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UC San Diego



ChimpACT: A Longitudinal Dataset for Understanding Chimpanzee Behaviors

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<https://shirleymaxx.github.io/ChimpACT/>

*This video contains audio.

Motivation



Animal welfare [1]

Social behavior [2]

Evolution [3]

Ethical & Effective

Motivation



Biruté Galdikas



Jane Goodall

Motivation



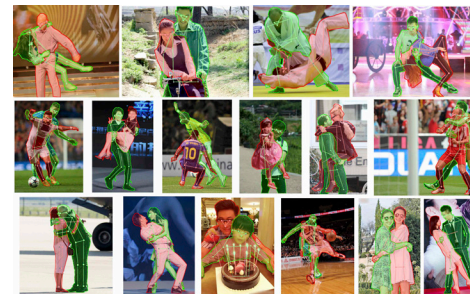
COCO [4]



MOT-17 [5]



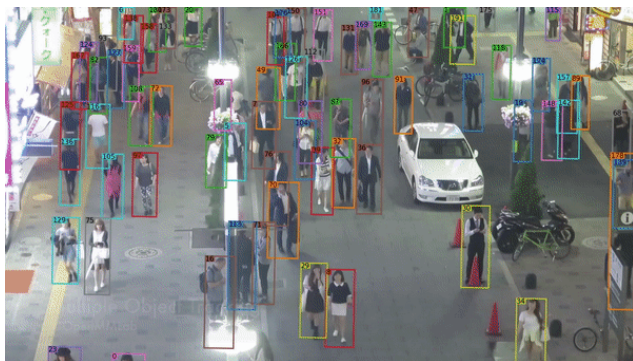
AIST++ [6]



OCHuman[7]



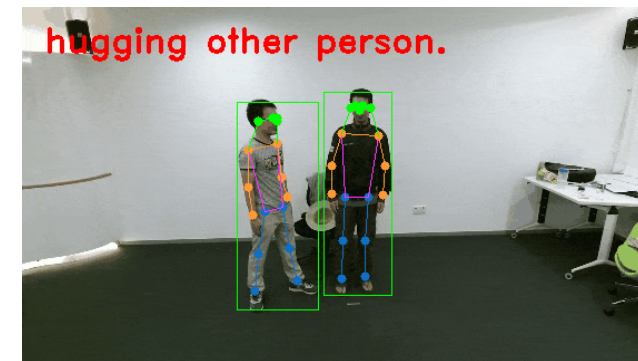
NTU RGB+D [8]



Human tracking [9]



Human pose estimation [10]

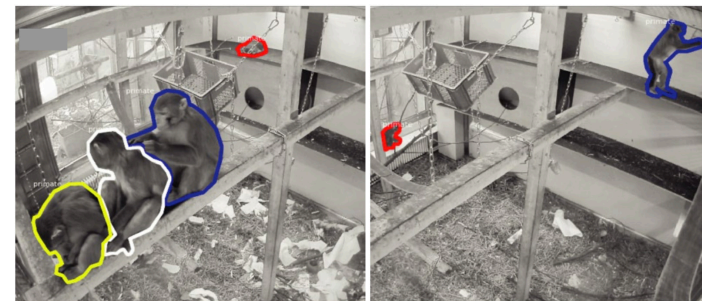


Human action recognition [11]

Existing datasets

Dataset	Species	Track 1 detection, tracking, ReID				Track 2 pose estimation				Track 3 action recognition		Source
		ID #	frame #	box #	track	frame #	pose #	track	dim.	class #	label #	
AP-10K (Yu et al., 2021)	G	×	×	×	×	10,015	13,028 [<500]	×	2D	×	×	I
AnimalKingdom (Ng et al., 2022)	G	×	×	×	×	33,099	99,297 [576]	×	2D	140	30,100 [∅]	I
OpenApePose (Desai et al., 2022)	P	×	×	×	×	71,868	71,868 [18,010]	×	2D	×	×	I
OpenMonkeyChallenge (Yao et al., 2023)	P	×	×	×	×	111,529	111,529 [<10,000]	×	2D	×	×	I & Z
OpenMonkeyStudio (Bala et al., 2020)	M	×	×	×	×	194,518	33,192 [0]	✓	3D	×	×	C (6.7m ²)
MacaquePose (Labuguen et al., 2021)	M	×	×	×	×	13,083	16,393 [0]	×	2D	×	×	I & Z
SIPEC (Marks et al., 2022)	M	4	191	2,200 [0]	✓	×	×	×	×	4	∅	C (15m ²)
CCR (Bain et al., 2019)	C	13	936,914	1,937,585	✓	×	×	×	×	×	×	W
ChimpACT (Ours)	C	23	160,500	56,324	✓	16,028	56,324	✓	2D	23	64,289	CP (4400m ²)

Comparison of ChimpACT with existing animal behavioral datasets



SIPEC [12]

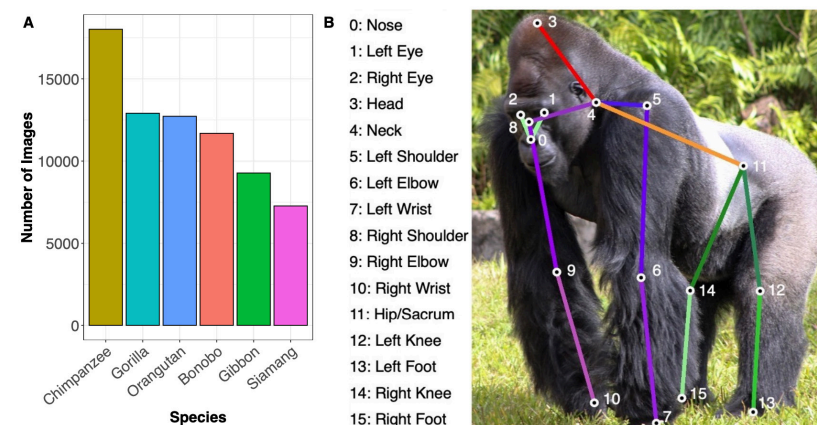


Figure 2. Properties of our OpenApePose database. A. Number of annotated images per

OpenApePose [13]

13 Chimpanzee Individuals

Identity Gender Age

10 Hours of video footage

Over 2 Years



Face, Body and Frame Annotations



Located in a wild, open forest



Guinea Africa

CCR [14]

ChimpACT

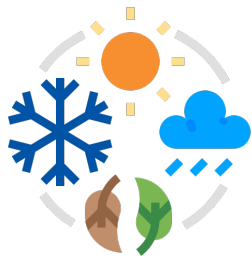
- Collection
 - Chimpanzee-A group housed at Leipzig Zoo, Germany
 - In total of around 2 hours of longitudinal focal video recordings between 2015 and 2018
 - Focal sampling of **Azibo**

Azibo



Father:	unknown
Mother:	Swela
Birth:	April 14, 2015
Sex:	male
in Leipzig since:	birth

Longitudinal data



Semi-naturalistic and social environment



Ethogram with solitary and social behaviors

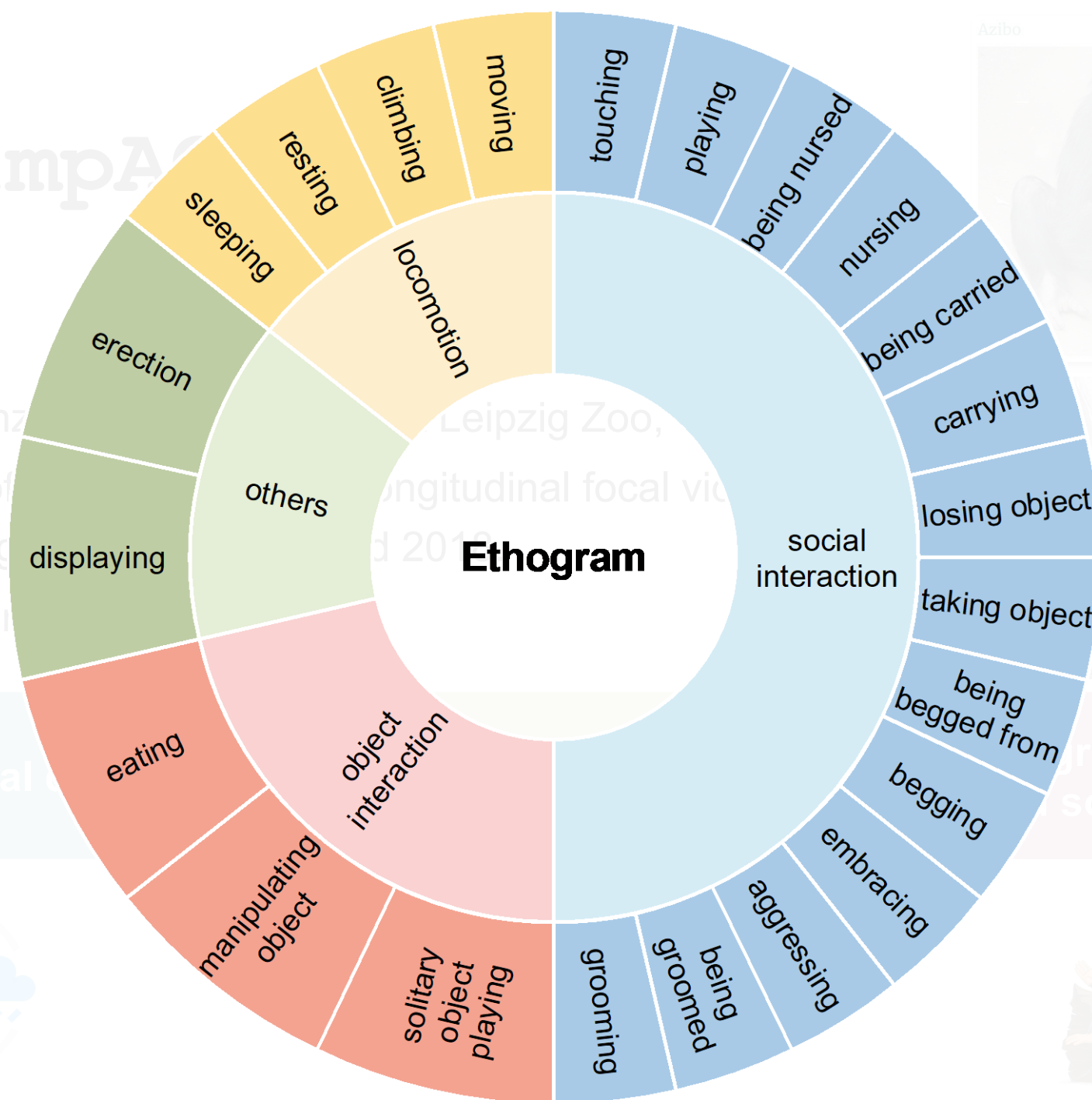




ChimpA

Collection

- Chimpanzee
- In total of
- recording
- Focal sampling



Azibo



Father:	unknown
Mother:	Swela
Birth:	April 14, 2015
Sex:	male
in Leipzig since:	birth



Ethogram with solitary and social behaviors

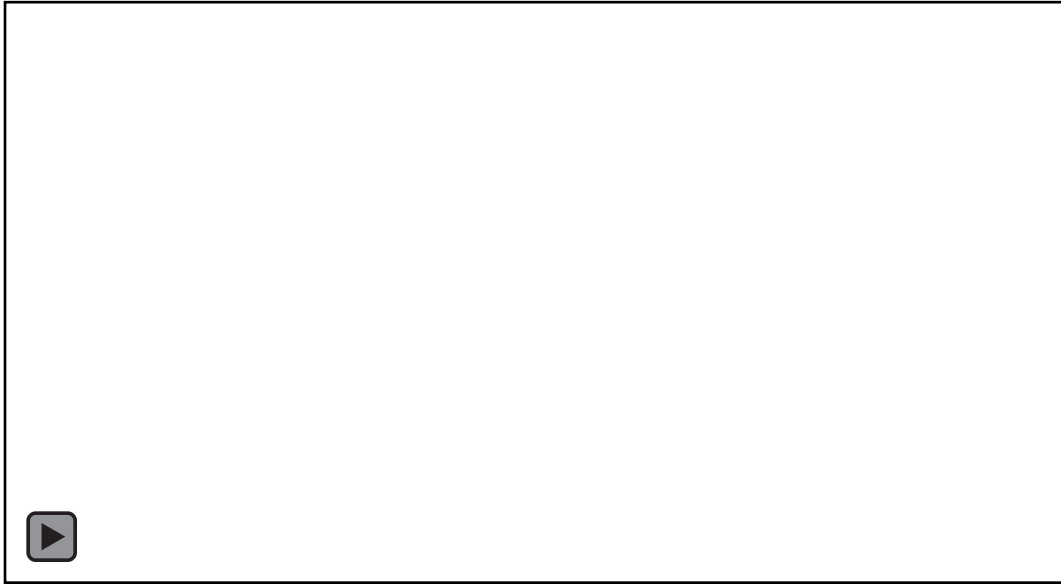


Longitudinal





ChimpACT



Swela is nursing Azibo

Azibo

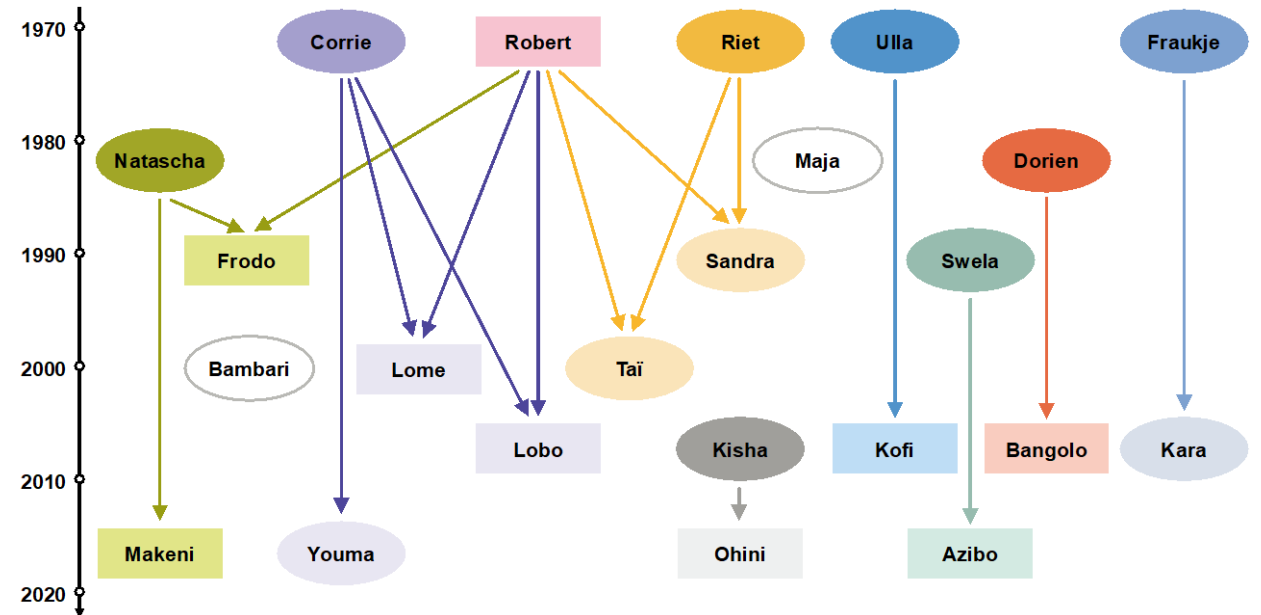


Father: unknown
Mother: Swela
Birth: April 14, 2015
Sex: male
in Leipzig since: birth

Swela



Father: Eros
Mother: Benga
Birth: October 19, 1995
Sex: female
in Leipzig since: March 15, 2005





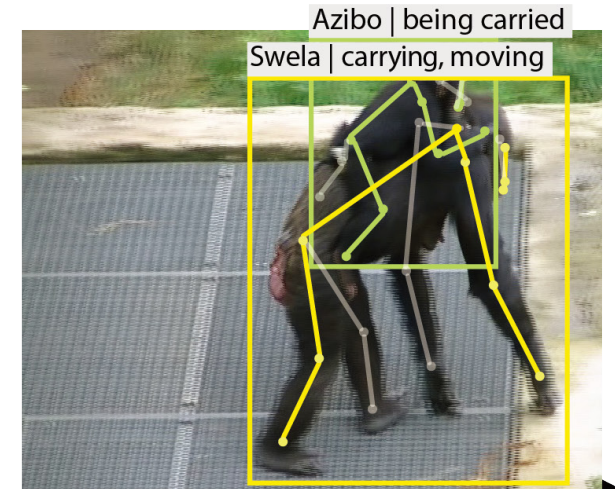
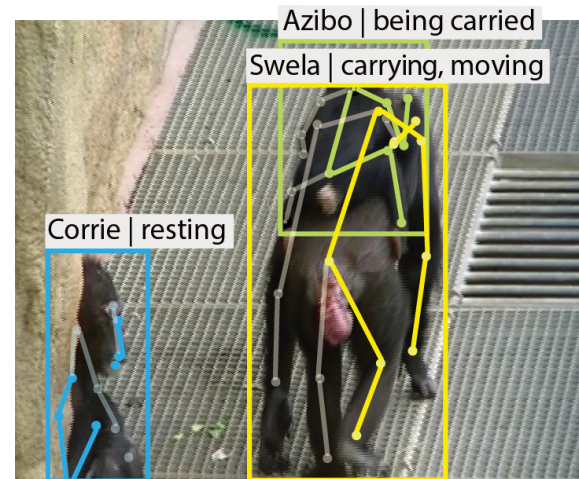
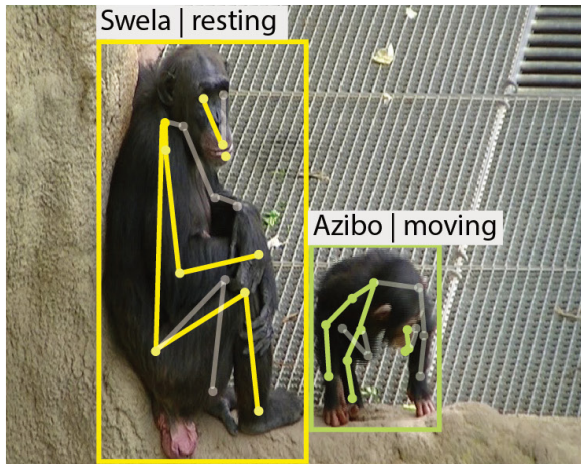
ChimpACT

Rich annotations

Detection, tracking,
and ReID

Pose estimation

Spatiotemporal
action detection





ChimpACT

Detection, tracking,
and ReID

Pose estimation

Spatiotemporal
action detection





ChimpACT

Detection, tracking,
and ReID

Pose estimation

Spatiotemporal
action detection





ChimpACT

Detection, tracking,
and ReID

Pose estimation

**Spatiotemporal
action detection**



Experiments on ChimpACT

Detection, tracking,
and ReID



DeepSORT [15]



ByteTrack [16]

Experiments on ChimpACT

Detection, tracking,
and ReID



QDTrack [17]



ByteTrack [16]

Experiments on ChimpACT

Detection, tracking,
and ReID



QDTrack [17]



OC-SORT [18]

Experiments on ChimpACT

Detection, tracking,
and ReID



Tracktor [19]

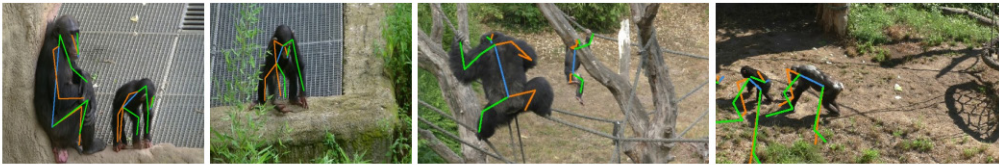


OC-SORT [18]

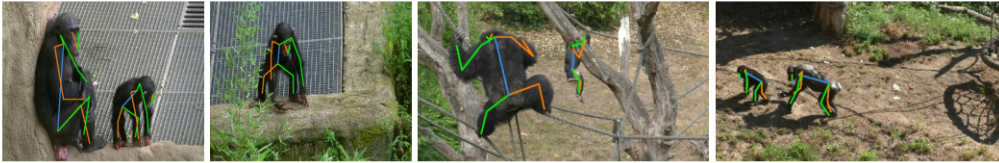
Experiments on ChimpACT

Pose estimation

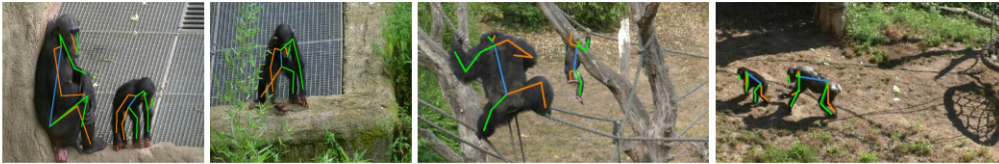
RLE
(ResNet-152)



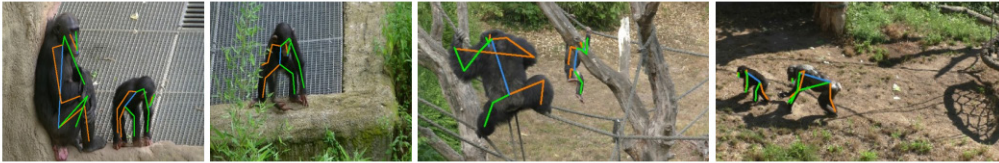
CPM



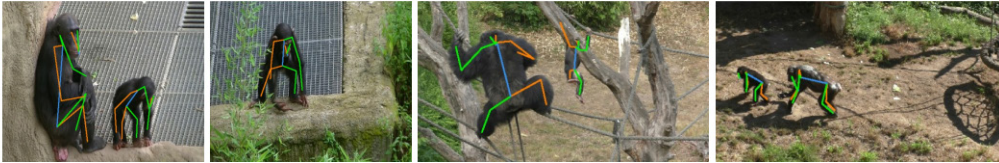
Hourglass



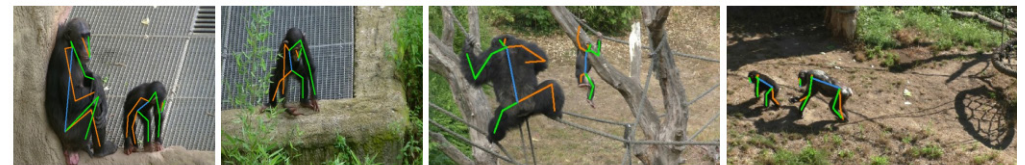
MobileNetV2



SimpleBaseline
(ResNet-152)



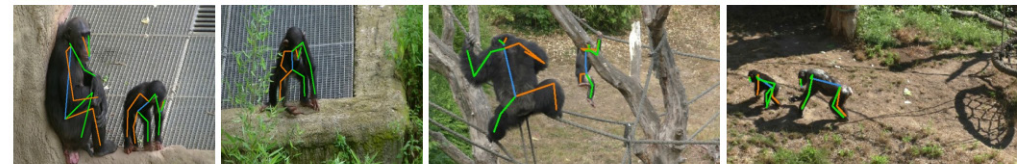
HRNet-W48



DarkPose
(ResNet-152)



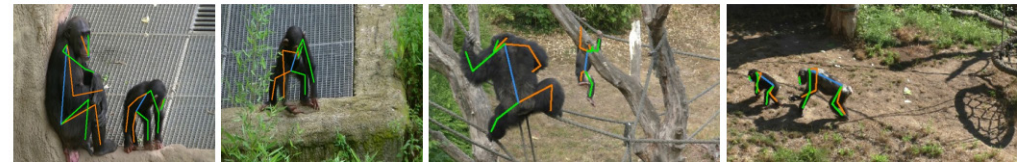
DarkPose
(HRNet-W48)



HRFormer-B

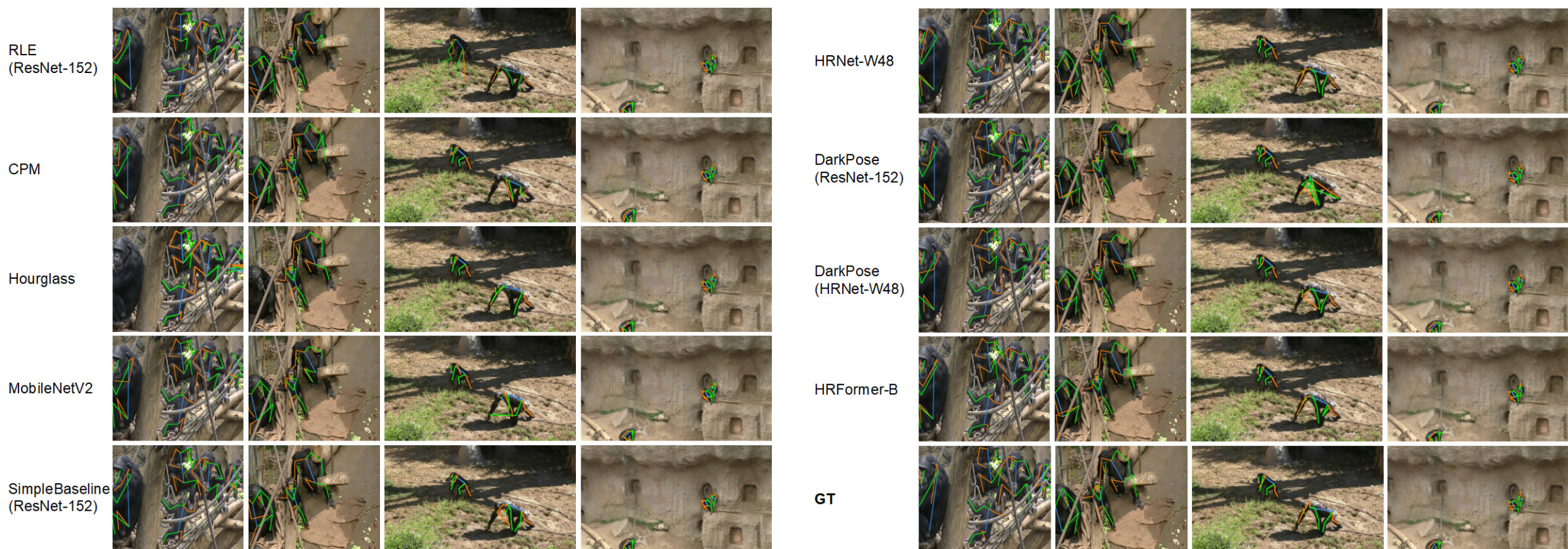


GT



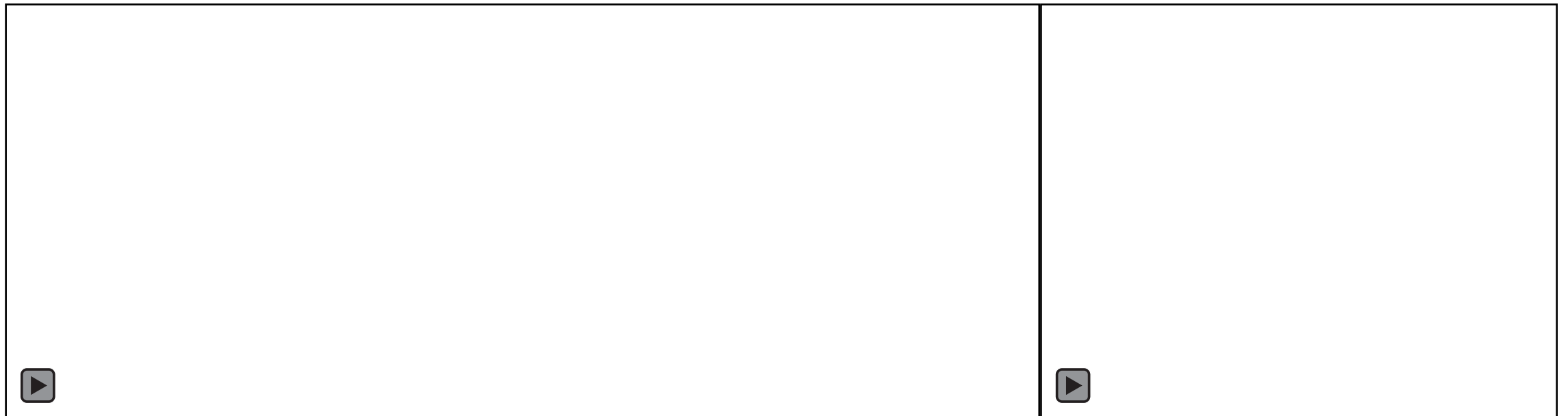
Experiments on ChimpACT

Pose estimation



Experiments on ChimpACT

Spatiotemporal
action detection



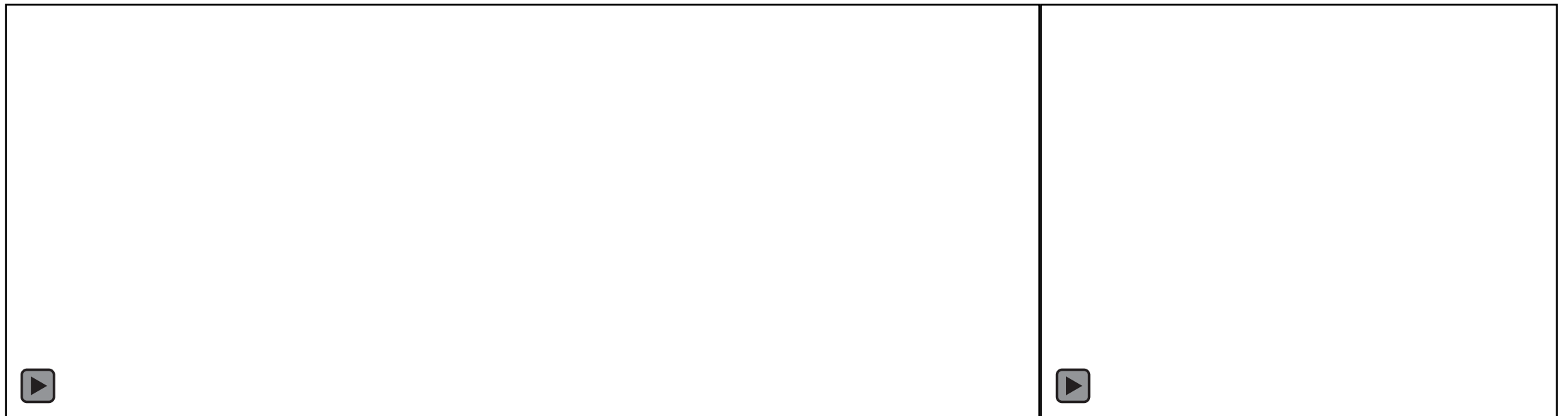
Input

GT

LFB [21]

Experiments on ChimpACT

Spatiotemporal
action detection



Input

GT

ACRN [20]



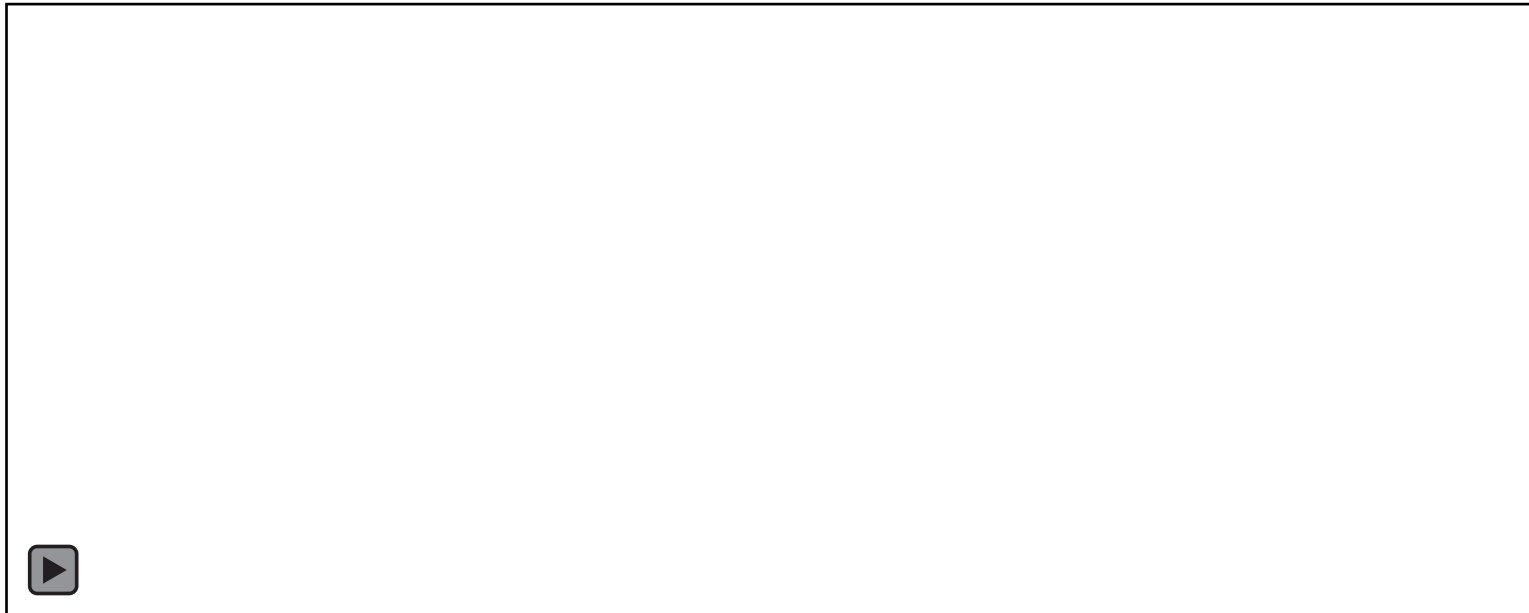
ChimpACT

Rich annotations

**Detection, tracking,
and ReID**

Pose estimation

**Spatiotemporal
action detection**



References

- [1] Figure source: <https://awionline.org/>
- [2] Figure source: <https://www.google.com/>
- [3] Figure source: <https://med.stanford.edu/news/all-news/2015/09/scientists-home-in-on-origin-of-human-chimpanzee-facial.html>
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Thank you for watching!

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