 0.9522 | 0.9261 | 0.9587 |
| 9 | 0.9500 | 0.9391 | 0.9587 |
| 10 | 0. 9500 | 0.9109 | 0.9457 |
| avg | 0. 9552 | 0.9255 | 0.9548 |
| stdev | 0.0054 | 0.0104 | 0.0054 |

***F-measure***

|  |  |  |  |
| --- | --- | --- | --- |
| Fold | Random Forest | Logistic Regression | XGBoost |
| 1 | 0. 9478 | 0. 9152 | 0. 9458 |
| 2 | 0. 9630 | 0. 9214 | 0. 9586 |
| 3 | 0. 9586 | 0. 9280 | 0. 9588 |
| 4 | 0. 9674 | 0. 9325 | 0. 9608 |
| 5 | 0. 9435 | 0. 9088 | 0. 9545 |
| 6 | 0. 9630 | 0. 9369 | 0. 9565 |
| 7 | 0. 9520 | 0. 9345 | 0. 9500 |
| 8 | 0. 9563 | 0. 9256 | 0. 9588 |
| 9 | 0. 9475 | 0. 9385 | 0. 9586 |
| 10 | 0. 9497 | 0. 9104 | 0. 9454 |
| avg | 0. 9549 | 0. 9252 | 0. 9548 |
| stdev | 0. 0076 | 0. 0103 | 0. 0054 |

Like Table 12.4

***F-measure rank***

|  |  |  |  |
| --- | --- | --- | --- |
| Fold | Random Forest | Logistic Regression | XGBoost |
| 1 | 0. 9478(1) | 0. 9152(3) | 0. 9458(2) |
| 2 | 0. 9630(1) | 0. 9214(3) | 0. 9586(2) |
| 3 | 0. 9586(2) | 0. 9280(3) | 0. 9588(1) |
| 4 | 0. 9674(1) | 0. 9325(3) | 0. 9608(2) |
| 5 | 0. 9435(2) | 0. 9088(3) | 0. 9545(1) |
| 6 | 0. 9630(1) | 0. 9369(3) | 0. 9565(2) |
| 7 | 0. 9520(1) | 0. 9345(3) | 0. 9500(2) |
| 8 | 0. 9563(2) | 0. 9256(3) | 0. 9588(1) |
| 9 | 0. 9475(2) | 0. 9385(3) | 0. 9586(1) |
| 10 | 0. 9497(1) | 0. 9104(3) | 0. 9454(2) |
| Avg rank | 1.4 | 3 | 1.6 |

Like table 12.8

R = 2

nSum (Rj−R)^2 = 15.2

1/n(k-1) Sum (Rij−R)^2 = 1

The critical value for k=3 and n=10 at the α=0.05 level is 6.2

Therefore 15.2 > 6.2 then we can reject the null hypothesis which states that there is at least one model that is has a significant difference from the others so now we preform the Nemenyi test

Critical difference = 1.0478

Compute the absolute differences between average ranks for each pair and compare that with the critical difference

* Random Forest vs Logistic Regression: ∣1.4−3.0∣=1.6
* Random Forest vs XGBoost: ∣1.4−1.6∣=0.2
* Logistic Regression vs XGBoost: ∣3.0−1.6∣=1.4

Logistic Regression performs significantly differently from both Random Forest and XGBoost, while Random Forest and XGBoost have comparable performance.