

# Open Set Domain Adaptation for Image and Action Recognition - Supplemental Material

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## 1 OPEN SET DOMAIN ADAPTATION

The list of shared and unknown action classes for the open set domain adaptation protocol between the *Kinetics Human Action Video Dataset* [1] (Kinetics) and the *UCF101 Action Recognition Dataset* [2] (UCF101) are given in Table 1.

## REFERENCES

- [1] W. Kay, J. Carreira, K. Simonyan, B. Zhang, C. Hillier, S. Vijayanarasimhan, F. Viola, T. Green, T. Back, P. Natsev, M. Suleyman, and A. Zisserman, "The kinetics human action video dataset," *CoRR*, vol. abs/1705.06950, 2017.
- [2] K. Soomro, A. R. Zamir, and M. Shah, "UCF101: A dataset of 101 human actions classes from videos in the wild," *CoRR*, vol. abs/1212.0402, 2012.

Action recognition open set protocol for Kinetics → UCF101					
Shared classes				Unknown classes	
Kinetics	UCF101	Kinetics	UCF101	Kinetics	UCF101
archery	archery	Kinetics dribbling basketball, playing basketball, shooting basketball	basketball	bench pressing	bench press
biking through snow, riding a bike, riding mountain bike	biking	blowing out candles	blowing candles	bowling	bowling
brushing teeth	brushing teeth	canoeing or kayaking	kayaking	catching or throwing baseball	baseball pitch
catching or throwing frisbee	frisbee catch	clean and jerk	clean and jerk	climbing a rope	rope climbing
crawling baby	baby crawling	cutting pineapple, cutting watermelon	cutting in kitchen	diving cliff	cliff diving
dunking basketball	basketball dunk	filling eyebrows	apply eye makeup	getting a haircut	haircut
golf driving	golf swing	hammer throw	hammer throw	high jump	high jump
hula hooping	hula hoop	javelin throw	javelin throw	jetskiing	skijet
contact juggling, juggling balls	juggling balls	juggling soccer ball	soccer juggling	jumping into pool	trampoline jumping
knitting	knitting	long jump	long jump	lunge	lunges
making pizza	pizza tossing	marching	band marching	massaging persons head	head massage
mopping floor	mopping floor	playing cello	playing cello	playing cricket	cricket shot
playing drums	drumming	playing flute	playing flute	playing guitar	playing guitar
playing piano	playing piano	playing tennis	tennis swing	playing violin	playing violin
playing volleyball	volleyball spiking	pole vault	pole vault	pull ups	pull ups
punching bag	boxing punching bag, boxing speed bag	punching person	punch	push up	push ups, wall pushups
riding or walking with horse	horse riding	rock climbing	rock climbing indoor	salsa dancing	salsa spins
scuba diving	diving	shot put	shotput	skateboarding	skate boarding
skiing, skiing crosscountry, skiing slalom	skiing	skipping rope	jump rope	skydiving	sky diving
kicking soccer ball, shooting goal	soccer penalty	squat	body weight squats	surfing water	surfing
swimming breast stroke	breaststroke	swing dancing	swing	tai chi	tai chi
throwing discus	throw discus	trimming or shaving beard	shaving beard	walking the dog	walking with a dog

Kinetics: abseiling, air drumming, answering question, applauding, applying cream, arm wrestling, arranging flowers, assembling computer, auctioning, baby walking up, baking cookies, balloon blowing, bandaging, barbequing, bartending, beatboxing, bee keeping, belly dancing, bending back, bending metal, blasting sand, blowing glass, blowing leaves, blowing nose, bobsledding, bookbinding, bouncing on trampoline, braiding hair, breading or breadcrumbing, breakdancing, brush painting, brushing hair, building cabinet, building shed, bungee jumping, busking, celebrating, capoeira, carrying baby, cartwheeling, carving pumpkin, catching fish, catching or throwing softball, changing oil, changing wheel, checking tires, cheerleading, chopping wood, clapping, clay pottery making, cleaning floor, cleaning gutters, cleaning pool, cleaning shoes, cleaning toilet, cleaning windows, climbing ladder, climbing tree, contry line dancing, cooking chicken, cooking egg, cooking on campfire, cooking sausages, counting money, cracking neck, crossing river, crying, curling hair, cutting nails, dancing ballet, dancing charleston, dancing gangnam, dancing macarena, deadlifting, decorating the christmas tree, digging, dining, disc golfing, dodgeball, doing aerobics, doing laundry, doing nails, drawing, drinking, drinking beer, drinking shots, driving car, driving tractor, drop kicking, drumming fingers, dying hair, eating burger, eating cake, eating carrots, eating chips, eating doughnuts, eating hotdog, eating ice cream, eating spaghetti, eating watermelon, egg hunting, exercising arm, exercising with an exercise ball, extinguishing fire, faceplanting, feeding birds, feeding fish, feeding goats, finger snapping, fixing hair, flipping pancake, flying kite, folding clothes, folding napkins, folding paper, front raises, frying vegetables, garbage collecting, gargling, getting a tattoo, giving or receiving award, golf chipping, golf putting, grinding meat, grooming dog, grooming horse, gymnastics tumbling, headbanging, headbutting, high kick, hitting baseball, hockey stop, holding snake, hopscotch, hoverboarding, hugging, hurdling, hurling, ice climbing, ice fishing, ice skating, ironing, jogging, juggling fire, jumpstyle dancing, kicking field goal, kissing, kitesurfing, krumping, laughing, laying bricks, making a cake, making a sandwich, making bed, making jewelry, making snowman, making sushi, making tea, making tea, massaging back, massaging feet, massaging legs, milking cow, motorcycling, moving furniture, mowing lawn, news anchoring, opening bottle, opening present, paragliding, parasailing, parkour, passing American football, passing American football, peeling apples, peeling potatoes, petting animal, petting cat, picking fruit, planting trees, plastering, playing accordion, playing badminton, playing bagpipes, playing bass guitar, playing cards, playing chess, playing clarinet, playing controller, playing cymbals, playing didgeridoo, playing harmonica, playing harp, playing ice hockey, playing keyboard, playing kickball, playing monopoly, playing organ, playing paintball, playing poker, playing recorder, playing saxophone, playing squash or racquetball, playing trombone, playing trumpet, playing ukulele, playing xylophone, presenting weather forecast, pumping fist, pumping gas, pushing cart, pushing car, pushing wheelchair, reading book, reading newspaper, recording music, riding a camel, riding elephant, riding mechanical bull, riding mule, riding scooter, riding unicycle, ripping paper, robot dancing, rock scissors paper, roller skating, running on treadmill, sailing, sanding floor, scrambling eggs, setting table, shaking hands, shaking head, sharpening knives, sharpening pencil, shaving head, shaving legs, shearing sheep, shining shoes, shoveling snow, shredding paper, shuffling cards, side kick, sign language interpreting, singing, situp, ski jumping, slackclining, slapping, sled dog racing, smoersaulting, smoking, smoking hookah, snatch weight lifting, sneezing, sniffing, snorkeling, snowboarding, snowkiting, snowmobiling, spinning poi, spray painting, spraying, springboard diving, stickin tongue, stomping grapes, stretching arm, stretching leg, strumming guitar, surfing floor, sweeping crowd, sweeping floor, swimming backstroke, swimming butterfly stroke, swinging legs, swinging on something, sword fighting, taking a shower, tango dancing, tap dancing, tapping guitar, tapping pen, tasting beer, tasting food, testfying, texting, throwing axe, throwing ball, tickling, tobogganing, tossing coin, tossing salad, training dog, trapezing, trimming trees, triple jump, tying bow tie, tying knot, tying tie, unboxing, unloading truck, using computer, using remote controller, using segway, vault, waiting in line, washing dishes, washing feet, washing hair, washing hands, water skiing, water sliding, watering plants, waxing back, waxing chest, waxing eyebrows, waxing legs, weaving basket, welding, whistling, windsurfing, wrapping present, wrestling, writing, yawning, yoga, zumba

UCF101: apply lipstick, balance beam, billiards shot, blow dry hair, fencing, field hockey penalty, floor gymnastics, front crawl, hammering, handstand pushups, handstand walking, horse race, ice dancing, jumping jack, military parade, mixing batter, nun chucks, parallel bars, playing daf, playing dhol, playing sitar, playing tabla, pommel horse, rafting, rowing, still rings, sumo wrestling, table tennis shot, throw discus, typing, uneven bars, writing on board, yo yo

TABLE 1

Definition of shared and unknown classes for the open set protocol between the Kinetics [1] and the UCF101 [2] action recognition dataset.