

# Video-Überwachung mit *motion*

Problemstellung: Es sollen nur Fotos und Videos angefertigt (und hochgeladen) werden, wenn sich etwas im Bereich der Kamera bewegt.

Voraussetzung: Raspi-Kamera angeschlossen und in den Einstellungen aktiviert:

## **sudo raspi-config**

→ Enable Camera unter „Interfacing Options“

Danach reboot.

## Software-Installation: **sudo apt install motion**

**motion** vergleicht Bildsequenzen auf Änderungen bzw. Bewegungen innerhalb von Bildausschnitten. Wird eine Bewegung erkannt, kann motion auch auf Wunsch eine Bildsequenz als kurzes Video generieren, auch mit Bildern VOR und NACH der Bewegung.

Hinweis: Wenn die Konfig-Dateien auch von User „pi“ geschrieben werden können sollen,

## **sudo chmod -R a+rw /etc/motion**

/etc/motion/camera\*.conf – Enthält Kameraspezifische Optionen (Auflösung, Dateinamen etc., nur notwendig, wenn mehrere Kameras angesteckt sind!

/etc/motion/motion.conf – Enthält Laufzeitparameter zur Aufnahme und Behandlung der Bilder. Es können hierin auch Kommandos definiert werden, die z.B. per ssh/scp die Bilder möglichst schnell auf einen Server laden, damit bei Diebstahl oder Zerstörung des Pi immer noch eine Kopie vorhanden ist.

Beispiel:

```
#####  
# System control configuration parameters  
#####  
  
# Start in daemon (background) mode and release terminal.  
daemon on  
  
# Start in Setup-Mode, daemon disabled.  
setup_mode off  
  
# File to store the process ID.  
; pid_file value  
  
# File to write logs messages into. If not defined stderr and syslog is used.  
log_file /var/log/motion/motion.log  
  
# Level of log messages [1..9] (EMG, ALR, CRT, ERR, WRN, NTC, INF, DBG, ALL).  
log_level 6  
  
# Target directory for pictures, snapshots and movies  
target_dir /var/lib/motion
```

```

# Video device (e.g. /dev/video0) to be used for capturing.
videodevice /dev/video0

# Korrekte Farben/Format für Standard Raspi-Cam, s. „man motion“
v4l2_palette 17

# The video norm to use (only for video capture and TV tuner cards)
# Values: 0 (PAL), 1 (NTSC), 2 (SECAM), 3 (PAL NC no colour). Default: 0 (PAL)
norm 0

# Parameters to control video device. See motion_guide.html
; vid_control_params value

# The full URL of the network camera stream.
; netcam_url value

# Name of mmal camera (e.g. vc.ril.camera for pi camera).
; mmalcam_name value

# Camera control parameters (see raspivid/raspistill tool documentation)
; mmalcam_control_params value

#####
# Image Processing configuration parameters
#####

# Image width in pixels.
width 320

# Image height in pixels.
height 240

# Maximum number of frames to be captured per second.
# Weniger → ggf. Längere Belichtung und schärferes Bild!
framerate 2

# The video norm to use (only for video capture and TV tuner cards)
# Values: 0 (PAL), 1 (NTSC), 2 (SECAM), 3 (PAL NC no colour). Default: 0 (PAL)
norm 0

# Minimum time in seconds between capturing picture frames from the camera.
# Default: 0 = disabled - the capture rate is given by the camera framerate.
# This option is used when you want to capture images at a rate lower than 2 per second.
minimum_frame_time 0

# Let motion regulate the brightness of a video device (default: off).
# The auto_brightness feature uses the brightness option as its target value.
# If brightness is zero auto_brightness will adjust to average brightness value 128.
# Only recommended for cameras without auto brightness
auto_brightness off

# Set the initial brightness of a video device.
# If auto_brightness is enabled, this value defines the average brightness level
# which Motion will try and adjust to.
# Valid range 0-255, default 0 = disabled
brightness 192

# Set the contrast of a video device.
# Valid range 0-255, default 0 = disabled
contrast 192

# Set the saturation of a video device.
# Valid range 0-255, default 0 = disabled
saturation 0

# Set the hue of a video device (NTSC feature).
# Valid range 0-255, default 0 = disabled
hue 0

# Text to be overlayed in the lower left corner of images
text_left CAMERA1

# Text to be overlayed in the lower right corner of images.
text_right %Y-%m-%d\n%-T-%q

# Codec to used by ffmpeg for the video compression.
# Timelapse movies are always made in mpeg1 format independent from this option.
# Supported formats are: mpeg1 (ffmpeg-0.4.8 only), mpeg4 (default), and msmpeg4.
# mpeg1 - gives you files with extension .mpg
# mpeg4 or msmpeg4 - gives you files with extension .avi
# msmpeg4 is recommended for use with Windows Media Player because
# it requires no installation of codec on the Windows client.
# swf - gives you a flash film with extension .swf
# flv - gives you a flash video with extension .flv
# ffv1 - FF video codec 1 for Lossless Encoding ( experimental )
# mov - QuickTime ( testing )
# ogg - Ogg/Theora ( testing )
ffmpeg_video_codec mpeg4

#####
# Motion detection configuration parameters
#####

# Always save pictures and movies even if there was no motion.
emulate_motion off

# Threshold for number of changed pixels that triggers motion.
# Anpassen, wenn höhere Kamera-Auflösung gewählt wird!
# 1500 bei 320x240 sind ca. 2% Änderung
threshold 1500

# Noise threshold for the motion detection.
; noise_level 32

```

```
# Despeckle the image using (E/e)rode or (D/d)ilate or (I)label.
# Hier ggf. auch auskommentieren probieren, wenn es sonst im Livestream Farbflecken gibt:w
despeckle_filter EedDI

# Number of images that must contain motion to trigger an event.
minimum_motion_frames 1

# Gap in seconds of no motion detected that triggers the end of an event.
event_gap 60

# The number of pre-captured (buffered) pictures from before motion.
pre_capture 3

# Number of frames to capture after motion is no longer detected.
post_capture 0

#####
# Script execution configuration parameters
#####

# Command to be executed when an event starts.
; on_event_start value

# Beispiel: Sound abspielen wenn eine Bewegung erkannt wurde:
on_event_start /usr/bin/aplay /home/pi/event.wav

# Command to be executed when an event ends.
; on_event_end value

# Command to be executed when a movie file is closed.
; on_movie_end value

#####
# Picture output configuration parameters
#####

# Output pictures when motion is detected
# Einzelbilder aufnehmen (standardmäßig aus)
picture_output on

# File name(without extension) for pictures relative to target directory
picture_filename %Y%m%d%H%M%S-%q

#####
# Movie output configuration parameters
#####

# Create movies of motion events.
movie_output on

# Maximum length of movie in seconds.
movie_max_time 60

# The encoding quality of the movie. (0=use bitrate, 1=worst quality, 100=best)
movie_quality 45

# Container/Codec to used for the movie. See motion_guide.html
movie_codec mkv

# File name(without extension) for movies relative to target directory
movie_filename %t-%v-%Y%m%d%H%M%S

#####
# Webcontrol configuration parameters
#####

# Port number used for the webcontrol.
webcontrol_port 8080

# Restrict webcontrol connections to the localhost.
webcontrol_localhost on

# Type of configuration options to allow via the webcontrol.
webcontrol_parms 0

#####
# Live stream configuration parameters
#####

# The port number for the live stream.
stream_port 8081

# Restrict stream connections to the localhost.
stream_localhost on

#####
# Camera config files - One for each camera.
#####
; camera /etc/motion/camera1.conf
; camera /etc/motion/camera2.conf
; camera /etc/motion/camera3.conf
; camera /etc/motion/camera4.conf

#####
# Directory to read '.conf' files for cameras.
#####
; camera_dir /etc/motion/conf.d
```

Zu Konfiguration und Test:

**sudo motion -s**

→ Browser localhost:8081

Wichtig: Falls der Livestream merkwürdig aussieht, muss das bei den aufgenommenen Bildern nicht der Fall sein!

Die aufgenommenen Bilder/Videos sind standardmäßig unter `/var/lib/motion` abrufbar.

Zum automatischen Start per init-skript beim Hochfahren des Pi muss noch `daemon=yes` in `/etc/default/motion` gesetzt werden.

Motion im „Normalmodus“ als daemon starten:

**sudo /etc/init.d/motion restart**

Zum Anhalten entsprechend

**sudo /etc/init.d/motion stop**