

A software toolkit for pre-processing sign language video streams

<https://github.com/DFKI-SignLanguage/VideoProcessingTools>



Problem: most SL video-to-text systems share the same video analysis requirements, but their implementations are hidden in ad-hoc scripts.

Proposal: Collect in a single open source repository the various typical video pre-processing procedures, based on different underlying libraries, each specialized on the analysis of a different body-part (hands, torso, face, ...).



1 - Usable as command line tool as well as Python function

```
python -m slvideotools.crop_video\  
--inframes myface.mp4\  
--inbounds face_bounds.json\  
--outframes cropped_frames/
```

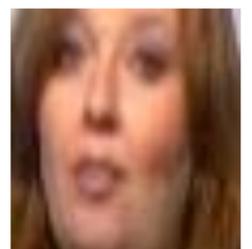
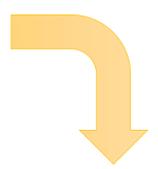
```
from slvideotools.crop_video import crop_video  
from slvideotools.datagen import create_frame_producer, create_frame_consumer  
  
with create_frame_producer(dir_or_video="myface.mp4") as prod,\  
create_frame_consumer(dir_or_video="cropped_frames") as cons:  
with open("face_bounds.json", "r") as bounds_fp:  
    bounds = json.load(bounds_fp)  
  
crop_video(frames_producer=prod, bounds_tuple=bounds, frames_consumer=cons)
```

2 - Support video streams both as encoded videos and frame sequence

```
from slvideotools.datagen import create_frame_producer, create_frame_consumer  
  
with create_frame_producer(dir_or_video="my/frames/") as prod,\  
create_frame_consumer(dir_or_video="my_final_video.mp4") as cons:  
  
    for in_frame in prod.frames():  
        # Process your frame  
        # out_frame = ...  
  
        # Feed the frame to output video  
        cons.consume(frame=out_frame)
```

3 - Command line tools designed to be concatenated in build automation tools

```
# Directory containing the .mp4 files  
DIR=videos  
# Lists all of the MP4 videos  
invideofiles := $(wildcard $(DIR)/*.mp4)  
# Compose the names of output .bound files.  
boundfiles := $(subst .mp4,.bounds,$(invideofiles))  
  
all: $(boundfiles)  
    @echo "Extracted face bounds."  
  
$(boundfiles): $(DIR)/%.bounds: $(DIR)/%.mp4  
    @echo "Finding bounds for video $< ..."  
    python -m slvideotools.extract_face_bounds --invideo $< --outbounds $@  
    @echo "Saved to $@."
```



Feature: MediaPipe face rotation normalization

Implemented Tools:

- extract_face_bounds
- draw_bbox
- crop_video
- extract face data
- trim_video

