

Hand landmarks dataset

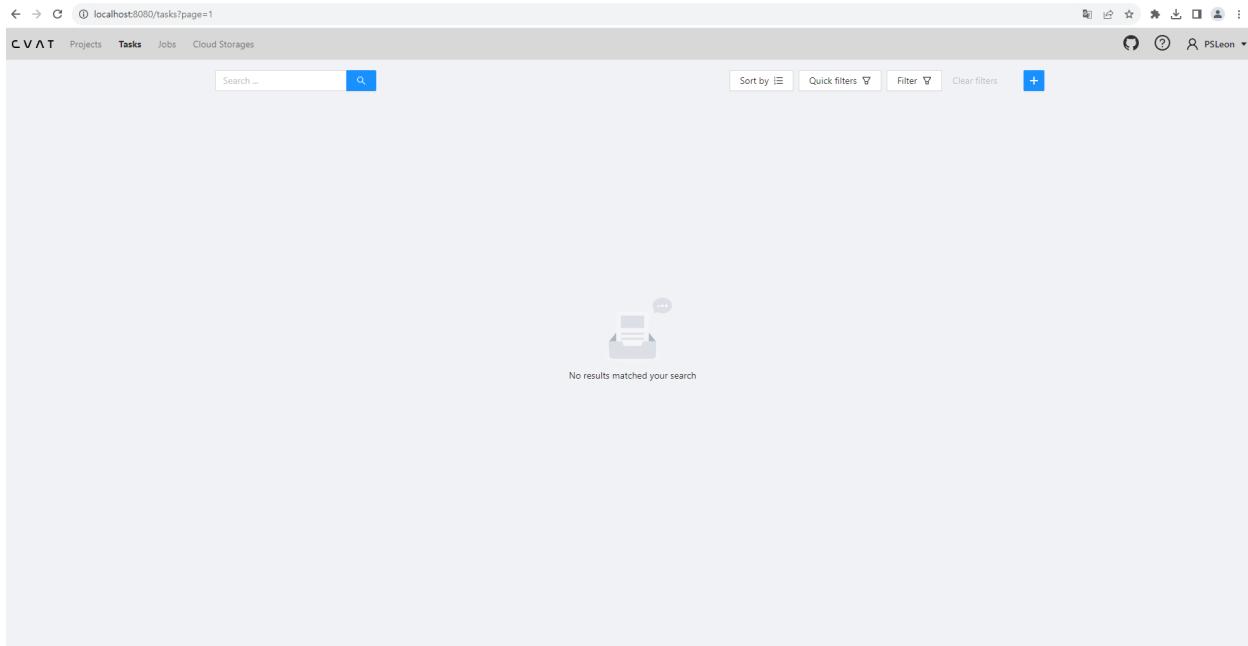
2023/10/12

Today work records

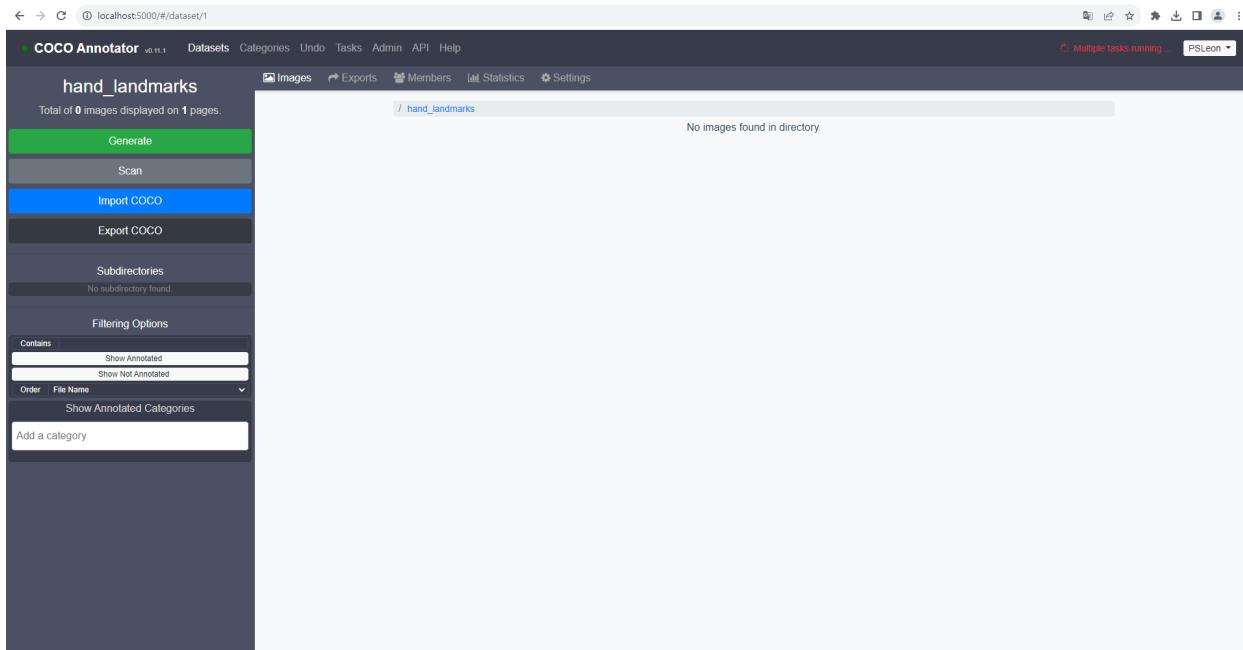
1. 2가지 종류의 annotation tool 설치
2. occlusion시 어떤 식으로 reannotate하는지? 또는 어떤 식으로 극복하는지? 가려진 부분을 reannotate 할 때 기준을 무엇으로 잡는지? 와 관련된 논문들 찾아보고 정리하기
3. 가려진 부분의 관절점까지 생성해주는 controlnet 모델 중 DW OpenPose

1. Install annotation tools

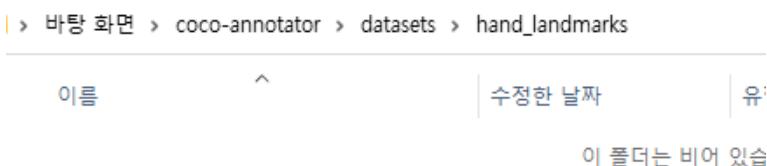
1. OpenCV의 CVAT(annotation tool) Local PC에 설치

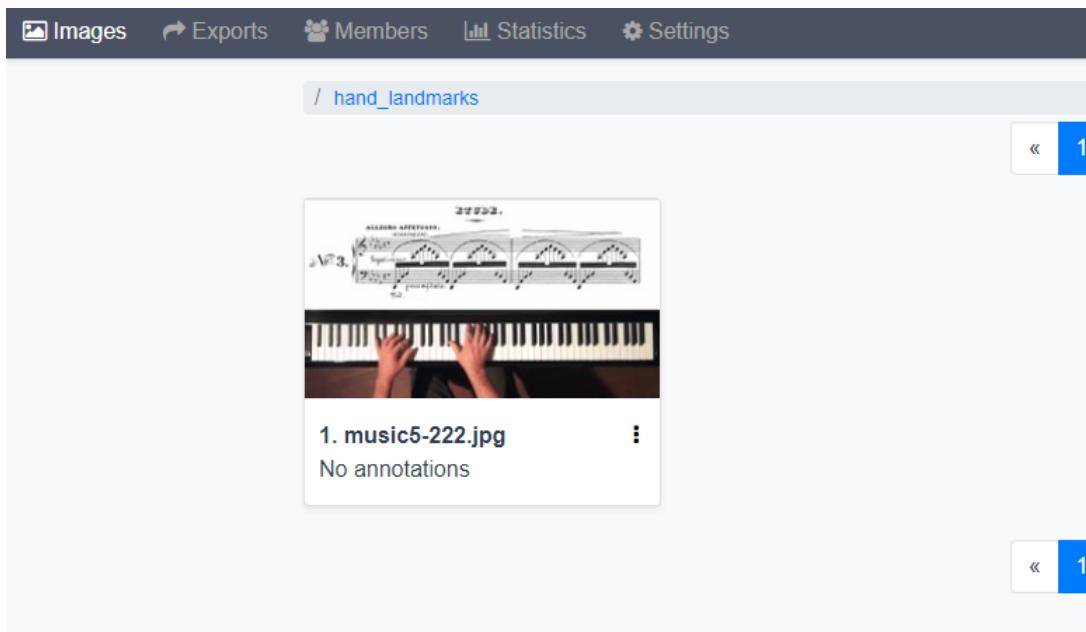


2. COCO Annotator(annotation tool)를 Local PC에 설치



1. 아래 폴더 영역에 이미지 파일들을 넣으면 load





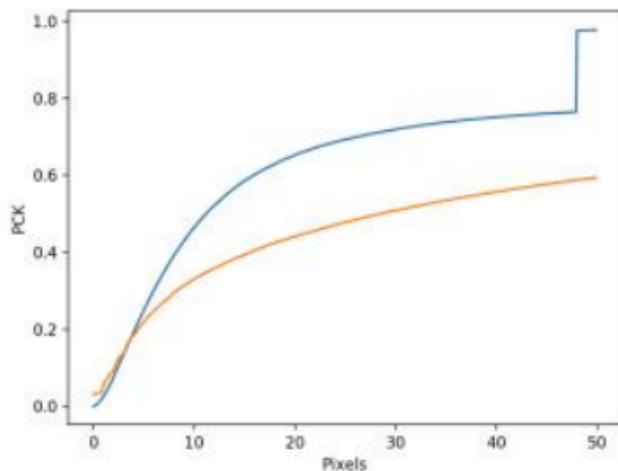
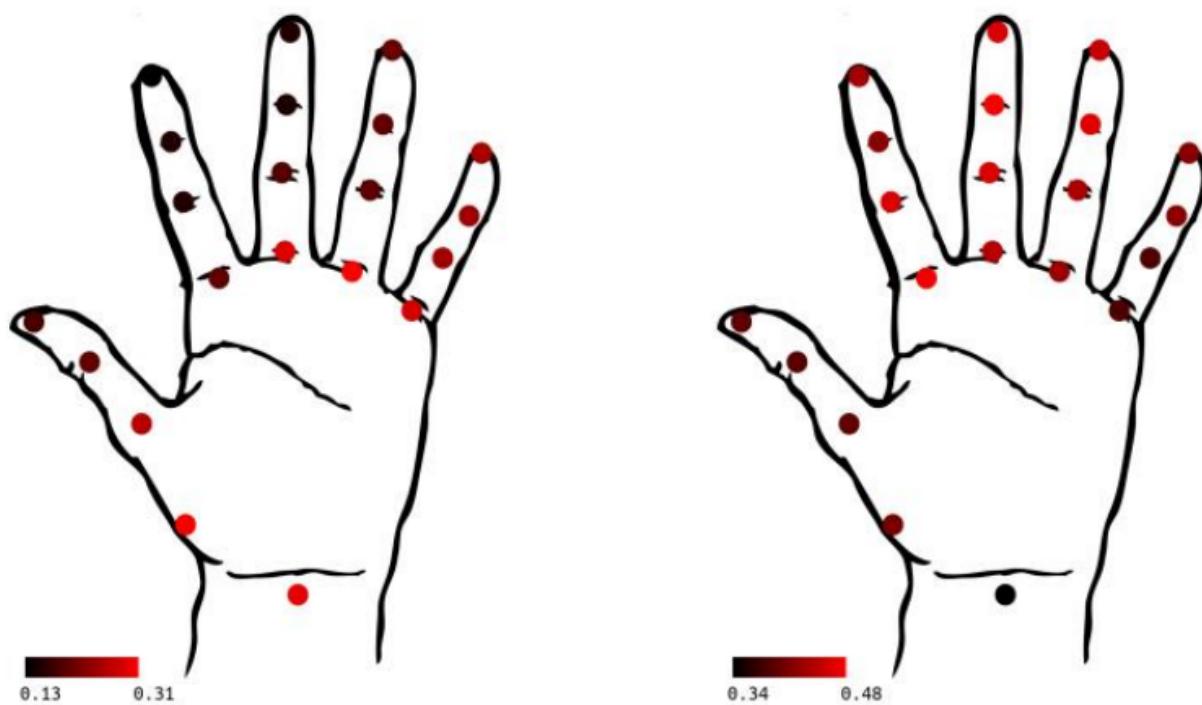
2. Search related paper

- Pseudo labeling 후 1에서 사용했던 annotation tool을 사용하려면 coco 형태로 추출할 수 있는 모델을 사용해야 함. 또한 annotation의 기준 관절점 위치들과 이름도 동일하게 해야

카테고리	occlusion, reannotation
논문명	LUVLi Face Alignment: Estimating Landmarks' Location, Uncertainty, and Visibility Likelihood
내용	landmark를 추정할 때 하트맵을 사용하지만, 불확실성을 추정하는 데는 사용하지 않음 향후 연구를 촉진하도록 불확실성이 있는 얼굴 데이터에 대해 19,000개 이상의 데이터를 라벨링한 MERL Reannotation 데이터 세트를 새로 제시 - 수동 라벨링한 데이터 ~ 이 부분은 우리 연구와 흡사함 3가지 유형으로 visibility별 category를 분류하여 나눔(unoccluded / externally occluded / self occluded) 사람은 위치를 추정하는 데 능숙하다고 주장 - 세 명의 서로 다른 라벨러에서 동일한 이미지를 주고 라벨링을 시킴 p.16 - 아래 이미지들이 예시(녹색: unoccluded / 빨간색: externally occluded / 검은색: self occluded)



카테고리	occlusion, reannotation
논문명	Partially Occluded Hands: A challenging new dataset for single-image hand pose estimation
내용	물체를 들고 있는 rgb 단일 이미지의 2d pose estimation와 관련된 연구(기존에는 깊이 이미지에만 중점을 둔 연구가 대다수였으며 손과 물체의 interaction과 관련된 연구는 거의 없었다고 서론 부분에 밝힘) 21개의 키포인트(각 손가락에 4개*5, 손목에 1개) $21 * 2(x, y) * 2(\text{hands}) = 84$ 이 연구도 역시 여러 명이 라벨링을 진행하고 한 이미지당 4개의 주석을 사용해서 이미지 판단에 사용 인간의 정량적 측정을 제공(400개의 이미지[가려진 이미지 200개, 안가려진 이미지 200개]에 대해 각 이미지별로 4개의 라벨링 데이터 수집) (mean=5.3px, std=1.7px)



- Performance for OpenPose, shown in blue, and ZB, shown in red. (a) The distance between keypoints in the occluded hand and those in the same hand pose unoccluded by any object.

카테고리	reannotation
논문명	CrowdPose: Efficient Crowded Scenes Pose Estimation and A New Benchmark
내용	다수의 사람을 라벨링하는 경우 라벨러가 실수하기 쉬움 - 이를 극복하기 위해 교차 annotation(최소 두 명의 라벨러가 한 장의 이미지를 같이 라벨링)을 사용 - 두 주석자의 편차가 크면 이미지 라벨링 실

패로 간주하고 다시 라벨링(이 부분은 hands에도 동일하게 적용할 수 있을 것 같음(너무 많은 landmarks로 인해 한 명이 진행할 경우 실수 확률 높음))

카테고리	data acquisition, multiview camera, occlusion
논문명	Automated pose estimation in primates
내용	multiview로 원숭이 팔이나 다리의 가려진 부분 estimation

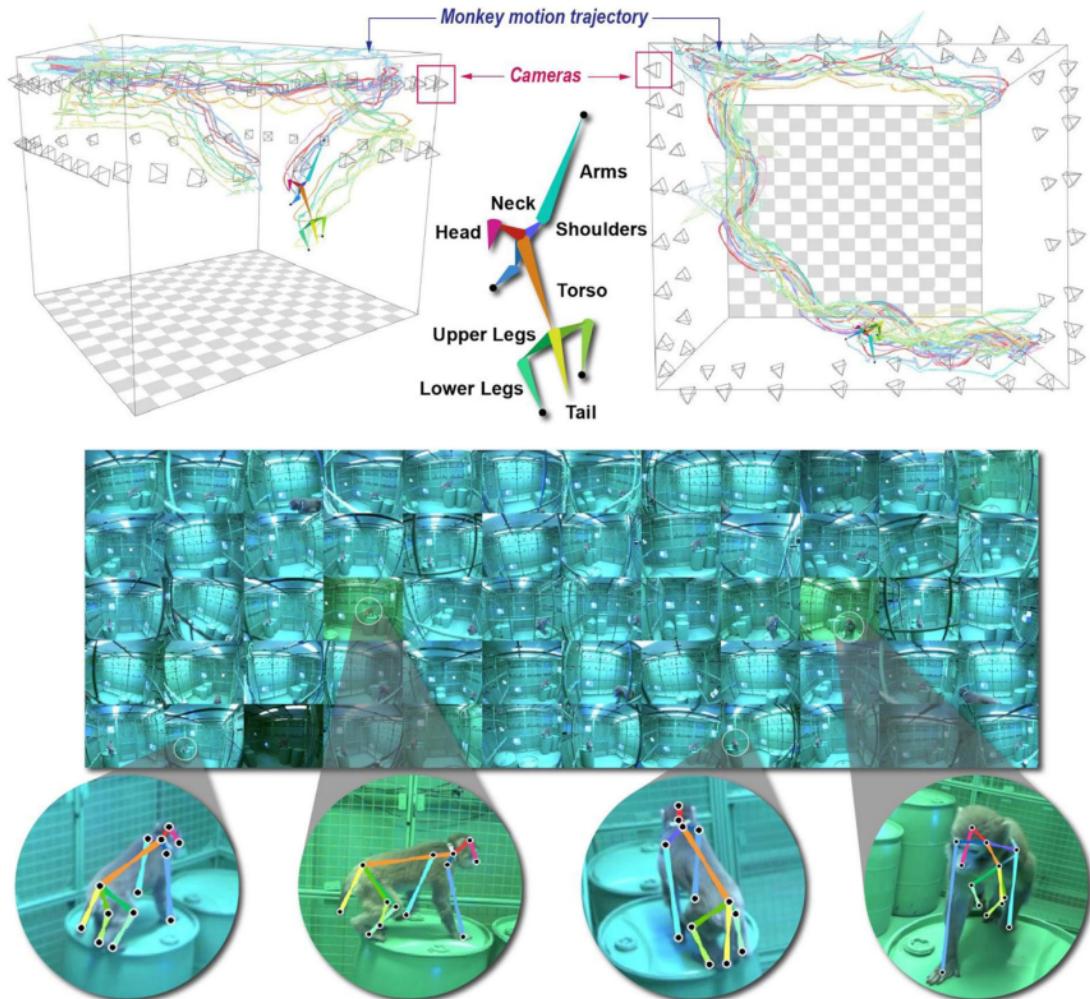


FIGURE 2 Automated pose-tracking software, such as OpenMonkeyStudio (Bala et al., 2020), can provide high-quality tracking of poses in primates. The OMS system is based on multiview capture, which can bypass problems associated with occlusion

etc - 다음주에 볼 것

- AP-10K: A Benchmark for Animal Pose Estimation in the Wild



Figure 1: A glance at diverse animal species in AP-10K. Figures are best viewed in color.

In this paper, we make an attempt to answer these questions by collecting the first large-scale benchmark AP-10K for general mammal pose estimation. It consists of 10,015 images collected and filtered from 23 animal families and 54 species following the taxonomic rank, where the keypoints of all animal instances on each image are manually labeled and carefully double-checked. Specifically, various animal images are collected from existing publicly available datasets, and a cleaning process is carried out to remove the replicated images. Then, they are organized following the taxonomic rank. Finally, thirteen annotators are recruited to carefully annotate the bounding boxes for all animal instances in each image and their body keypoints, as well as the background category of each image, following the COCO [31] annotation style. In addition to the labeled 10,015 images, AP-10K also contains about 50k animal images organized following the taxonomic rank but without keypoint annotations, which can be used for animal pose estimation at the settings of semi-supervised learning [14] and self-supervised learning [21, 8, 9].

3.2 Data annotation

To obtain high-quality animal pose annotations for each image, we recruited 13 well-trained annotators and asked them to annotate all the keypoints of each animal they can distinguish. Three rounds of cross-checking and correction are then carried out to improve the annotation quality. Finally, it took about three months to complete the whole annotation process, where 10,015 images were labeled. Similar to the keypoints defined for representing human pose, 17 keypoints are defined to represent animal pose, including two eyes, one nose, one neck, one tail, two shoulders, two elbows, two knees, two hips, and four paws, as listed in Table 1. A visual example of the keypoint annotations of a Chimpanzee is shown in Figure 2. Besides, We also labeled 8 background type for all posed images, *i.e.*, grass or savanna, forest or shrub, mud or rock, snowfield, zoo or human habitation, swamp or riverside, desert or gobi and mugshot. The annotations are saved in line with the COCO format to facilitate further research in animal pose estimation by reusing common training and evaluation tools developed in the human pose estimation community. The AP-10K is split into three disjoint subsets, *i.e.*, train, validation, and test sets, at the ratio of 7:1:2 per animal species. It is also noteworthy that in addition to the 10,015 images with keypoint annotations, we also include the remaining 49,643 images with their family and species labels in our AP-10K to facilitate future research, *e.g.*, semi-supervised learning and self-supervised learning for animal pose estimation.

- 다중 시점 기하학 관련 내용

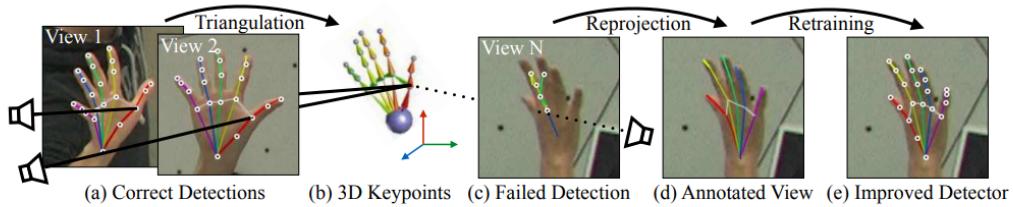
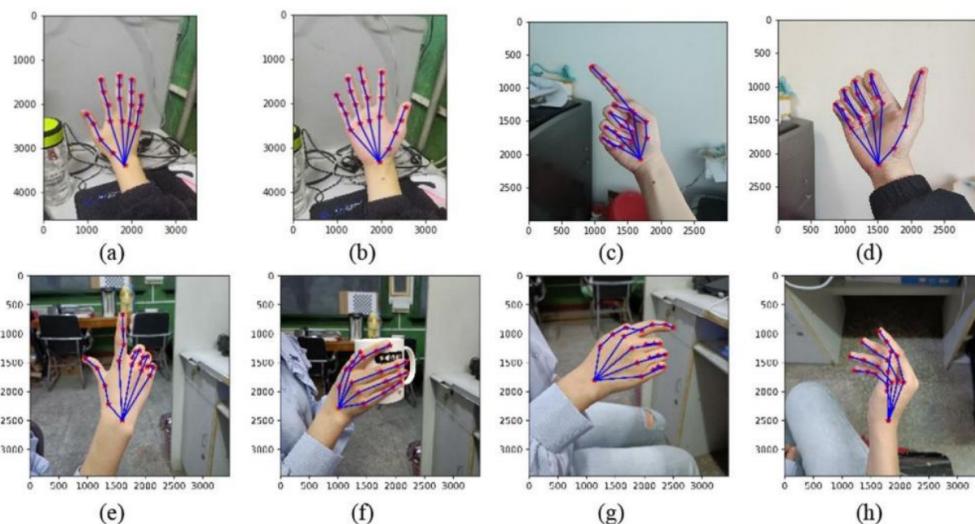


Figure 3: Multiview Bootstrapping. (a) A multiview system provides views of the hand where keypoint detection is easy, which are used to triangulate (b) the 3D position of the keypoints. Difficult views with (c) failed detections can be (d) annotated using the reprojected 3D keypoints, and used to retrain (e) an improved detector that now works on difficult views.

- 성능 높은 손 추정



3. DW Openpose

- 불꽃 모양 누르고 PREVIEW에 가서 DOWNLOAD 아이콘 → JSON 버튼 누르면 json 형태로 저장

손가락까지 정확한 새로운 DW OPENPOSE 살펴보기! (그대로 따라하기, controlnet)

#ai이미지 #aiimages #ai #webui #colab #controlnet #openpose

컨트롤넷에 새롭게 추가된 DW 오픈포즈를 소개시켜드릴게요

▶ <https://www.youtube.com/watch?v=JOQ9AnXvai8>