ISEN
ALL IS DIGITAL!
LILLE

yncréa

# Keystroke Dynamics

Rapport final

Bourgeon Rémi
Dobrowolski Franciszek
Houdas Rodolphe
Jouglet Timothé

# Introduction


# Plan

I - Etat de l’art

II - Problématique

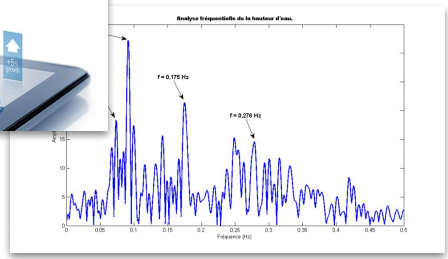
III - Saisie des échantillons

IV - Traitement et Machine Learning

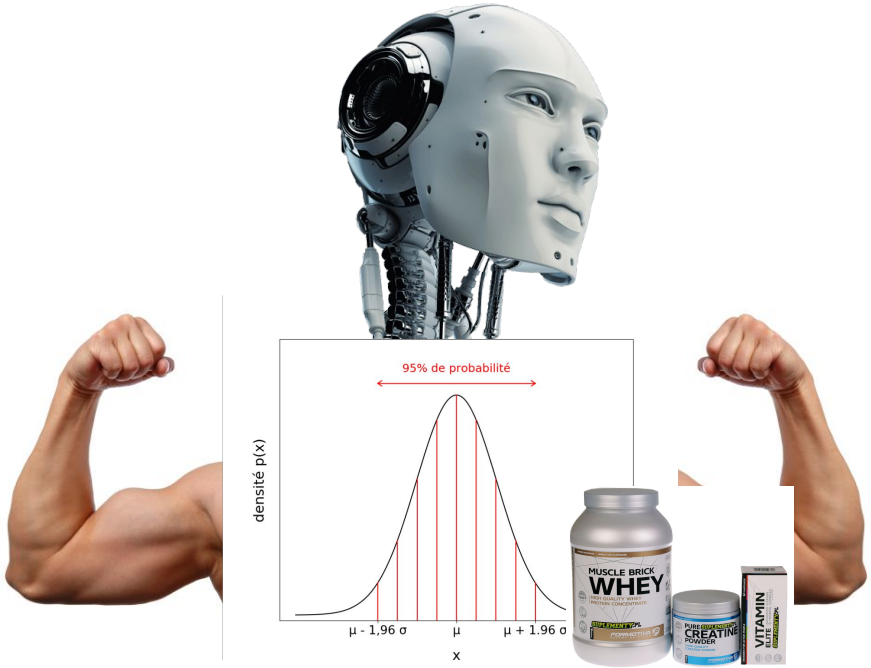
V - Sécurité et chiffrement du modèle

# Etat de l’art


50%
75%
90%
75%


Analyse fréquentielle de la hauteur d'eau.
f = 0,175 Hz
f = 0,278 Hz
Amplitude
Fréquence (Hz)

# Etat de l’art


95% de probabilité
densité p(x)
μ - 1,96 σ
μ
μ + 1.96 σ
x
MUSCLE BRICK
WHEY
CREATINE
VITAMIN

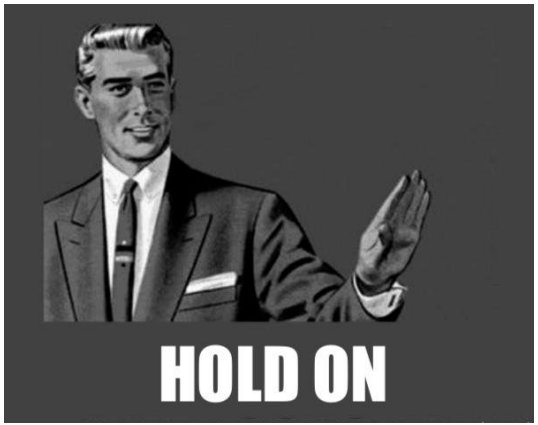
# Problématique

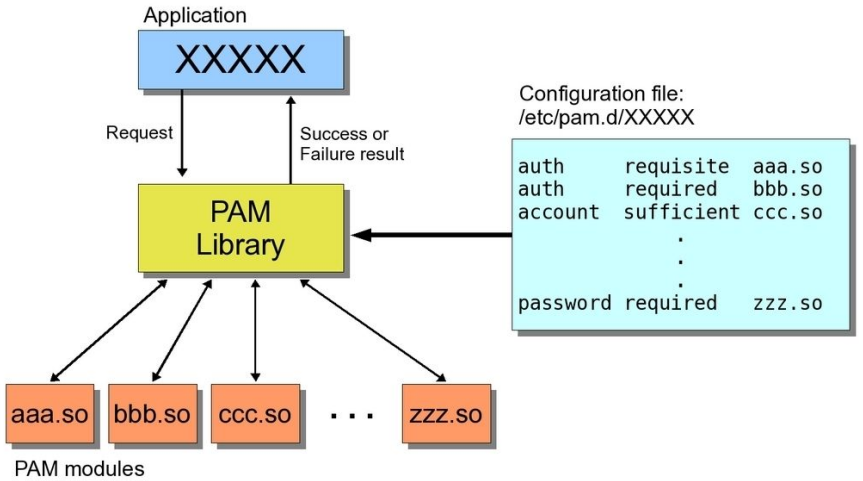
Créer un système biométrique de dynamique de frappe au clavier sans données d’imposteurs.

# Protocole


# Saisie des échantillons

# Linux PAM


HOLD ON

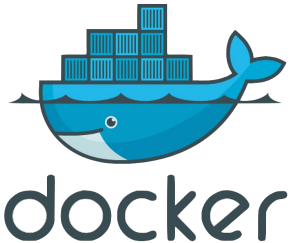

Application
XXXXX
Request
Success or
Failure result
PAM
Library
Configuration file:
/etc/pam.d/XXXXX
auth requisite aaa.so
auth required bbb.so
account sufficient ccc.so
password required zzz.so
aaa.so
bbb.so
ccc.so
zzz.so
PAM modules

# Ligne de commande

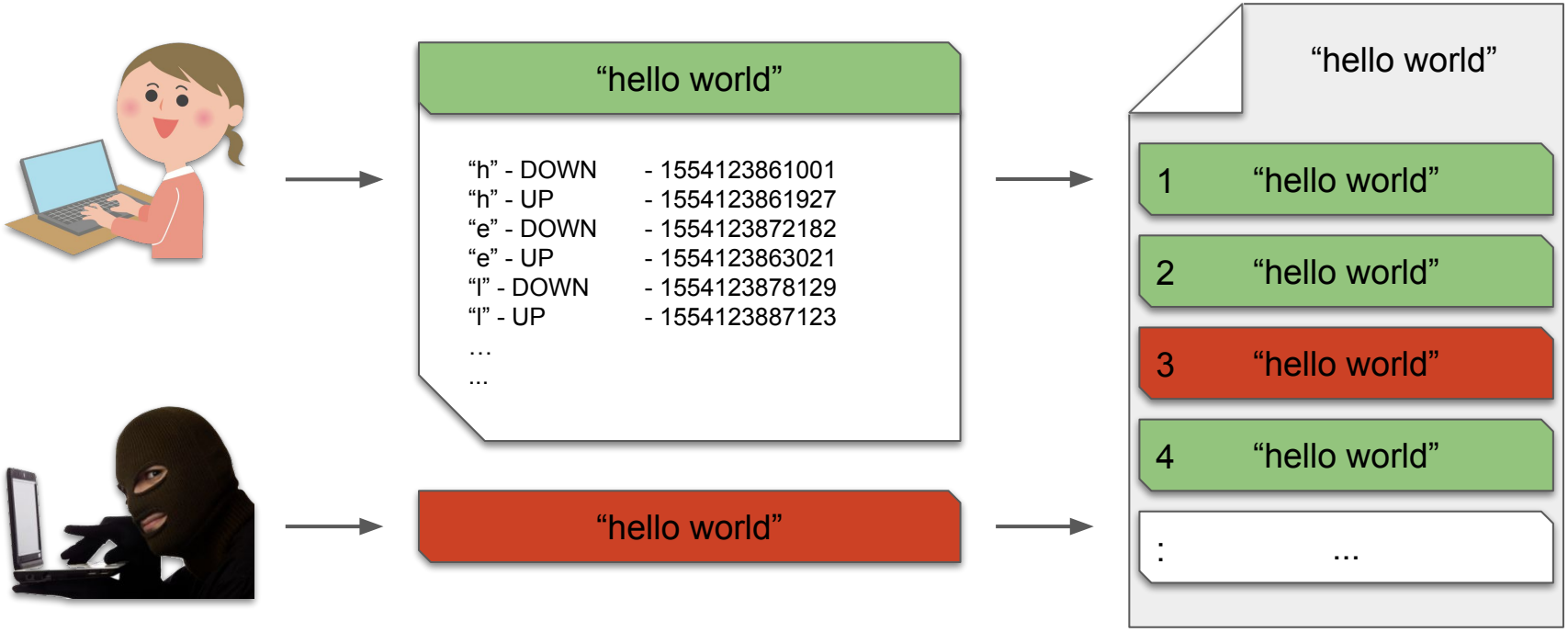
```
franeck@franeck-VirtualBox: ~/keystroke-dynamics/softs/sample_recorder/sequence
Fichier  Édition  Onglets  Aide
franeck@franeck-VirtualBox:~/keystroke-dynamics/softs/sample_recorder$ sudo python3 sample_recorder.py


----- Welcome to kStrokes sequence manager ! -----

? Do you want to use an existing sequence (file) ?  No
? Name your new sample :  password_1_legit
You are about to begin a new record.
Type the text sample you want to record.
This first sample MUST be typed by the real user (no impostor data).
Recording ... : hello world
Sample recorded : "hello world"
? Do you want to keep this sample ?  Yes
        The first sequence has been successfully recorded !
? 1 sample(s) in this sequence. Do you want to add another sample ?  Yes
? Are you an impostor ?  No
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hello world
Recording ... : hell world
"hell world" mismatches the reference: hello world
Recording ... : hello world
Recording ... : hello world
Recording ... :
>> END
? 25 sample(s) in this sequence. Do you want to add another sample ?  No
```

# Les outils employés





# Échantillon et Séquence



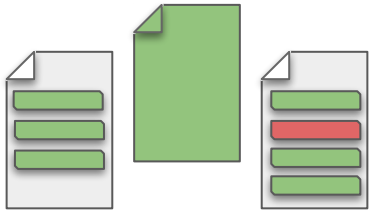
# Un imposteur ?

“Créer un système biométrique…”

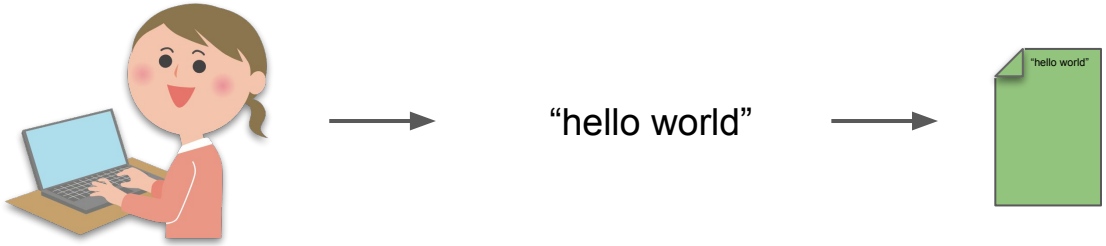
“…sans données d’imposteurs”

# Capture des données 1/3

1. Choisir la séquence ou créer un nouvelle



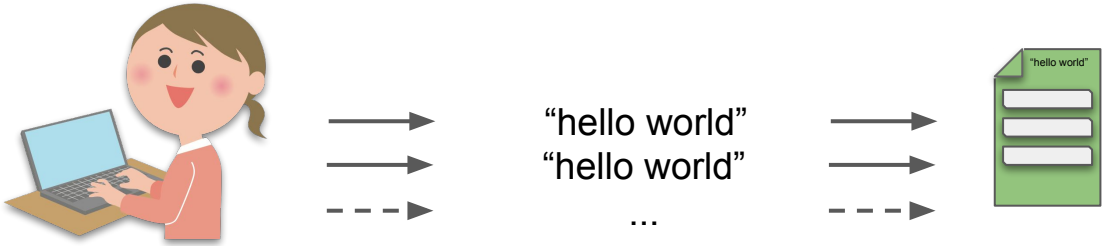
2. Rappeler / Saisir la phrase de référence



# Capture des données 2/3

3. Choisir le sujet de la saisie

4. Continuer la saisie autant que l'on souhaite



# Capture des données 3/3

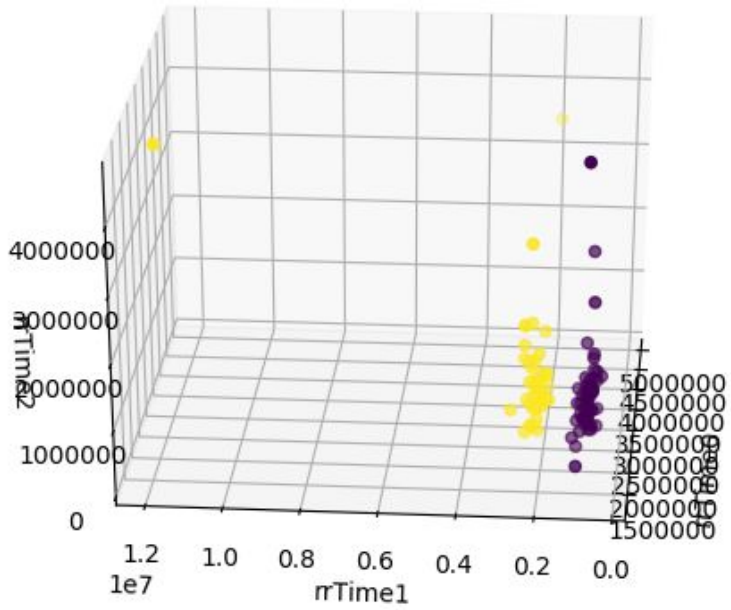
5. Changer de sujet ou quitter le programme


6. Sauvegarder la séquence

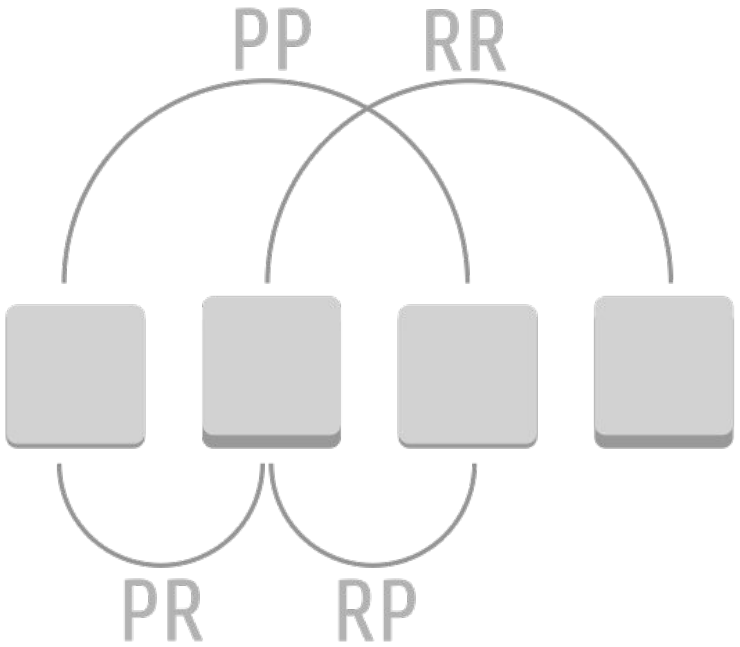
# Traitement et Machine Learning

# Notre reference initiale

GREYC



# Traitement des données



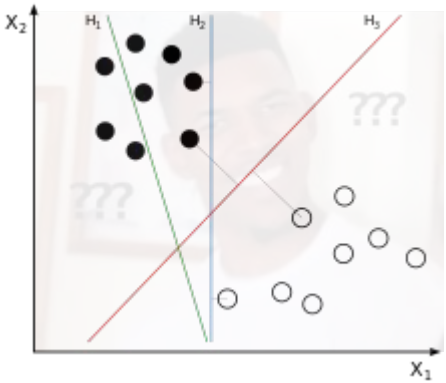

PP: Press-Press

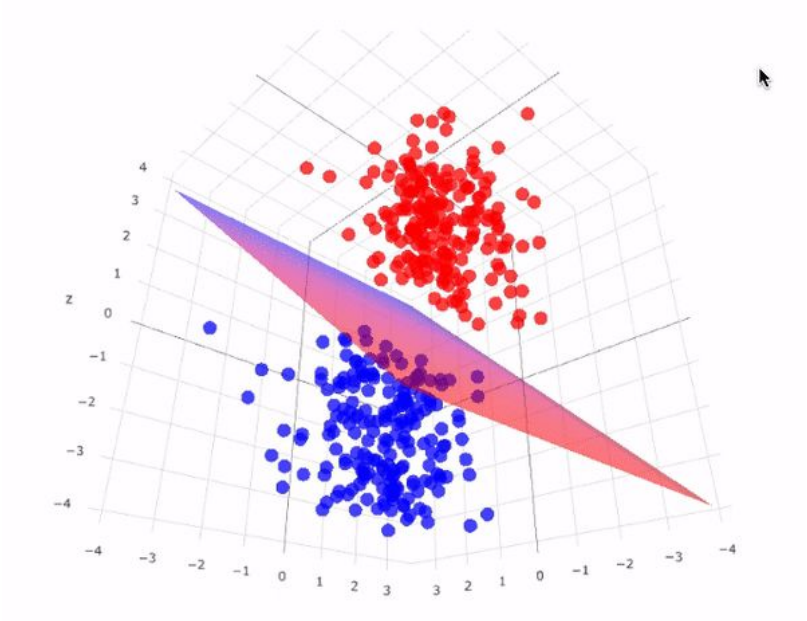
PR: Press-Release

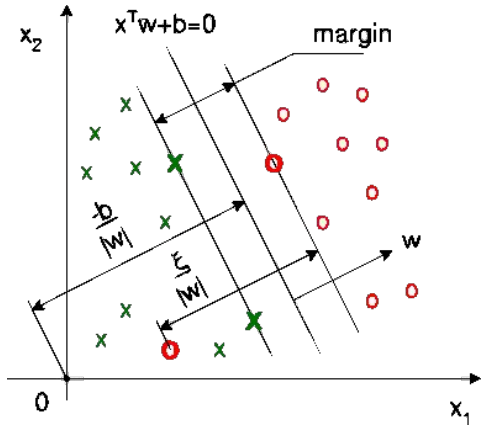
RP: Release-Press

RR: Release-Release

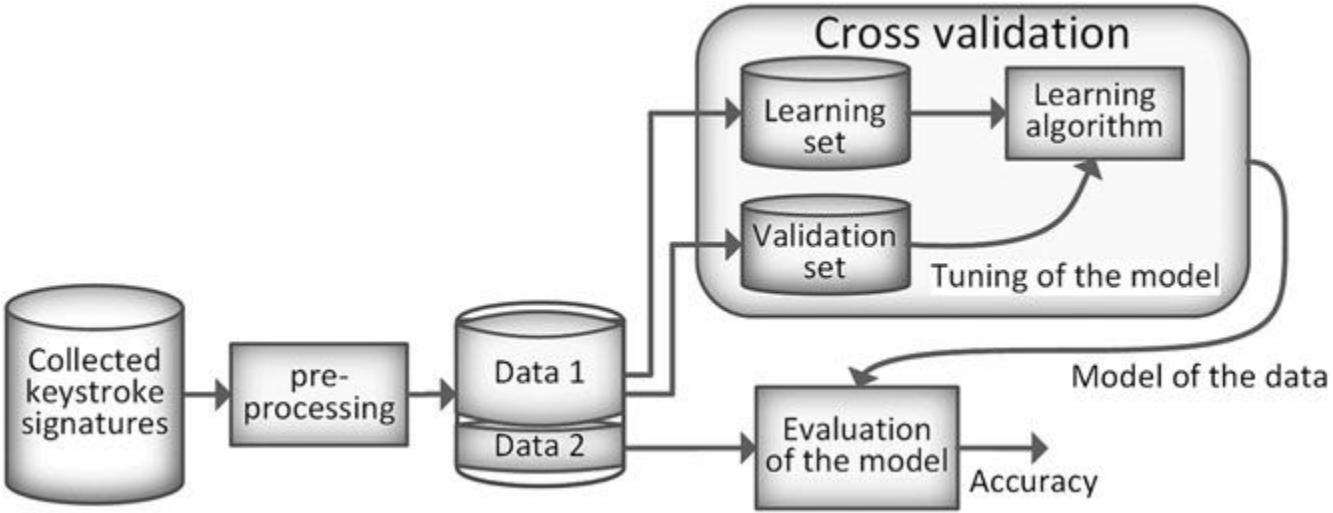
# Machine à vecteurs de support (SVM)



# Optimisation et évaluation du modèle




Chang, Eude (201x?)

# Création du modèle

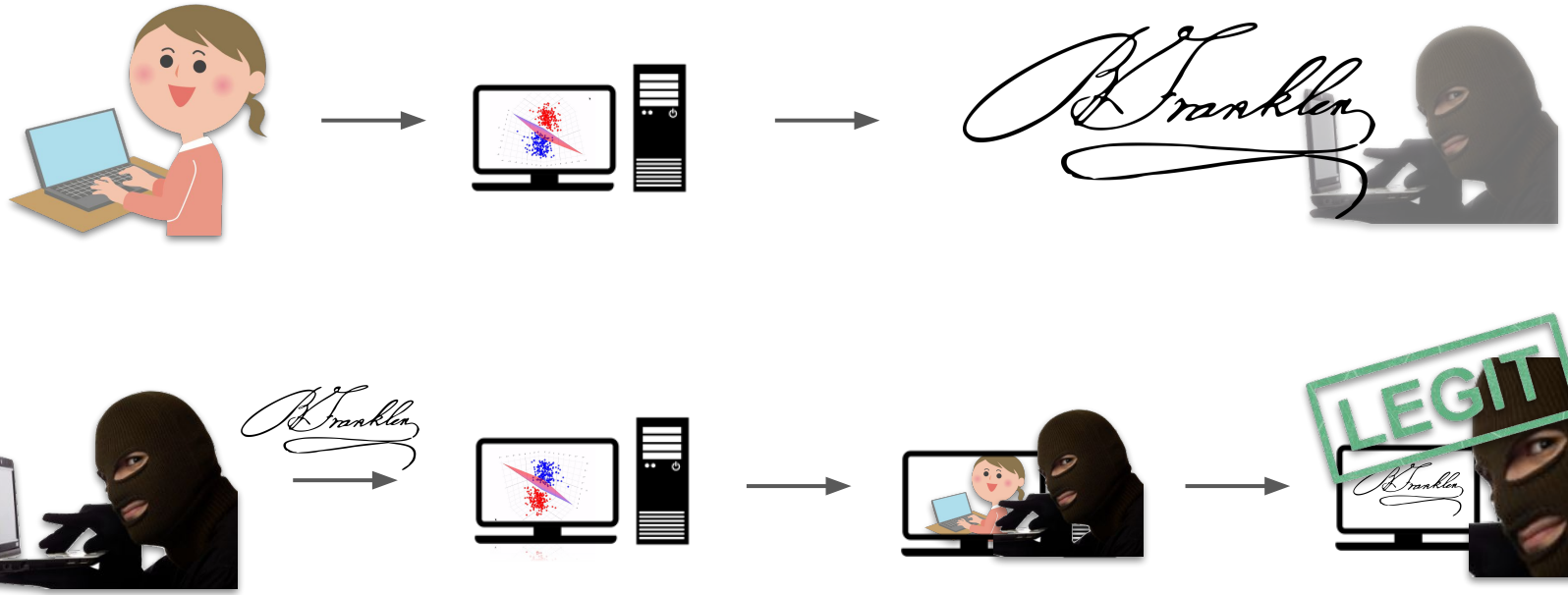
```
dP       .d88888b    dP
88       88.    "'   88
88  .dP  `Y88888b. d8888P 88d888b. .d8888b. dP.  .dP
88888"         `8b   88   88'  `88 88'  `88  `8bd8'
88  `8b. d8'   .8P   88   88       88.  .88  .d88b.
dP   `YP  Y88888P    dP   dP       `88888P' dP'  `dP


? Which program do you want to load ?  (Use arrow keys)
 ❯ Sample recorder
   Trainer
   Evaluator
   Tester
```

# Sécurité et chiffrement du modèle

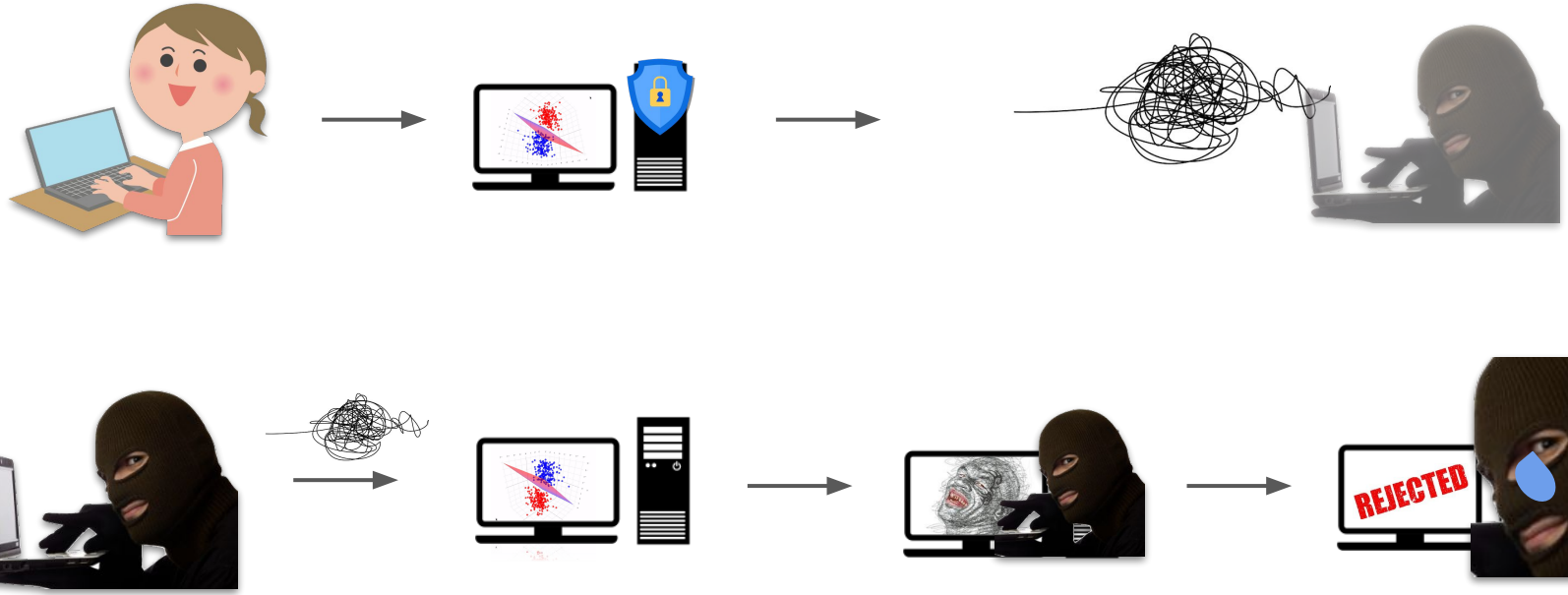
# Sécurité des données

- Modèle d'évaluation à temps fixe
- Pas d'échantillons d'entraînement stocké
- Pas de stockage des caractères tapés
- Chiffrement des données

# Problématique

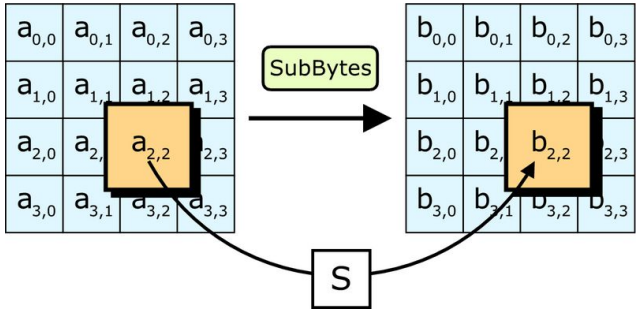


# Solution



# Notre solution

Encryption Package




# Conclusion

# Etat de l’art (annexe)


# Sélection des données (annexe)

Cas simple


Touches intercalés


Suppressions