LNL_Course_Project

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Course Assignment. Part 1

1. Problem Description

The business analytics group of a company is asked to investigate causes of malfunctions in technological process of one of the manufacturing plants that result in significantly increased cost to the end product of the business. One of suspected reasons for malfunctions is deviation of temperature during the process from optimal levels. The sample in the provided file contains times of malfunctions in seconds since the start of measurement and minute records of temperature.

2. Data

The file `MScA_LinearNonLinear_CourseProject.csv` contains time stamps of events expressed in seconds.

Read and prepare the data.

```
Course.Project.Data<-read.csv(file="C:/Users/Patrick/Documents/R/UChicago/Linear_NonLinear/MScA_LinearNo

Course.Project.Data<-as.data.frame(Course.Project.Data)
Course.Project.Data[1:20,]
```

```
##          Time Temperature
## 1    18.08567    91.59307
## 2    28.74417    91.59307
## 3    34.23941    91.59307
## 4    36.87944    91.59307
## 5    37.84399    91.59307
## 6    41.37885    91.59307
## 7    45.19283    91.59307
## 8    60.94242    97.30860
## 9    66.33539    97.30860
## 10   69.95667    97.30860
## 11   76.17420    97.30860
## 12   80.48524    97.30860
## 13   81.29133    97.30860
## 14   86.18149    97.30860
## 15   91.28642    97.30860
## 16   91.75162    97.30860
## 17   98.29452    97.30860
## 18  142.58741    95.98865
## 19  149.82484    95.98865
## 20  151.58587    95.98865
```

3. Create Counting Process, Explore Cumulative Intensity

Counting Process is a step function that jumps by 1 at every moment of new event.

```
Counting.Process<-as.data.frame(cbind(Time=Course.Project.Data$Time,Count=1:length(Course.Project.Data$T

Counting.Process[1:20,]
```

```
##          Time Count
## 1    18.08567     1
## 2    28.74417     2
## 3    34.23941     3
## 4    36.87944     4
## 5    37.84399     5
## 6    41.37885     6
## 7    45.19283     7
## 8    60.94242     8
## 9    66.33539     9
## 10   69.95667    10
## 11   76.17420    11
## 12   80.48524    12
## 13   81.29133    13
## 14   86.18149    14
## 15   91.28642    15
## 16   91.75162    16
## 17   98.29452    17
## 18  142.58741    18
## 19  149.82484    19
## 20  151.58587    20
```

```
plot(Counting.Process$Time,Counting.Process$Count,type="s")
```