Interactive Robot „C-3PO"

QUICK-START INFORMATION

Description	Value
SSID / WIFI Name	Interactiverobot
WIFI Password	Interactiverobot
SSH active	Yes
WIFI IP	10.3.141.1
Lan IP	DHCP (currently not functional)
Admin password	play
Application executable	/home/pi/Projects/interactiverobot/control.py
Application log file	/home/pi/Projects/interactiverobot/log.txt

SYSTEM DESCRIPTION

This is a robot inspired by the superior C-3PO and his expertise in etiquette, customs and translations. While the name says "Interactiverobot", the actual system is very one-sided. After connecting the system to the mains power and about 1min waiting time, the system is operational. Typically, this is indicated by a flashing of the eyes. Then, a movement detection sensor waits for motion. Once a motion triggers the system, either only the eyes flash or a sound is played depending on a random choice. Sounds are chosen from a large variety that depends on time of the day, weekday, month, etc.

OPERATING SYSTEM SETUP

- Use balena etcher to write image "2019-09-26 raspbian buster full"
- Boot-up in my intranet with DHCP IP 192.168.178.50
- Set-up configuration
  - Country/Keyboard/Timezone   Germany/Berlin
  - Password   play
- Settings on home screen
  - Plug-in desired audio device and select default output
  - Go to Settings/Configuration/Interfaces/SSH and toggle to ACTIVE
  - Copy soundsnippets into directory /home/pi/soundsnippets
- Start terminal for further setup steps
  - sudo raspi-config => Advanced options => Expand filesystem (sudo reboot afterwards)
  - # sudo apt-get update (required for mplayer)
  - # sudo apt-get install python3-dev
  - # sudo apt-get install mplayer
  - # sudo apt-get install vim
  - # sudo apt-get purge wolfram-engine (1GB memory free)
  - # sudo apt-get purge libreoffice (300MB memory free)

- o # sudo apt-get clean
- o # sudo apt-get autoremove (200MB memory free)
- o # pip install RPi.GPIO
- o # mkdir Projects
- o # cd Projects
- o # git clone https://github.com/joscha-mh-h/interactiverobot
- o # crontab -e
  - ▪ Insert one line with:
    @reboot sleep 40 && python3
    /home/pi/Projects/interactiverobot/control.py
    /home/pi/Projects/interactiverobot/log.txt 2>&1

Note: Current configuration doesn't give internet access even if raspberry Ethernet is connected

SYSTEM SETUP WITH IMAGE

All above steps can be skipped by using the image: interactiverobot8gb.img

CONNECT WITH SSH

- Log-in to WiFI SSID "Interactiverobot", password "Interactiverobot"
- Start terminal / console
- Use "ssh pi@10.3.141.1" and password "play" to login and "exit" to leave

DEBUGGING

- Connect to the Raspberry either with monitor/keyboard or via SSH
- Check log file /home/pi/Projects/interactiverobot/log.txt
- The application can be stopped with the following command sequence
  - o Use command „top" in terminal, identify the python3 and remember the PID, type „k" to switch into process killing mode and then type in the PID, confirm with enter twice, type „q" to exit the task view

BEHAVIOR CHANGES

- The logic that decides which sound when to play is hardcoded into the control.py file (/home/pi/Projects/interactiverobot/control.py)
- Changes can be easily made by modifying the randomness chances in line 170ff

ADDING SOUNDS

Sounds can be added into the appropriate folders in the directory "/home/pi/soundsnippets"