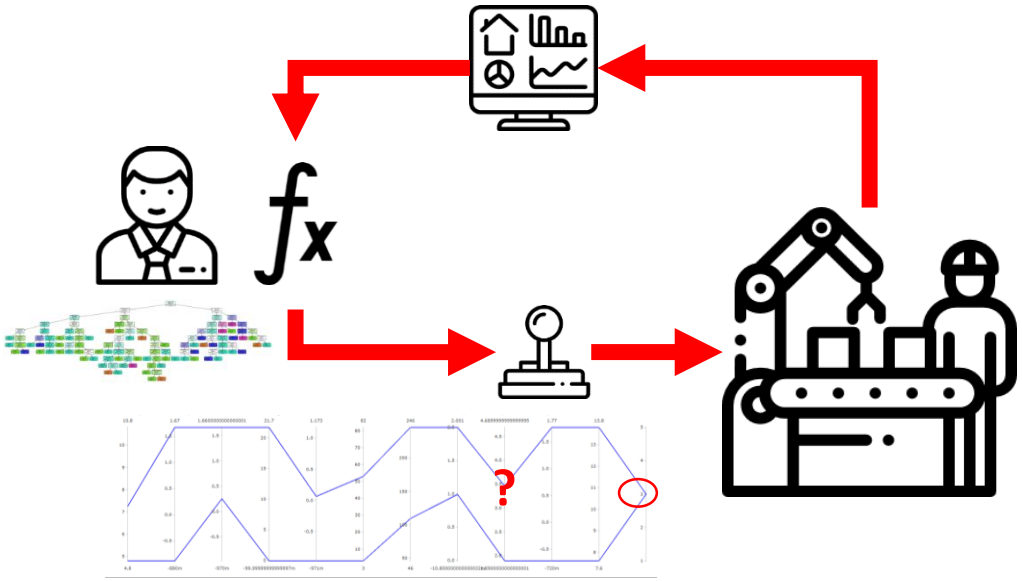
Challenge

Conformity/quality asessement of products



Key Process Parameter identification
Identification of relationships between process parameters and the considered product characteristic

Data

All PP and the considered KC

KC2 & KC12

Processing

Interpretation

Missing Values ?
Outliers ?
Correlation analysis ?
….
KNN application, why not ?

PCA
SHAP !

Key Process Parameter identification
Extraction of rules

Decision Tree ? Accuracy ?
Rules ?
Compared to PCA Results ?
Other clasifications? Why not?

Key Process Parameter identification
Definition of a regression model – assessment of the accuracy of the model

Rgression model , confusion matrix ?
Accuracy ?
Model reduction ?

Comments for PCA Use in R

```
setwd("D:/Enseignement/Enseignement_ENSAM/Maths/Formation Data science/ACP")
rm(list=ls())
chooseCRANmirror(ind=29)

install.packages("FactoMineR")
install.packages("factoextra")
install.packages("corrplot")
library("FactoMineR")
library("factoextra")
library("corrplot")

donnee<-read.csv("factory_process_ACP5_KC4.csv", header=TRUE, sep=";")

res<-PCA(donnee,axes=c(1,5), graph=F)
vp<-fviz_eig(res)
var<-fviz_pca_var(res,axes=c(1,5))
ind<-fviz_pca_ind(res,axes=c(1,5),col.ind=donnee$KC4,label="none",gradient.cols="red")
bip<-fviz_pca_biplot(res,axes=c(1,5),col.ind=donnee$KC4,label="var",gradient.cols="red")
M <- cor(donnee)
corrplot(M, order = "hclust", addrect = 5)
print(ind)
print(vp)
print(bip)
print(var)
pdf("ACP15_KC4.pdf")
print(vp)
print(var)
print(ind)
print(bip)
corrplot(M, order = "hclust", addrect = 5)
dev.off()
```

Working directory address

Data file name (.csv)

PCA projection axis

Name of the considered KC

Number of clusters for the correlation analysis

Result file name (.pdf)