

Laboratorio GUGLER

Administrador GNU/Linux I

Trabajo Practico Integrador

Tema: Acceso Mediante Reconocimiento
Facial con Howdy



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Índice

Introducción.....	4
Guía de Instalación.....	5
Paso 1. Añadir repositorios al APT e instalar Howdy.....	5
Paso 2. Resolución de Problemas de Instalación.....	6
Conclusiones.....	10
Bibliografía.....	11
GNU Free Documentation License.....	12
0. PREAMBLE.....	12
1. APPLICABILITY AND DEFINITIONS.....	12
2. VERBATIM COPYING.....	14
3. COPYING IN QUANTITY.....	15
4. MODIFICATIONS.....	16
5. COMBINING DOCUMENTS.....	17
6. COLLECTIONS OF DOCUMENTS.....	18
7. AGGREGATION WITH INDEPENDENT WORKS.....	18
8. TRANSLATION.....	19
9. TERMINATION.....	19
10. FUTURE REVISIONS OF THIS LICENSE.....	20
11. RELICENSING.....	20

Introducción

Como es sabido, GNU/Linux constantemente nos pide contraseñas de acceso para diversas situaciones: login, desbloqueo de pantalla, o ejecutar comandos con sudo, entre otros. Como método alternativo a esto se podría usar por ejemplo, reconocimiento de huella dactilar. Como en mi laptop esto no es posible por no contar con un lector de huellas, se decidió optar por otro método, quizás no tan efectivo o seguro, pero con buenas prestaciones igualmente: el reconocimiento facial.

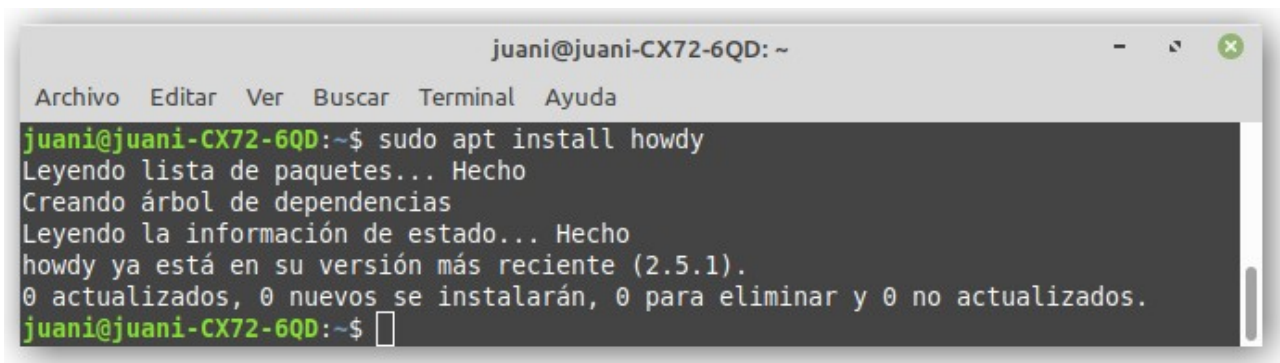
Dado que lo único que se necesita es una cámara web, se usó la que viene por defecto en mi PC.

El sistema que describiré usa el modulo PAM presente en una vasta cantidad de distribuciones GNU/Linux. PAM (Pluggable Authentication Modules) es un mecanismo flexible para la autenticación de usuarios centralizado. Permite modelar políticas de seguridad personalizada dependiendo el servicio para distintos usuarios.

Como base se usó la distribución Linux Mint 19,2 “Tina”.

El software en cuestión se llama “Howdy”. Aclaro que hay otros sistemas de reconocimiento facial dando vueltas, pero este ha sido el que mejor me ha funcionado para la versión de SO que uso actualmente.

Como se podrá ver, ejecuté el sudo y no me pidió contraseña. El sistema verdaderamente funciona.



```
juani@juani-CX72-6QD: ~  
Archivo Editar Ver Buscar Terminal Ayuda  
juani@juani-CX72-6QD:~$ sudo apt install howdy  
Leyendo lista de paquetes... Hecho  
Creando árbol de dependencias  
Leyendo la información de estado... Hecho  
howdy ya está en su versión más reciente (2.5.1).  
0 actualizados, 0 nuevos se instalarán, 0 para eliminar y 0 no actualizados.  
juani@juani-CX72-6QD:~$
```

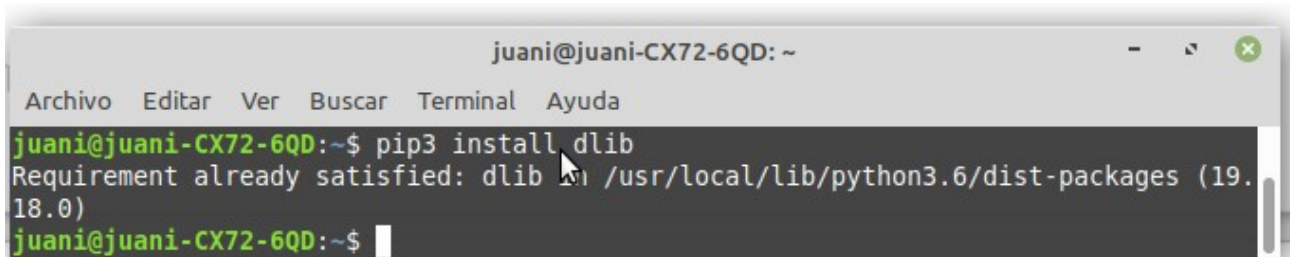
Obviamente la instalación es mas larga, pues tiene que descargar los paquetes del programa y las dependencias. Pero como ya esta instalado se muestra solo esto. Así como esta, seria la instalación completa del programa. A continuación mencionare problemas que me han ido surgiendo en la instalación.

Paso 2. Resolución de Problemas de Instalación

Howdy usa unas librerías llamadas “dlib”. Muchas veces si no se tiene, el programa instala sin problemas, pero a la hora de querer agregar perfiles de caras para el proceso de login, no funciona ya que no posee estas librerías. Esto se soluciona ejecutando el comando en consola:

sudo pip3 install dlib

Esto instalara esas librerías y no deberían tener mayores problemas en lo que a instalación se refiere.



```
juani@juani-CX72-6QD: ~  
Archivo Editar Ver Buscar Terminal Ayuda  
juani@juani-CX72-6QD:~$ pip3 install dlib  
Requirement already satisfied: dlib in /usr/local/lib/python3.6/dist-packages (19.18.0)  
juani@juani-CX72-6QD:~$
```

Configuración del programa

Howdy en si no necesita mucha configuración para funcionar, a continuación nombraré todas las opciones de configuración via consola, ya que no tiene GUI.

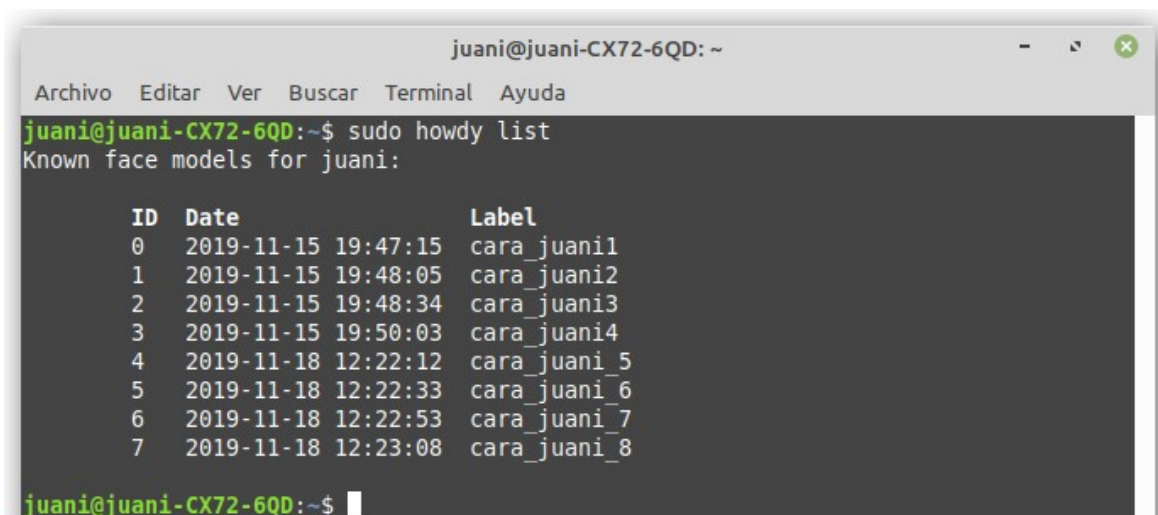
howdy [-U usuario] comando [argumento]

Comando	Descripción
add	Agrega un nuevo modelo de cara
clear	Remueve todos los modelos para un usuario
config	Abre la configuración de howdy con el editor por defecto.
disable	Deshabilita o habilita howdy
list	Lista todos los modelos para un usuario dado
remove	Remueve un modelo especifico para un usuario
test	Prueba la cámara y métodos de reconocimiento

El comando que mas vamos a usar, es “add”, dado que este agrega modelos de cara a la base de datos de howdy. Se recomienda hacer varios modelos de cara con distintos ángulos, mayor o menor luz, distintas distancias, etc.

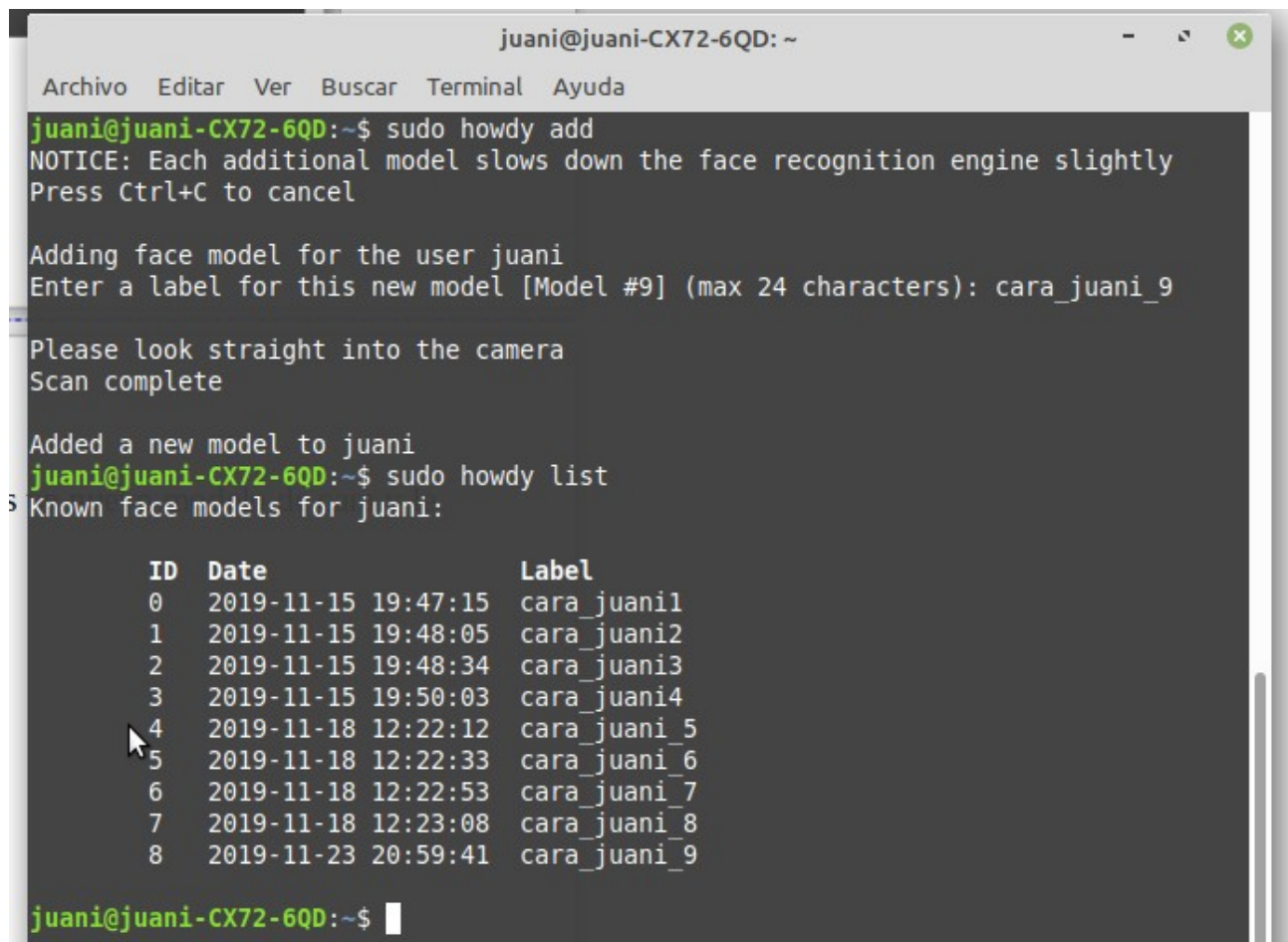
Cabe aclarar, que si no especificamos un usuario (con -U), howdy tomara al usuario actualmente logeado como aquel por defecto.

Agregare un modelo de cara para mostrar como es el proceso. Primeramente veamos cuantos modelos tiene cargado mi usuario.



```
juani@juani-CX72-6QD: ~  
Archivo Editar Ver Buscar Terminal Ayuda  
juani@juani-CX72-6QD:~$ sudo howdy list  
Known face models for juani:  
  
ID Date Label  
0 2019-11-15 19:47:15 cara_juani1  
1 2019-11-15 19:48:05 cara_juani2  
2 2019-11-15 19:48:34 cara_juani3  
3 2019-11-15 19:50:03 cara_juani4  
4 2019-11-18 12:22:12 cara_juani_5  
5 2019-11-18 12:22:33 cara_juani_6  
6 2019-11-18 12:22:53 cara_juani_7  
7 2019-11-18 12:23:08 cara_juani_8  
  
juani@juani-CX72-6QD:~$
```

Luego con el comando “sudo howdy add” agregaremos un nuevo modelo de cara y le agregaremos un nombre a él.



```
juani@juani-CX72-6QD: ~  
Archivo  Editar  Ver  Buscar  Terminal  Ayuda  
juani@juani-CX72-6QD:~$ sudo howdy add  
NOTICE: Each additional model slows down the face recognition engine slightly  
Press Ctrl+C to cancel  
  
Adding face model for the user juani  
Enter a label for this new model [Model #9] (max 24 characters): cara_juani_9  
  
Please look straight into the camera  
Scan complete  
  
Added a new model to juani  
juani@juani-CX72-6QD:~$ sudo howdy list  
Known face models for juani:  
  
   ID   Date                Label  
   --   -  
0  2019-11-15 19:47:15  cara_juani1  
1  2019-11-15 19:48:05  cara_juani2  
2  2019-11-15 19:48:34  cara_juani3  
3  2019-11-15 19:50:03  cara_juani4  
4  2019-11-18 12:22:12  cara_juani_5  
5  2019-11-18 12:22:33  cara_juani_6  
6  2019-11-18 12:22:53  cara_juani_7  
7  2019-11-18 12:23:08  cara_juani_8  
8  2019-11-23 20:59:41  cara_juani_9  
  
juani@juani-CX72-6QD:~$
```

Ni bien agregamos el nombre y le dan Enter, miren la cámara fijamente así les toma el modelo. Luego con “sudo howdy list” podemos ver que agregó con éxito el nuevo modelo de cara.

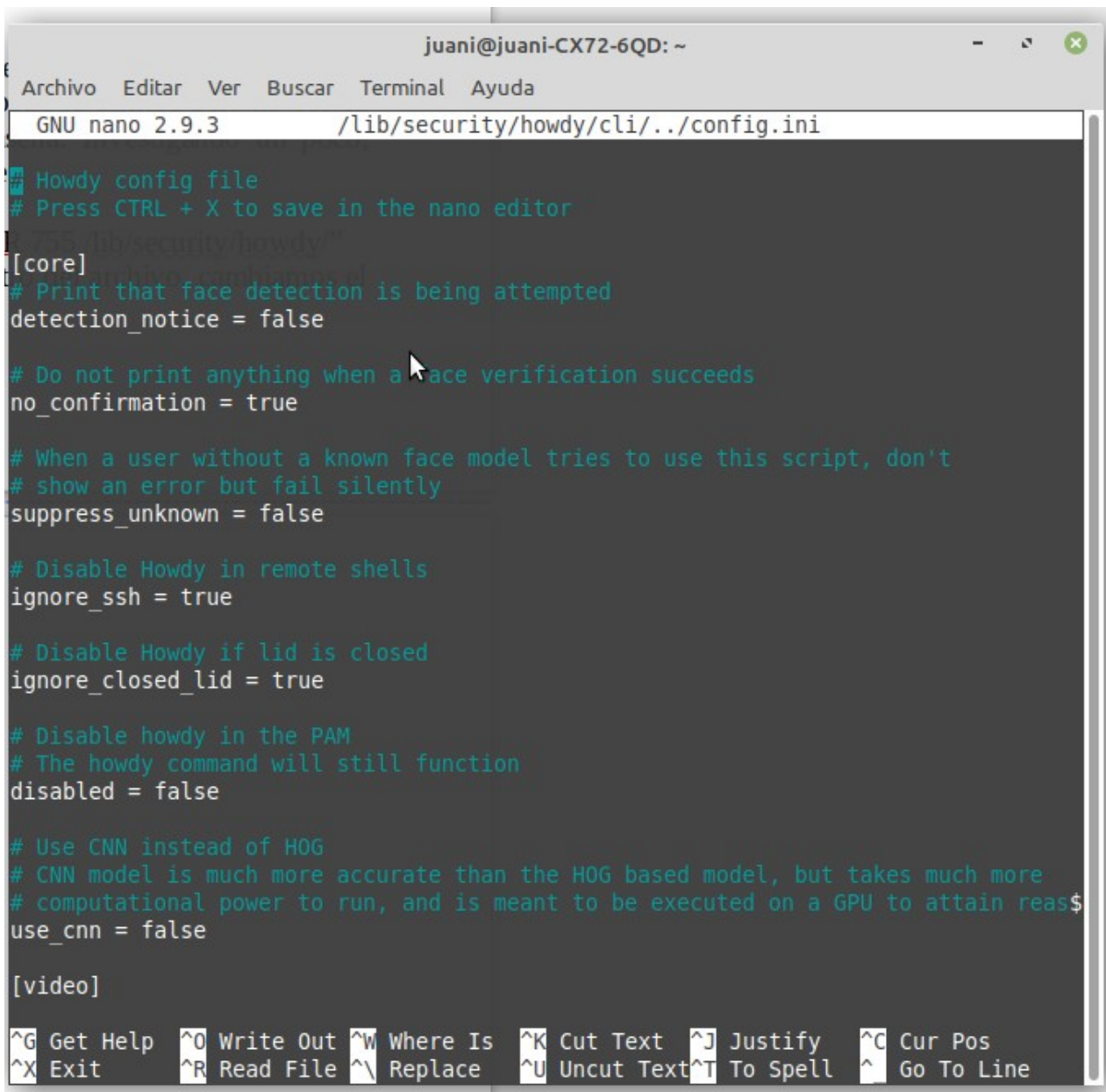
Como podrán haber notado, en ningún momento tuve que agregar contraseña cuando usé el “sudo”. Esto es porque la cámara tomaba mi cara y accedía automáticamente a ejecutar el comando.

Esto es idéntico a la hora de logearse al inicio y en general, en cada momento que necesitemos ingresar nuestra contraseña.

Nota: una vez instalado y comprobado su funcionamiento, noté que al bloquear la pantalla y luego intentar desbloquearla, me tomaba el rostro la cámara pero no volvía al escritorio y debía ingresar manualmente la contraseña. Investigando un poco, encontré que la solución a este problema era el siguiente:

1. Ejecutamos el siguiente comando: “*sudo chmod -R 755 /lib/security/howdy/*”
2. Luego ejecutar: “*sudo howdy config*” y ahí adentro del archivo, cambiamos el parámetro “set no_confirmation” a **true**

Aquí se puede ver el archivo de configuración de howdy, en este caso, abierto con nano, mi editor por defecto.



```
juani@juani-CX72-6QD: ~
GNU nano 2.9.3 /lib/security/howdy/cli/./config.ini
Howdy config file
# Press CTRL + X to save in the nano editor
# /lib/security/howdy
[core]
# Print that face detection is being attempted
detection_notice = false

# Do not print anything when a face verification succeeds
no_confirmation = true

# When a user without a known face model tries to use this script, don't
# show an error but fail silently
suppress_unknown = false

# Disable Howdy in remote shells
ignore_ssh = true

# Disable Howdy if lid is closed
ignore_closed_lid = true

# Disable howdy in the PAM
# The howdy command will still function
disabled = false

# Use CNN instead of HOG
# CNN model is much more accurate than the HOG based model, but takes much more
# computational power to run, and is meant to be executed on a GPU to attain reas$
use_cnn = false

[video]

^G Get Help  ^O Write Out  ^W Where Is  ^K Cut Text   ^J Justify    ^C Cur Pos
^X Exit      ^R Read File  ^\ Replace   ^U Uncut Text ^T To Spell   ^ Go To Line
```

Conclusiones

Si bien este sistema es bastante práctico, dado que cada vez que necesitamos ejecutar una acción con permisos debemos ingresar nuestra contraseña de usuario, no debería reemplazar el uso de una contraseña ya que siempre son vulnerables a ataques de diversos tipos. Pero si podemos decir que si nosotros tenemos una contraseña compleja, es bastante tedioso todo el tiempo tener que estar escribiéndola cuando el sistema necesita ejecutar alguna acción donde se requiera nuestra autorización.

Este es uno de tantos sistemas de autenticación de usuarios dando vueltas. Yo lo encontré tanto sencillo de instalar, como fácil y rápido de usar, y la verdad es que si uno se toma el trabajo de agregar varios modelos de cara con distintos factores de luz, distancia, ángulos y otras variables, funciona muy bien.

Como aclare previamente, a mí me funciona con mi versión actual de SO. Puede ser que a otros no le funcione. Lo bueno es que el autor de este programa tiene un repositorio de Howdy en GitHub y en él, no solo cuenta como instalarlo para diferentes versiones, sino que además hay gente que publica sus problemas y posibles soluciones a los mismos.

Bibliografía

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