

# **DIVA Annotation Guidelines**

Version 1.0

November 6, 2017

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# Changelog

06nov2017: v1.0 release for DIVA Kickoff

## DIVA Annotation Guidelines

DIVA annotations include scene elements, activities, and complex events.

### 1. Scene Elements

1.1. Sky

1.2. Building

*Example:* In the case of a parking attendant building, where a person can interact with the door, the building is annotated as a scene element and the door to the building is annotated as an object track.

1.3. Shadows

1.4. Grass

1.5. Ground

1.6. Trees

1.7. Parking Lot

*Description:* This includes the regions within the lot where cars can circle looking for parking spots. Additionally, the regions along the side of the street where cars can park are annotated as parking lots.

1.8. Street

1.9. Sidewalk

1.10. Crosswalk

*Description:* The white crossed or parallel line bounded region demarcating the region where people should cross the street.

1.11. Intersection

*Description:* Quadrilateral region defined by the intersection of multiple streets from stop line or crosswalk.

1.12. Stairs

1.13. Background

*Description:* This region can contain a collection of different scene elements that are difficult to individually annotate. Additionally, people/vehicles may be present in this section but do not need to be annotated.

1.14. Unannotated

*Description:* This region may be either too low contrast, obstructed, or low resolution to reasonably expect annotations and/or accurate detections.

## 2. Object Types

2.1. Door

*Description:* People can interact with the building scene element through the static object “door”. A door may also be a doorway for a person to enter a facility.

2.2. Tree

*Description:* A single standalone tree annotated as it may be an occluding object.

*Example:* Trees are annotated as an objects when people can walk behind them -- entering one side and exiting the other. A single track for an individual walking behind a tree would be continued when it is not feasible for a hidden person to replace the tracked person while occluded.

2.3. Receptacle

*Examples of receptacles:* Trashcan, Newspaper Box, Cigarette Butt Catcher

2.4. Dumpster

2.5. Parking Meter

2.6. ATM

2.7. Umbrella

*Description:* This refers to the big table-style umbrella, not the personal umbrella someone carries (which is a prop once separate from the person).

2.8. Construction Barrier

*Examples:* Cones, Barrels, Construction Fences (often colored orange and white)

2.9. Other

2.10. Person

2.11. Vehicle

*Examples:* Car, pickup truck, 18-wheeler or big truck, Bus, Golf Cart, Motorcycle, and anything that can be expected to be seen on a highway. Doors on vehicles are not annotated separately.

*Notes:* Motorcycles are tracked as vehicles with bounding box containing both the person & bike.

2.12. Bike

*Description:* A “bike” can refer to any small vehicle where the person is still visible but where the person is modifying their movement (e.g., foot-powered scooter, skateboard, bicycle). These will always consist of two tracks – one for the person and one for the “bike”. Events, such as riding, pushing, and pulling, are used to couple the person and “bike” tracks. This is also true for Push/Pulled Objects. The Bike does not need any attributes or activities except for moving & visibility attributes. That is, turning or stopping should not be applied to bikes. Note: A person riding a bike is not occluded by the bike and the bike is not occluded by the person riding it. The same is true for any pushed scooters or skateboards.

Bikes that are chained to something or remain stationary and are NOT ridden in the clip are not annotated. Bikes that are ridden at some point within clip are tracked from the beginning of the clip.

2.13. Construction Vehicle

*Examples:* CAT, Tractor, Ride-on Lawn Mower

2.14. Push/Pulled Object

*Examples:* Hand Cart, Stroller, Suitcase, Dolly

If a prop or object is added to a pushed/pulled object, the initial prop is no longer tracked and it becomes part of the push/pulled object.

*Note:* People are not occluded by the handle of a push/pulled object that they are pushing or pulling.

2.15. Prop

*Examples:* Tables, Chairs, Bags, Boxes. Props are only annotated when there is person-prop interaction of some sort.

*Note:* Props are not tracked in the bed of a truck unless they are involved in some sort of interaction (loading/unloading). This behavior is similar to that of a prop being added to a Push/Pull Object.

2.16. Animal

*Examples:* Used primarily for dogs on leashes. Animals only need to be annotated if there is human-animal interaction. They only get occlusion attributes.

2.17. Articulated Infrastructure

*Example:* Traffic Arm

# Activities

## Person Activities

### 4.1. Standing

*Description:* A person is standing with at least one foot in contact with the ground and no net translation in movement for short time scales. Must be standing for a minimum of 2 s to add annotation.

*Start:* Annotation begins when person stops previous motion or track begins.

*End:* Annotation ends 1 s after the person is no longer standing. If transitioning to crouching, sitting, walking, or running, then standing will end after 1 s of next activity.

### 4.2. Crouching

*Description:* A person is crouching with no chair involved. Must be crouching for a minimum of 2 s to add annotation.

*Start:* Annotation begins when person stops previous motion or track begins.

*End:* Annotation ends 1 s after the person is no longer crouching. If transitioning to standing, sitting, walking, or running, then crouching will end after 1 s of next activity.

### 4.3. Sitting

*Description:* A person is sitting, which may or may not involve the use of a chair. The person sitting should not be supporting all of their weight.

*Start:* Annotation begins when person stops previous motion or track begins.

*End:* Annotation ends 1 s after the person is no longer sitting. If transitioning to crouching, standing, walking, or running, then sitting will end after 1 s of next activity.

*Note:* Annotating sitting while a person is in a car during an entering or exiting a vehicle is only annotated when sitting is visible for >10 frames. When entering, "standing" stops once bottom is on seat of car. When exiting, "sitting" stops once bottom is off of seat or person appears above the car if seat is not visible. We only annotate sitting when the person is visible in the car (door open) for > 10 frames.

### 4.4. Walking

*Description:* A person walking. The person must be consistently walking for 2 s or more.

*Start:* Annotation begins when person stops previous motion or track begins.

*End:* Annotation ends 1 s after the person is no longer walking. If transitioning to crouching, sitting, standing, or running, then walking will end after 1 s of next activity.

Horizontal motion must occur. (Pacing is annotated as standing.)

#### 4.5. Running

*Description:* A person running. The person must be consistently running for 2s or more.

*Start:* Annotation begins when person stops previous motion or track begins.

*End:* Annotation ends 1 s after the person is no longer running. If transitioning to crouching, sitting, standing, or walking, then running will end after 1 s of next activity.

#### 4.6. Falling

*Description:* A person falling by either (1) losing one's balance and possibly collapsing, or (2) moving downward from a higher to a lower level.

*Start:* Annotation begins 1 s before falling motion begins.

*End:* Annotation ends 1 s after falling motion ends.

#### 4.7. Carrying

*Description:* A person carrying an object up to half the size of the person, where the person's gait has not been substantially modified. The object may be carried in either hand, with both hands, or on one's back.

*Examples:* Carrying a Backpack, Purse, Briefcase, or Box.

*Counter-examples:* "Incidental carrying" such as a sheet of paper or a file folder such that the person's arm motion is not affected by the payload.

*Start:* Annotation begins in one of two ways: (1) when the person who will be carrying the object makes contact with the object, or (2) when the track begins, if the person is already carrying the object (e.g., backpack or purse).

*End:* Annotation ends when contact with the object is broken.

*Note:* If a carried object (e.g., purse, backpack, box) is separated from the individual, a new track for that object ("Prop") will be created. The events, pickup, drop, and set down will be used to couple/decouple the person and object.

#### 4.8. Gesturing

*Description:* Gesturing is movement of the body or limbs, which expresses or emphasizes an idea, sentiment, or attitude and the intent to communicate.

*Examples:* Pointing, Waving

*Start:* Annotation begins 1 s before the gesture is evident. For example, when waving, the gesture begins 1 s before the person waving begins to raise their arm to wave.

*End:* Annotation ends 1 second after motion ends.

*Note:* If two gesturing activities overlap, then they will appear as a continuous “gesturing” annotation.

Gesticulating while talking is NOT considered gesturing

#### 4.9. Distress

*Description:* A person in distress. Distress is characterized by acute suffering - often associated pain or strong emotions. Distress must last for a minimum of 5 s.

*Examples:* Universal Choking Sign , clutching chest as if having a myocardial infarction, guarding abdomen as if GI distress.

*Note:* This activity may often be coupled with Gesturing associated with distress.

*Start:* Annotation begins 1 s before distress begins.

*End:* Annotation ends 1 s after distress ends.

#### 4.10. Aggressive

*Description:* A person acting aggressively. Aggression is characterized by hostile or violent behavior or attitudes toward another - displayed as readiness to attack or confront. Aggressive behavior must last for a minimum of 5 s.

*Examples:* Look of anger in face while raising arms as if to strike, posturing as if about to strike an individual.

*Note:* This activity may often be coupled with Gesturing associated with aggression.

*Start:* Annotation begins 1 s before aggressive behavior begins.

*End:* Annotation ends 1 s after aggressive behavior ends.

#### 4.11. Talking On Phone

*Description:* A person talking on a cell phone where the phone is being held on the side of the head. This activity should apply to the motion of putting one’s hand up to the side of their head regardless of the presence of a phone in hand.

*Start:* Annotation should begin when hand makes motion toward side of head.

*End:* Annotation should end 1 s after hand leaves side of head.

#### 4.12. Texting On Phone

*Description:* A person texting on a cell phone. This applies to any situation when the phone is in front of the person’s face (as opposed to along the side of the head) and they are using it. This includes using the phone with thumbs and fingers or video chatting.

*Start:* Annotation should begin 1 s before “texting” is observed.

*End:* Annotation should end 1 s after last instance of “texting” is observed.

#### 4.13. Digging

*Description:* A person digging in the ground. Digging may involve the use of a tool or simply hands (in this case, the hands are the tool).

*Start:* Annotation begins when the tool makes contact with the ground or track begins.

*End:* Annotation ends 1 second after the tool has been removed from the ground, or immediately if the digging tool is dropped.

*Note:* Digging and Carrying should not be annotated together.

#### 4.14. Using tool

*Description:* A person using a tool. This is a broad description used to describe large motions of the person that involve using at least movement of the shoulders.

*Examples:* Hammering, Weed Whacking, Spreading Concrete

*Start:* Annotation begins when first motions associated with using the tool are observed.

*End:* Annotation ends 1 second after motions associated with using the tool have ceased.

*Note:* Carrying may also be annotated with "using tool" if it looks like the person is carrying an object. For example, someone using a backpack style leaf blower would be both using tool and carrying (since wearing the leaf blower looks like wearing a backpack). Additionally, someone using a weed whacker looks like he's carrying the weed whackers. So when weed whacking is taking place, it should be "using tool" and "carrying."

#### 4.15. Throwing

*Description:* A person throwing an object with themselves, to another person, or at something.

*Start:* Annotation begins 1 s before the throw is evident (e.g., 1 s before the arm is raised)

*End:* Annotation ends 1 s after the object is released or the arm has reached full extension.

*Notes:* Throwing and Carrying should not be annotated at the same time. If the object being thrown is not visible, then the event should be annotated as Gesturing. If two throwing activities overlap, then they will appear as a continuous "throwing" activity.

#### 4.16. Kicking

*Description:* A person kicking an object (e.g., a ball, the air, a trashcan) with themselves, to another person, or at something. This activity may be accomplished with one or for the talented few, both feet.

*Start:* Annotation begins 1 s before the kick is evident (e.g., 1 s before the leg is pulled back into a "kicking" motion).

*End:* Annotation ends 1 s after person's leg has reached full extension.

*Note:* If two kicking activities overlap, then they will appear as a continuous "kicking" activity.

#### 4.17. Umbrella



*Description:* A person holding an open personal umbrella in the position to protect them from the rain or sun.

*Note:* If the umbrella is closed, then there is only a carry attribute applied; “umbrella” should not be used. If the umbrella is separated from the person, a new track is created for the umbrella (denoted as Prop) otherwise the umbrella is not tracked separately. Person with an umbrella gets visibility attributes, the rationale is that a person can purposely hide behind an umbrella.

*Start:* Attribute annotation should begin 1 s before umbrella is opened or when track begins if umbrella is already open.

*End:* Attribute annotation should end 1 s after last instance of an opened umbrella is observed.

## **Vehicle Activities**

### 4.18. Moving

*Description:* A vehicle is moving. This may apply to the motion of standard vehicles (e.g., car, truck, van), construction vehicles, or bikes when moving between locations.

*Start:* Annotation begins when motion is evident.

*End:* Annotation ends when motion is no longer evident.

*Note:* For the bicycle to be in motion, it must be ridden by a person.

### 4.19. Stopping

*Description:* A vehicle stops. The vehicle is “stopping” when it begins noticeably slowing down, even if the vehicle never comes to a full and complete stop.

*Start:* Annotation begins at least 1 s before the vehicle has stopped.

*End:* Annotation ends when vehicle motion has stopped OR starting (acceleration begins - see special case).

*Note:* A parked car is not stopping.

*Special Case:* A vehicle in a line of vehicles approaching an intersection. The vehicle is “stopping” when it begins noticeably slowing down, even if the car never completely “stops” until the intersection. The vehicle is “moving” and “stopping” (more like slowing). “Rolling Stop”.

### 4.20. Starting

*Description:* A vehicle starts.

*Start:* Annotation begins when motion is evident.

*End:* Annotation ends after at least 1 s of motion.

*Note:* A vehicle entering the FOV is not starting.

### 4.21. Turning (Right or Left)

*Description:* A vehicle turning left or right is determined from the POV of the driver of the vehicle. The vehicle may not stop for more than 10 s during the turn.

*Start:* Annotation begins 1 s before vehicle has noticeably changed direction.

*End:* Annotation ends 1 s after the vehicle is no longer changing direction and linear motion has resumed.

*Note:* This event is determined after a reasonable interpretation of the video.

#### 4.22. U-Turn

*Description:* A vehicle making a u-turn is defined as a turn of 180 and should give the appearance of a “U”. A u-turn can be continuous or comprised of discrete events (e.g., a 3-point turn).The vehicle may not stop for more than 10 s during the u-turn.

*Start:* Annotation begins when the vehicle has ceased linear motion.

*End:* Annotation ends 1 s after the car has completed u-turn.

*Note:* This event is determined after a reasonable interpretation of the video.

U-turns do not contain left and right turns (or start/stop in the case of K turns).

U-turns are also annotated when going around something, like a bank of trees/shrubs.

#### 4.23. Construction Function

*Description:* A construction vehicle performing its designed function. This action is distinct from moving between locations.

*Example:* Excavating, Bulldozing, Steamrolling , Lawnmowing

*Start:* Annotation begins when construction function is evident.

*End:* Annotation ends when construction function is no longer evident.

### **Additional Annotations**

#### 4.24. Partially Occluded

*Description:* This applies to any occlusion up to 50% of an object.

*Start:* Attribute annotation begins when occlusion is observed.

*End:* Attribute annotation ends when occlusion is no longer observed.

*Note:* People are not occluded by the handle of a push/pulled object that they are pushing or pulling or a bike that they are riding. Vehicle occlusions should only be marked when the person is not entering/exiting the vehicle. For exiting, vehicle occlusion should be marked once door is closed. For entering, vehicle occlusion should no longer be marked once the door is opening

#### 4.25. Mostly Occluded

*Description:* This applies to any occlusion greater than 50% of an object.

*Start:* Attribute annotation begins when occlusion is observed.

*End:* Attribute annotation ends when occlusion is no longer observed.

*Note:* People are not occluded by the handle of a push/pulled object that they are pushing or pulling or a bike that they are riding.

#### 4.26. Miscellaneous

*Description:* This is a catch all for distinct activities that can be documented in a growing list and periodically reviewed. This list will be reviewed to determine if a sufficient number of each activity have been amassed and should be broken off into its own activity type.

*Examples:* Eating, Drinking, Knitting, Smoking, Taking Off Jacket, Put on Hat, Typing/Working on Laptop, Skating

*Note:* Stopping to read a billboard or large sign (attention caught, leaning in, etc.) Reading a book or papers in your hand is NOT included in this. Adjusting a hat or jacket is NOT a miscellaneous activity.

*Start:* Annotation begins when miscellaneous activity is observed.

*End:* Annotation ends when miscellaneous activity is no longer observed.

## Complex Activities

#### 4.27. Entering

*Description:* A person entering (going into or getting into) a vehicle or facility.

*Start:* The event begins 1 s before the door moves or if there is no door, the event begins 1 s before the person's body is inside the vehicle/facility.

*End:* The event ends when the person is in the vehicle/facility and the door (if present) is shut.

*Notes:* A facility is defined as a structure built, installed or established to serve a particular purpose. This facility must have an object track (e.g., door or doorway) for the person to enter through. The two necessary tracks included in this event are (1) the person entering and (2) the vehicle or the object for entering a facility (e.g., door). A special case of "entering" is mounting a motorized vehicle (e.g., motorcycle, powered scooter).

*Note 2:* No special activity for standing or crouching when entering or exiting a vehicle. Whenever the person starts standing or walking, annotate as usual, but once they stop lateral motion and start bending down to get into / out of the car, they've stopped both standing and walking, so no activity. Sitting in car when entering or exiting is only if sitting is visible for >10 frames.

*Objects required:* Person; and Door or Vehicle

#### 4.28. Exiting

*Description:* A person exiting a vehicle or facility. See entering for definition of facility.

*Start:* The event begins 1 s before the door moves or if there is no door, the event begins 1 s before half of the person's body is outside the vehicle/facility.

*End:* The event ends 1 s after the person has exited the vehicle/facility.

*Note:* A special case of “exiting” is dismounting a motorized vehicle (e.g., motorcycle, motorized scooter).

*Objects required:* Person; and Door or Vehicle

#### 4.29. Opening

*Description:* A person opening the door to a vehicle or facility.

*Start:* The event begins 1 s before the door starts to move.

*End:* The event ends after the door stops moving.

*Note:* The two necessary tracks included in this event are (1) the person opening the door and (2) the vehicle or the object for a facility (e.g., door). The vehicle door does not need to be independently annotated because the vehicle itself is a track which can be coupled to the person in this event. This event often overlaps with entering/exiting; however, can be independent or absent from these events.

*Note 2:* Opening clarification: When opening a car door, the event ends when the when the door stops moving from being opened. This is distinguished from someone opening a car door, then leaning on the door when they exit and the door wiggles. The wiggling is not part of opening, even though it is in fact moving.

*Objects required:* Person; and Door or Vehicle

#### 4.30. Closing

*Description:* A person closing the door to a vehicle or facility.

*Start:* The event begins 1 s before the door starts to move.

*End:* The event ends after the door stops moving.

People in cars who close the car door from within is a closing event if you can still see the person within the car. If the person is not visible once they are in the car, then the closing should not be annotated as an event.

*Objects required:* Person; and Door or Vehicle

#### 4.31. Pick Up

*Description:* A person picking up an object.

*Start:* The event begins 1 s before the person makes contact with the object.

*End:* The event ends 1 s after the object is released or person is standing up right. If the person holding the object begins to walk, then the event ends after 1 s of walking (or next subsequent activity).

*Note:* The two necessary tracks included in this event are (1) the person picking up the object and (2) the object (Prop). If the object is less than half the size of the person or does not alter the person’s gait, then the object track will not continue to be tracked after pick up.

*Objects required:* Person; and Prop, Push/Pulled Object, or Animal

4.32. Set Down

*Description:* A person sets down an object.

*Start:* The event begins 1 s before the person changes posture to set down object.

*End:* The event ends 1 s after the object and person no longer make contact.

*Objects required:* Person; and Prop, Push/Pulled Object, or Animal

4.33. Drop

*Description:* A person drops an object where the person's posture does not change.

*Start:* This event begins 1 s before the object loses contact with the person.

*End:* This event ends 1 s after the object loses contact with the person.

*Objects required:* Person; and Prop, Push/Pulled Object, or Animal

4.34. Object Transfer

*Description:* A person-to-person or person-to-(person-in-vehicle) exchange of an object where the object may or may not be tracked; the tracking status of the object remains the same.

*Start:* This event begins 1 s before the object transfer occurs.

*End:* This event ends 1 s after the object transfer occurs.

4.35. Talking

*Description:* A person talking to another person in a face-to-face arrangement between  $n + 1$  people.

*Start:* This event begins when the face-to-face arrangement is initiated.

*End:* This event ends when the face-to-face arrangement is broken.

4.36. Person-Person Interaction

*Description:* A physical interaction (excluding fighting) between two or more people.

*Examples:* Holding Hands, High Fives, Hugging

*Start:* This event begins 1 s before physical contact.

*End:* This event ends 1 s after physical contact.

4.37. Interacts with Object

*Description:* A person performs one of a wide variety of interactions with an object other than a vehicle or person that is not otherwise defined in this document.

*Examples:* Getting money from ATM, paying parking meter, mounting or dismounting a bike.

*Start:* This event begins 1 s before interaction.

*End:* This event ends 1 s after conclusion of interaction.

*Note:* This event usually begins/ends as soon as interaction between two tracks begins/ends, especially for discrete interactions like touching a screen or kicking a post. Some interacts events are more fluid and should start/end 1s before/after the interaction, currently the only exception is mounting/dismounting a bike. Must be clear an interaction is occurring.

*Objects required:* Person; and Object of any type other than person or vehicle

#### 4.38. Riding

*Description:* A person riding a “bike” (i.e., any one of the variety of human powered vehicles where the person is still visible but their movement is modified).

*Note:* The two necessary tracks included in this event are (1) the person and (2) the “bike” they are riding. Events for Riding, Pushing and Pulling are used to couple the person and “bike” tracks.

*Start:* This event begins when the person’s motion is modified by the “bike”, or upon entering the FOV if the person is already riding the “bike”.

*End:* This event ends when the person’s motion is no longer modified by the “bike”, or upon exiting the FOV.

#### 4.39. Open Trunk

*Description:* A person opening a trunk. A trunk is defined as a container designed to store non-human cargo on a vehicle.

*Start:* The event begins 1 s before the trunk starts to move.

*End:* The event ends after the trunk has stopped moving.

*Notes:* A trunk does not need to have a lid or open from above. So the back/bed of a truck is a trunk and dropping the tailgate is the equivalent of opening a trunk. Additionally, opening the double doors on the back of a van is the equivalent of opening a trunk.

*Objects required:* Person; and Vehicle

#### 4.40. Close Trunk

*Description:* A person closing a trunk. See Open Trunk (above) for definition of trunk and special cases.

*Start:* The event begins 1 s before the trunk starts to move.

*End:* The event ends after the trunk has stopped moving.

*Objects required:* Person; and Vehicle

#### 4.41. Loading

*Description:* An object moving from person to vehicle.

*Start:* The event begins 2 s before the cargo to be loaded is extended toward the vehicle (i.e., before a person’s posture changes from one of “carrying” to one of “loading”).

*End:* The event ends after the cargo is placed into the vehicle and the person-cargo contact is lost. In the event of occlusion, it ends when the loss of contact is visible.

*Note:* The two necessary tracks included in this event are the person performing the (un)loading and the vehicle/cart being (un)loaded. Additionally, if the items being loaded are at least half the person's size or large enough to substantially modify the person's gait (as defined in the Carrying activity -- [4.7](#)), then they should be individually tracked as Props and included in the event. "Fiddling" with the object being (un)loaded is still part of the (un)loading process.

*Objects required:* Person; and Vehicle

#### 4.42. Unloading

*Description:* An object moving from vehicle to person.

*Start:* The event begins 2 s before the cargo begins to move. If the start of the event is occluded, then it begins when the cargo movement is first visible.

*End:* The event ends after the cargo is released. If the person holding the cargo begins to walk away from the vehicle, the event ends after 1 s of walking. If the door is closed on the vehicle, the event ends when the door is closed. If both of these things happen, the event ends at the earlier of the two events.

*Note:* See Loading above.

*Objects required:* Person; and Vehicle

#### 4.43. Vehicle Picks Up Person

*Description:* A vehicle picks up a person or group of people. This encompasses the act of the vehicle stopping, people getting into the vehicle, and the vehicle driving away.

*Start:* This event begins 1 s before the vehicle comes to a complete stop.

*End:* This event ends 1 s after the vehicle resumes motion.

*Objects required:* Person; and Vehicle

#### 4.44. Vehicle Drops Off Person

*Description:* A vehicle drops off a person or group of people. This encompasses the act of the vehicle stopping, people getting out of the vehicle, and the vehicle driving away.

*Start:* This event begins 1 s before the vehicle comes to a complete stop.

*End:* This event ends 1 s after the vehicle resumes motion.

*Objects required:* Person; and Vehicle

#### 4.45. Abandoning Object

*Description:* A person abandons an object. This is characterized by a person deserting an object with no apparent intention (on a short timescale) of returning for the left item.

*Start:* This event begins 1 s before person loses contact with object.

*End:* This event ends 1 s after the person begins walking away from item.

#### 4.46. Transport Large Object or Heavy Carry

*Description:* A person or multiple people carrying an oversized or heavy object. This is characterized by the object being large enough (over half the size of the person) or heavy enough (where the person's gait has been substantially modified) to require being tracked separately.

*Start:* This event begins 1 s before the person (or the first person for multiple people) establishes contact with the object.

*End:* This event ends 1 s after the person (or the final person for multiple people) loses contact with the object.

*Objects required:* Person; and Prop

#### 4.47. Fighting

*Description:* A person fighting is characterized by a physical altercation. Fight must last for a minimum of 5 s.

*Start:* Annotation begins 1 s before fight begins.

*End:* Annotation ends 1 s after fight begins.

#### 4.48. Push

*Description:* A person exerting a force to cause motion away. The two necessary tracks included in this event are the person pushing and object being pushed (Push/Pulled Object - See Active Object Type [3.5](#)).

*Start:* As soon as the object is visibly moving or track begins if object already in motion.

*End:* As soon as the object is no longer moving or the person loses contact with the object being pushed. In the event of occlusion, the event will end when the loss of contact is visible.

*Objects required:* Person; and Push/Pulled Object

#### 4.49. Pull

*Description:* A person exerting a force to cause motion toward. The two necessary tracks included in this event are the person pulling and object being pulled (Push/Pulled Object - See Active Object Type [3.5](#)).

*Start:* As soon as the object is visibly moving or track begins if object already in motion.

*End:* As soon as the object is no longer moving or the person loses contact with the object being pulled. In the event of occlusion, the event will end when the loss of contact is visible.

*Objects required:* Person; and Push/Pulled Object