

## Supplementary Material 1. R commands for performing significance tests

```
##### significance tests of non-tunned algorithms vs tunned  
algorithms
```

```
## KNN
```

```
x = c(78.3, 82.03)
```

```
n = c(100, 100)
```

```
prop.test(x,n,alternative = "two.sided", conf.level = 0.95)
```

```
# 95 percent confidence interval:
```

```
# -0.15770686 0.08310686
```

```
## SVC
```

```
x = c(10.82, 81.98)
```

```
n = c(100, 100)
```

```
prop.test(x,n,alternative = "two.sided", conf.level = 0.95)
```

```
# 95 percent confidence interval:
```

```
# -0.8184589 -0.6047411
```

```
## Logistic Regression
```

```
x = c(90.6, 90.6)
```

```
n = c(100, 100)
```

```
prop.test(x,n,alternative = "two.sided", conf.level = 0.95)
```

```
# 95 percent confidence interval:
```

```
# -0.08088931 0.08088931
```

```
## Multi-Layer Perceptron
```

```
x = c(79.89, 83.40)
```

```
n = c(100, 100)
```

```
prop.test(x,n,alternative = "two.sided", conf.level = 0.95)
```

```
# 95 percent confidence interval:
# -0.152291  0.082091

## Kmeans
x = c(10.16, 68.34)
n = c(100, 100)
prop.test(x,n,alternative = "two.sided", conf.level = 0.95)
# 95 percent confidence interval:
# -0.7005103 -0.4630897

## Random Forest
x = c(66.75, 72.69)
n = c(100, 100)
prop.test(x,n,alternative = "two.sided", conf.level = 0.95)
# 95 percent confidence interval:
# -0.19648974  0.07768974

## Decision Tree
x = c(69.78, 66.04)
n = c(100, 100)
prop.test(x,n,alternative = "two.sided", conf.level = 0.95)
# 95 percent confidence interval:
# -0.1018903  0.1766903

##### significance test of best algorithms (LR and CNN)
#      LR      CNN
x = c(90.6, 94.43)
n = c(100, 100)
prop.test(x,n,alternative = "two.sided", conf.level = 0.95)
# 95 percent confidence interval:
```

# -0.12104649 0.04444649