

CDF

Md Ashiqul Amin (ma3359)

October 2, 2019

```
### get data and calculate key summary statistics
#Read data
#Mention the path of the data file
#header value will be true if there any header otherwise false

data <- read.table("C:/Users/Robin/Desktop/LoRaWAN/lpdata.csv", header = TRUE, sep = ",")
head(data)

##      No.of.observation Throughput.in.B Throughput RSSI SNR Header.Size
## 1                1                26         208   NA   NA           16
## 2                2                26         208 -201   -8           16
## 3                3                26         208 -121   -5           16
## 4                4                23         184   NA   NA           13
## 5                5                23         184   NA   NA           13
## 6                6                21         168 -201   -5           11
##      Latency Jitter.Calculation X
## 1      11.3                NA
## 2      11.0                0.3 NA
## 3      10.0                1 NA
## 4      13.0                3 NA
## 5      14.0                1 NA
## 6      11.0                3 NA

#Select specific data from the dataset
data_1= data$RSSI
data_2= data$Throughput

#Count the number of row conatining data
n = sum(!is.na(data_1))
m = sum(!is.na(data_2))

#summary (optional)
summary(fivenum(data_1))

##      Min. 1st Qu.  Median      Mean 3rd Qu.      Max.
## -208.0 -205.0 -201.0 -165.2 -109.0 -103.0

summary(fivenum(data_2))

##      Min. 1st Qu.  Median      Mean 3rd Qu.      Max.
##  128.0  168.0  184.0  179.2  208.0  208.0

# ordering the data
data.ordered = sort(data_1)
head(data.ordered)

## [1] -208 -207 -206 -206 -205 -205

data.ordered_1 = sort(data_2)
head(data.ordered_1)
```

```
## [1] 128 160 160 160 168 168
```

```
#create the image in png form
```

```
png('C:/Users/Robin/Desktop/LoRaWAN/L.png',width = 300, height = 300, units = "px", bg = "white")
```

```
# plot the possible values of probability (0 to 1) against the ordered data
```

```
# notice the option type = '' for plotting the functions
```

```
plot(data.ordered,(1:n)/n , type = 'o', col = 'blue',pch="o",lty=1, ylim = c(0, 1), xlab = 'RSSI(dBm, 5
```

```
#par(new=FALSE)
```

```
#points(data.ordered_1, (1:m)/m, col="red", pch="*")
```

```
#lines(data.ordered_1, (1:m)/m, col="red",lty=2)
```

```
par(new=TRUE)
```

```
plot(data.ordered_1, (1:m)/m, type = 'o',col = 'red',pch="+",lty=2, ylim = c(0, 1))
```

```
#add quartile (if necessary)
```

```
#ggplot(data.ordered) + stat_ecdf(geom = "step", pad = FALSE)
```

```
# mark the 3rd quartile
```

```
#abline(v = 62.5, h = 0.75)
```

```
# add a legend (if necessary)
```

```
#legend(65, 0.7, '3rd Quartile = 63.5', box.lwd = 0)
```

```
# add the label on the y-axis (optional)
```

```
#mtext(text = expression(hat(F)[n](x)), side = 2, line = 2.5)
```

```
dev.off()
```

```
## pdf
```

```
## 2
```