ActEV Annotation Definitions for MEVA Data

25th September 2019 AD

TRACK TYPES LIST

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2. Vehicle
3. Bike
4. Bag
5. Receptacle
6. Other

ACTIVITIES LIST

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Annotation Modifications - Difference from V1 Annotations

Annotation Updates Changelog

TRACK TYPE DEFINITIONS

Person

An individual human being.

Vehicle

Examples of vehicles include cars, trucks, 18-wheelers, buses, golf carts, motorcycles, and anything that can be expected to be seen on a highway. Doors on vehicles are not annotated separately. Motorcycles are tracked as vehicles with the bounding box containing both the person & motorcycle.

Bike

A "bike" refers 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). Bikes are only tracked when involved in an activity. A bike will always be tracked independent of person using the bike. Vehicle attributes such as turning or stopping are not applied to bikes. A person riding a bike is not occluded by the bike and the bike is not occluded by the person riding it.

Bag

Examples of bags include backpacks, shoulder-purse, duffle, suitcase, pelican case.

Receptacle

Examples of receptacles include trash cans, newspaper boxes, cigarette butt catchers, and dumpsters.

Other

Catch all for other objects that are required by an activity definition but have not labeled as a Person, Vehicle, Bike, Bag or Receptacle track type. Some examples are cooler, table, soccer ball, and frisbee.

OCCLUSION ATTRIBUTES

Partially Occluded

Description: This applies to any frame in which occlusion of the tracked object is greater than 10% of the object and less than fully occluded.

Start: Attribute annotation begins when occlusion is observed.

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

Fully Occluded

Description: This applies to any frame in which the object is completely occluded by objects in the foreground.

Start: Attribute annotation begins when occlusion is observed.

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

ACTIVITY DEFINITIONS

Person Opens Facility Door
Activity label: person_opens_facility_door

Description: A person opening the door to a facility. The only track required for this activity is a person track. Special Examples:

- A person holds the door open for an extended period of time, possibly to allow other individuals through, then the activity ends with the person holding the door open.
- A person grabbing an already open door does not get included in the activity.
- A person grabbing a door that has started closing does get this activity.

Start: The event begins 1 s before the door starts to move or when the person is first visible.

End: The event ends after the door stops moving or when the tracked person is no longer visible.

Person Closes Facility Door
Activity label: person_closes_facility_door

Description: A person closing the door to a facility. See "person opens facility door" for track requirements. Doors closing due to the mechanics of the door with no human assistance are not included in this activity. The only track required for this activity is a person track.

Start: The event begins 1 s before the door starts to move or when the person is first visible.

End: The event ends after the door stops moving or when the tracked person is no longer visible.

Person Enters Scene Through Structure
Activity label: person_enters_scene_through_structure

Description: A person entering the scene (going into the field of view) through a physical structure (e.g., doorway, arch, gateway, subway entrance/exit). This distinguishes entering through a structure from entering the FOV via (a) an incidental edge-of-image or (b) incidental occlusion, which both arise from the choice of camera viewpoint rather than inherent structures of the scenarios. Entering is always determined relative to the field of view. The only track required for this activity is a person track.

Start: The event begins 1 s before the individual crosses the entry threshold (regardless of door interaction) or when the individual is first visible.

End: The event ends 1s after the individual completely crosses the entry threshold (regardless of door interaction) or when the individual is no longer visible.

Special Case: In the event of entering through a stairwell (e.g., subway entrance), the threshold for entering is the first visible step of the staircase (i.e., the top step for an individual traveling down the staircase and the bottom step for an individual traveling up the staircase).

Person Exits Scene Through Structure
Activity label: person_exits_scene_through_structure

Description: A person exiting the scene (going out of the field of view) through a physical structure (e.g., doorway, arch, gateway, subway entrance/exit). This distinguishes exiting through a structure from entering the FOV via (a) an incidental edge-of-image or (b) incidental occlusion, which both arise from the choice of camera viewpoint rather than inherent structures of the scenarios. Entering is always determined relative to the field of view. The only track required for this activity is a person track.

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 through the structure.

End: The event ends 1 s after the person has passed through the structure.

Special Case: In the event of exiting through a stairwell (e.g., subway entrance), the threshold for entering is the top step of the staircase (i.e., the top step for an individual traveling down the staircase and the bottom step for an individual traveling up the staircase).

Person Opens Vehicle Door
Activity label: person_opens_vehicle_door

Description: A person opening the door to a vehicle. The only necessary track in this event is the vehicle. The vehicle door is not independently annotated from vehicle. This event often overlaps with entering/exiting; however, can be independent or absent from these events. The person does not need to be visible for the duration of the activity; however, if a person is visible they will be annotated. People will not be annotated through vehicle windows.

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

End: The event ends as soon as the door stops moving.

Person Closes Vehicle Door
Activity label: person_closes_vehicle_door

Description: A person closing the door to a vehicle. See "person opens vehicle door" for track requirements.

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

End: The event ends as soon as the door stops moving.

Person Enters Vehicle
Activity label: person_enters_vehicle

Description: A person entering (getting into) a vehicle. The two necessary tracks included in this event are (1) the person entering and (2) the vehicle being entered. A special case of "entering" is mounting a motorized vehicle (e.g., motorcycle, powered scooter). The person does not need to be visible for the duration of the activity; however, when the person is visible they will be annotated. People will not be annotated through vehicle windows or when no longer visible.

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

End: The event ends when the person is in the vehicle and the door (if present) is shut within 10 seconds of the person completely entering the vehicle.

Person Exits Vehicle
Activity label: person_exits_vehicle

Description: A person exiting a vehicle. See entering for track requirements. A special case of "exiting" is dismounting a motorized vehicle (e.g., motorcycle, motorized scooter). The person does not need to be visible for the duration of the activity; however, when the person is visible they will be annotated. People will not be annotated through vehicle windows or when no longer visible.

Start: The event begins either (1) 1 s before the door moves (even if the person opening the door is not visible) or (2) if there is no door interaction, 1 s before half of the person's body is outside the vehicle.

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

Person Opens Trunk
Activity label: Open_Trunk

Description: A person opening a trunk. A trunk is defined as a container designed to store non-human cargo on a vehicle (e.g., rear facing trunk, van rear doors, truck bed). The necessary tracks are person and vehicle. A special case exception of "open trunk" is remotely opening

trunks where the person is not near the vehicle -- in this case, the person track will not be included in the activity.

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

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

Person Closes Trunk
Activity label: Closing_Trunk

Description: A person closing a trunk. See "Open Trunk" 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.

Person Loads Vehicle
Activity label: person_loads_vehicle

Description: An object moving from person to vehicle. The two necessary tracks included in this activity are (1) the person performing the loading and (2) the vehicle being loaded. Additionally, if the items being loaded meet the criteria of a unique track, then they are included in this activity.

Start: The event begins 1 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.

Person Unloads Vehicle
Activity label: Unloading

Description: An object moving from vehicle to person. See "loading" for track requirements.

Start: The event begins 1 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 or trunk is closed on the vehicle, the event ends when the door or trunk is closed. If both of these things happen, the event ends at the earlier of the two events.

People Talking
Activity label: Talking

Description: A person talking to another person in a face-to-face or side by side arrangement between at least two people. Brief breaks in face-to-face orientation during a conversation should be included within the same "people talking" event. The people must be close in proximity and involved in a conversation (this specifically differentiates talking from lecturing to a classroom or crowd). Additionally, people may join or leave the talking activity as long as a nexus of individuals remain involved in the "people talking" event. A new track should be started for an individual leaving and returning to "people talking". Active listening maintains a person's involvement in the talking activity and can occur with one (or more) person in a group of individuals looking away/down; therefore, when there is a large group of people involved in a conversation (e.g., around a table) then they do not all need to be actively talking to be part of the "people talking" activity.

Start: This event begins when the face-to-face or side by side arrangement is initiated.

End: This event ends when the face-to-face or side by side arrangement is broken.

Minimum Duration: 5 seconds

Person Talking on Phone
Activity label: specialized_talking_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 the hand makes motion toward side of head or when the person is first visible performing the activity. Person is first visibly performing the activity when they enter the field of view actively talking on a phone or when talking on phone indicated by a hand to the side of the head is first visible.

End: Annotation should end after the hand leaves the side of the head or when the person leaves the scene.

Person Texting on Phone
Activity label: specialized_texting_phone

Description: A person texting on a cell phone, including both using the phone with thumbs and fingers and video phone calls. The latter applies to any situation when the phone is in front of the person (as opposed to along the side of the head) and they are using it, including playing games, checking emails, taking pictures, etc. A person must be in possession of the phone to be involved in the texting activity.

Start: Annotation should begin when "texting" is observed or when the person is first visible performing the activity.

End: Annotation should end after last instance of "texting" is observed or when the person leaves the scene.

Minimum Duration: 2 seconds continuous, uninterrupted texting. The goal is to avoid quick, sporadic use of phone (e.g., use of phone as a clock or checking messages).

Riding
Activity label: Riding

Description: A person riding a "bike" (i.e., any one of the varieties of human powered vehicles where the person is still visible but their movement is modified). The two necessary tracks included in this activity are the person and the "bike" they are riding.

Start: Annotation begins when the person's motion is modified by the "bike" or if the person is already riding the bike, upon entering the field-of-view.

End: Annotation ends when the person's motion is no longer modified by the bike, or upon exiting the field-of-view.

Vehicle Turning Left
Activity label: vehicle_turning_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. This event is determined after a reasonable interpretation of the video.

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/or linear motion has resumed.

Vehicle Turning Right
Activity label: vehicle_turning_right

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

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/or linear motion has resumed.

Vehicle U-Turn
Activity label: vehicle_u_turn

Description: A vehicle making a u-turn is defined as a turn of 180 and should give the appearance of a "U". U-turns do not contain left and right turns. A u-turn is a continuous turn in which the vehicle may not stop for more than 10 s. This event is determined after a reasonable interpretation of the video and may include turns around obstacles, such as concrete islands. Examples of acceptable and unacceptable can be found on Slide 17 of "Scene Specific Notes and Do Not Annotate Areas".

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

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

Person Sitting Down
Activity label: person_sitting_down

Description: A person sitting down -- transitioning from an upright, standing position to a sitting position in which the body weight is supported primarily by the buttocks in contact with the ground or a horizontal object (e.g., chair, bench).

Start: Annotation begins when the person's posture begins to go from standing to sitting.

End: Annotation ends when the person is completely seated.

Person Standing Up
Activity label: person_standing_up

Description: A person standing up -- transitioning from a seated or prone position to an upright, standing position.

Start: Annotation begins when the person's posture begins to go from sitting or prone to standing.

End: Annotation ends when the person is completely standing in an upright position. If a person begins walking before completely upright, the annotation ends after 1 s of walking.

Person Reading Document
Activity label: person_reading_document

Description: A person reading a hand-held document, such as a book, newspaper, flyer, brochure, etc. These documents should not include digital documents read on a phone, ipad, laptop, etc. Reading will only be annotated when the reading material is visible and the only participating track is for the person (i.e., the document will not be independently tracked). The person may look away from the read document for periods of time as part of the same activity as long as it is clear they have not abandoned reading (i.e. the reading is briefly interrupted). In the same vein, if the reading person is occluded, as long as the time period is reasonable as a brief interruption this is part of the same activity. Flipping through a magazine or book for the minimum duration is considered reading a document.

Start: Annotation begins when the person's attention is focused on the document for a minimum of 5 seconds, without interruption.

End: The activity ends either ACTIVELY or PASSIVELY. The activity ends actively if the person moves in such a way that stops the reading activity, i.e. closes the book, or stands up, or puts the book down and starts talking to somebody, etc. The activity ends passively if the reader's attention drifts away from the document for more than five seconds.

Minimum Duration: 5 seconds continuous, uninterrupted reading.

Object Transfer
Activity label: 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 is unaffected by its participation in object transfer. The two necessary tracks included in this activity are two person tracks or a person and vehicle track if object is transferred from person to person in a vehicle. Additionally, the transferred object should be at least the size of a coffee cup to require tracking.

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

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

Person Picks Up Object
Activity label: person_picks_up_object

Description: A person picking up an object. The two necessary tracks included in this event are (1) the person picking up the object and (2) the object(s) (e.g., bag). Tracks need not necessarily be the same length. A person picking up multiple items at a time can be annotated as one event if the two items break contact with the surface within 1 second of each other. Occluded pick up activities will only be annotated if the instant the pick up action begins is occluded for less than ½

second and the pickup activity is definitive with reasonable human interpretation. Moving or adjusting an object without vertical motion breaking contact with resting surface does not include a "pick up" activity. An item must be at least the size of a coffee cup to trigger a pickup activity and not be on the excluded list. Multiple people picking up a large item will constitute a single pick up instance. *This activity excludes any activities which satisfy the object transfer definition.*

Excluded List (do NOT annotate the activity "person picks up object" when only the following objects are involved): Phones, Pens/Pencils/Markers, Individual Sheets of Paper, Money, Hat, Gloves, Apple (or similarly sized food items)

Included List (DO annotate the activity "person picks up object" when the following objects are involved): Examples, which are not exhaustive, include newspaper, Frisbee, Soccer balls, cups, or occluded items that can be seen in the individual's hand after half a second.

Start: The event begins the moment the object breaks contact with the previous supporting surface (e.g., table).

End: The event ends 1 second after the object is released or no longer active in motion associated with pick up (e.g., 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).

Person Sets Down Object
Activity label: person_sets_down_object

Description: A person sets down an object . The two necessary tracks included in this event are (1) the person setting down the object and (2) the object(s) (e.g., purse). Tracks need not necessarily be the same length. Multiple people carrying the same object will share the same event. Set down activity only occurs if the item is separated from the individual (e.g. a person taking off gloves and placing them in their lap would not be a set down activity). A person setting down multiple items at a time can be annotated as one event if the two items make contact with the new supporting surface within 1 second of each other. Multiple people setting down a large item will constitute a single set down instance. For excluded and ambiguous included items, see Person Picks Up Object.

Start: The event begins 1 s before the object makes contact with the new supporting surface (e.g., table).

End: The event ends 1 s after the object has made contact with the new supporting surface.

Person Heavy Carry
Activity label: Transport_HeavyCarry

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; therefore, this activity requires tracking at least one person and one object (i.e., Bag or Other). If multiple actors are carrying, they may start or stop participating in the activity independently of the lifetime of the overall activity.

Start: This event begins when the person (or the first person for multiple people) establishes contact with the object or when the person heavy-carrying is first visible.

End: This event ends after the person (or the final person for multiple people) loses contact with the object or when the person heavy-carrying is no longer visible.

Hand Interaction
Activity label: hand_interaction

Description: A physical interaction between two or more people in which their hands come together or one individual's hand comes into contact with another person. Examples include handshakes, high-fives, and fist-bumps, and explicitly excludes fighting and embracing.
Examples: Handshakes, Holding Hands, High Fives, Fist Bumps, Linked Arms, Pat on Back/Shoulder.

Start: This event begins 1 s before physical contact.

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

Person-Person Embrace
Activity label: person_person_embrace

Description: A physical interaction between two or more people in which they put their arm or arms around the neck, back or waist of one another. This activity explicitly excludes fighting.

Examples: two-person hug, group hug, side hug

Start: This event begins 1 s before physical contact.

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

Person Purchasing
Activity label: person_purchasing

Description: A person purchasing something (e.g., coffee, snacks, bus tickets) using cash, credit card, apple/phone pay, etc. The only track involved in this activity is the purchaser (there may be

more than one purchaser for a single transaction). The purchasing activity must be visible from the camera point of view to be annotated.

Start: Annotation begins 1 second before the person begins to make the payment transaction. Payment transaction begins when the purchaser's arm motion begins to present the form of payment.

End: Annotation ends 1 second after the person receives the purchased item(s) or their return of payment (e.g., credit card, change), whichever occurs later.

The start and end actions may be reversed; all transferring must be complete, but the purchaser can receive their goods before they present payment. In this situation, the start and end criteria would be reversed

Person-Laptop Interaction
Activity label: person_laptop_interaction

Description: A person actively interacting with a laptop. This may include actions such as opening/closing a laptop, reading a document on a laptop, or typing. Brief breaks in interactions with laptop during a continuous activity should be included within the same "person-laptop interaction" event. Only the person interacting with the laptop is tracked. If there are multiple people interacting with the same laptop, those are separate person-laptop-interaction activities.

Minimum Duration: 5 seconds continuous, uninterrupted interaction with laptop.

Start: Annotation begins 1 second before active interaction or contact with the laptop first occurs.

End: The activity ends either ACTIVELY or PASSIVELY. The activity ends actively once the laptop has been fully closed (note the closing motion is included in the activity). The activity ends passively if the person's attention drifts away from the laptop for more than five seconds.

Vehicle Stopping
Activity label: vehicle_stopping

Description: A vehicle stops.   Car is "stopping" when it begins noticeably slowing down, even if the car never completely "stops".

Start: Activity annotation begins at least 1 s (up to 5 s) before the vehicle has stopped when deceleration is first observed .

End: Activity annotation ends when vehicle motion has stopped or started acceleration.

Vehicle Starting
Activity label: vehicle_starting

Description: A vehicle starts. Car is "starting" when it is accelerating from stopped or a slow velocity to a faster maintained velocity.

Start: Activity annotation begins when motion is evident.

End: Activity annotation ends after at least 1 s (up to 5 s) of motion when acceleration is no longer evident.

Vehicle Reversing
Activity label: vehicle_reversing

Description: A vehicle moving in the reverse direction. During this activity, no other vehicle activities (i.e., moving, stopping, starting, left turn, right turn) will be annotated.

Start: Annotation begins when motion is evident.

End: Annotation ends when motion is no longer evident.

Vehicle Picks Up Person
Activity label: vehicle_picks_up_person

Description: A vehicle picks up a person or group of people. This encompasses the act of the vehicle stopping (optional), people getting into the vehicle, and the vehicle driving away (optional). At least one of the optional vehicle motions must occur and the driver cannot leave the vehicle unattended. Both vehicle and person tracks should be included in this activity. Not all tracks will have the same length.

Start: This event begins 1 s before the vehicle comes to a complete stop or 1 second before the first person begins entering the vehicle, whichever comes first. People entering the vehicle should be tracked starting 1 second before the person enters the vehicle.

End: This event ends 1 s after the vehicle resumes motion or 1 second after the last person has entered the vehicle, whichever occurs last.

Vehicle Drops Off Person
Activity label: vehicle_drops_off_person

Description: A vehicle drops off a person or group of people. This encompasses the act of the vehicle stopping (optional), people getting out of the vehicle, and the vehicle driving away (optional). At least one of the optional vehicle motions must occur and the driver cannot leave the vehicle unattended. Both vehicle and person tracks should be included in this activity. Not all tracks will have the same length.

Start: This event begins 1 s before the vehicle comes to a complete stop or 1 second before the first person begins exiting the vehicle, whichever comes first. People exiting the vehicle should be tracked starting as soon as they are first visible.

End: This event ends 1 s after the vehicle resumes motion or 1 second after the final person has exited the vehicle, whichever occurs last. People who have exited the vehicle should stop being tracked 1 seconds after exiting the vehicle.

Abandon Package
Activity label: abandon_package

Description: A person moves away from and completely forsakes their package.   It should be clear the person has left the package with no intent to return for it at a later time, or has not attended to the package for at least two minutes. The two necessary tracks included in this event are (1) the person abandoning the object and (2) the object (e.g., bag). In addition to "abandon package", if the activity is visible, "set down object" will be annotated. An abandoned object must be at least the size of a small purse (e.g., backpacks, luggage, jacket) and not part of the excluded list below.

Excluded Objects: Phones, Wallets, Keys, Newspaper, Book, Cup, Food Items, Hats, Gloves.

Start: Annotation begins 2 seconds before the person and package lose contact.

End: Annotation ends 2 seconds after the person and package lose contact.

Special Note: Only the abandoning activity is annotated and the two minute interval associated with object abandonment is not part of the annotated activity. During annotation, the annotator will need to visually confirm the minimum two-minute package abandonment interval by scrubbing ahead in the assigned clip and possibly verifying in the subsequent clip as well.

Theft
Activity label: theft

Description: A person performing larceny, which is the taking of another person's property without permission.   This includes the taking of larger items, such as backpack, purse, or luggage. The two necessary tracks included in this event are (1) the thief and (2) the object being stolen.

Start: Annotation begins 2 seconds before the thief makes contact with the item of theft or the victim of theft.

End: Annotation ends 2 seconds after the thief takes possession of stolen item.

Track Requirements by Activity Type

The following table details the required and optional tracks (quantity and type) on a per-activity basis. Where "possible additional tracks" is N/A, no tracks other than those required can be included in the activity.

Activity	Required Number of tracks & Type	Notes	Possible Additional Tracks & Type	When to use possible additional tracks
Person Opens Facility Door	1 Person		N/A	
Person Closes Facility Door	1 Person		N/A	
Person Enters Through Structure	1 Person		N/A	
Person Exits Through Structure	1 Person		N/A	
Person Opens Vehicle Door	1 Vehicle		1 Person	Annotate person if/when person is visible
Person Closes Vehicle Door	1 Vehicle		1 Person	Annotate person if/when person is visible
Person Enters Vehicle	1 Vehicle and 1 Person		N/A	
Person Exits Vehicle	1 Vehicle and 1 Person		N/A	
Person Opens Trunk	1 Vehicle		1 Person	Annotate person if/when person is visible; a vehicle-only open trunk is reserved for automatic trunk opening, e.g. using a key fob.
Person Closes Trunk	1 Vehicle		1 Person	Annotate person if/when person is visible; a vehicle-only close trunk is reserved for automatic trunk opening, e.g. using a key fob.
Person Loads Vehicle	1 Vehicle and 1 Person		1 or more Other or Bag	If the object(s) being loaded into the vehicle meet the size criteria to annotate, they should be annotated and tracked.
Person Unloads Vehicle	1 Vehicle and 1 Person		1 or more Other or Bag	If the object(s) being unloaded into the vehicle meet the size criteria to annotate, they should be annotated and tracked.
People Talking	2 Persons		Additional people	If more than 2 People are talking, additional tracks should be created for each Person involved in the talking activity.
Person Talking on Phone	1 Person		N/A	
Person Texting on Phone	1 Person		N/A	
Riding	1 Person and 1 Bike		N/A	
Vehicle Turning Left	1 Vehicle		N/A	
Vehicle Turning Right	1 Vehicle		N/A	
Vehicle U-Turn	1 Vehicle		N/A	
Person Sitting Down	1 Person		N/A	
Person Standing Up	1 Person		N/A	
Person Reading Document	1 Person		N/A	

Object Transfer	1 Person and 1 Person OR 1 Person and 1 Vehicle		1 or more Other or Bag	If the object(s) being transferred meet the size criteria to annotate, they should be annotated and tracked.
Person Picks Up Object	1 Person and 1 Bag OR 1 Person and 1 Other OR 2 Persons and 1 Other OR 2 Persons and 1 Bag	The object being picked up should either be a "Bag" or "Other"; there should only be two tracks in total in a single "Person Picks Up Object" activity	N/A	
Person Sets Down Object	1 Person and 1 Bag OR 1 Person and 1 Other OR 2 Persons and 1 Other OR 2 Persons and 1 Bag	The object being set down should either be a "Bag" or "Other"; there should only be two tracks in total in a single "Person Sets Down Object" activity	N/A	
Person Heavy Carry	1 Person and 1 Bag OR 1 Person and 1 Other	The object being carried should either be a "Bag" or "Other"; check conditions to qualify as "Person Heavy Carry"	1 or more Persons	If multiple Persons are carrying the object, all Persons should be tracked and included in a single "Person Heavy Carry" activity.
Hand Interaction	2 Persons		1 or more Persons	If more than 2 Persons are involved in the "Hand Interaction" activity, additional tracks should be created for those Persons.
Person-Person Embrace	2 Persons		1 or more Persons	If more than 2 Persons are involved in the "Person-Person Embrace" activity, additional tracks should be created for those Persons.

Person Purchasing	1 Person		1 or more Persons	An additional Person or Persons may be involved in the Purchasing activity. For example, a person purchases and object for another person who receives said object. In this instance, both Persons should be tracked.
Person-Laptop Interaction	1 Person		N/A	
Vehicle Stopping	1 Vehicle		N/A	
Vehicle Starting	1 Vehicle		N/A	
Vehicle Reversing	1 Vehicle		N/A	
Vehicle Picks Up Person	1 Vehicle and 1 Person		1 or more Persons	When multiple Persons are picked up by the same vehicle, all Persons should be tracked.
Vehicle Drops Off Person	1 Vehicle and 1 Person		1 or more Persons	When multiple Persons are dropped off by the same vehicle, all Persons should be tracked.
Abandon Package	1 Person and 1 Bag OR 1 Person and 1 Other		N/A	
Theft	1 Person and 1 Bag OR 1 Person and 1 Other		1 or more Other	If multiple objects are stolen as part of a single activity, the additional items should be tracked.

Annotation Modifications - Differences from V1 Annotations

- Differing from V1 annotations:
  - Activity centric annotations result in object tracks only during the duration of the activity.
  - State activities such as Standing, Crouching, Sitting, Walking, Running, and Carrying from V1/V2 activities are not annotated.
  - Additionally, the following V1/V2 activities are not annotated: Falling, Gesturing, Distress, Aggressive, Digging, Using Tool, Kicking, Throwing, Umbrella, Photographing, Object Transfer, Vehicle Construction Function, Miscellaneous, and Interacts.
  - Person opens/closes a facility door, person enters/exits through a structure, and person opens/closes vehicle door do not require door, doorway or person tracks, respectively. Additionally, V1/V2 open, close, enter and exit activities specifically indicate the activity type (i.e., open/close facility door, open/close vehicle door, enter/exit through structure, enter/exit vehicle) in MEVA rather than relying on tracks included.
  - Enter through structure is dependent on the field of view of the camera, in contrast to the V1 "Entering Facility". In "Enter through structure" the Person enters the field of view through a structure, and is now visible in the field of view; in V1 "Entering facility" the person moves into the facility and is no longer visible in the field of view of the camera.
  - Exit through structure is dependent on the field of view of the camera, in contrast to the V1 "Exit Facility". In "Exit through structure", a person leaves the field of view through a structure and is no longer visible in the field of view; in V1 "Exit Facility" a person moves into the field of view and becomes visible in the field of view.
  - Hand Interaction and Person-Person Embrace are subdivisions of the V1/V2 activity Person-Person Interaction.

Annotation Updates Changelog

- April 29, 2019: Definition of "other" track type clarified
  - Reading document end of activity clarified to include active or passive end of activity. Start of activity updated to require attention on reading material rather than a "reading position.

- ○ Person Picks up object: Removed text on continuing object track (remnant from V1/V2 annotations) for clarity. Also clarified what the excluded and included lists mean.
  - ○ Person sets down object: Removed text on continuing object track (remnant from V1/V2 annotations) for clarity. Added "when arm motion begins" to start criteria.
  - ○ Removed "Joining a queue," "vehicle moving" and "casing facility" from annotated activities list.
  - ○ Person purchasing: Clarified definition of "payment transaction"; clarified how the start/end criteria can be reversed.
  - ○ Person laptop interaction: Changed activity end criteria to make endpoint clearer; either the laptop has been closed or attention has been shifted away from laptop for 5 seconds or more.
  - ○ Removed "pickpocketing" as a variation of theft activity.
  - ○ Added table of track requirements by activity type.
- May 16, 2019: Removed "Rare/threat" label for abandon package and theft activities; they are now simply included in the full list of activities.
- May 22, 2019: Updated activities to include the activity labels that are consistent with annotation files (json schema). Spaces were replaced with an underscore ("_") and some capital letters were made to be lower case.
- July 11, 2019:
  - ○ Modifications to "Vehicle Picks Up Person" and "Vehicle Drops Off Persion" for optional vehicle motion.
  - ○ Modifications to "Person Picks Up Object" and "Person Sets Down Object" for the pick up/set down of multiple objects.
  - ○ Updated start and end times of "Person Picks Up Object" and "Person Sets Down Object".
  - ○ Updated the "Person Picks Up Object" and "Person Sets Down Object" to allow for multiple people. Updated track requirements table to match.
- September 25, 2019
  - ○ Updated label for "Person Enters Through Structure" and "Person Exits Through Structure" to "Person Enters Scene Through Structure" and "Person Exits Scene Through Structure"
  - ○ Clarified Person Laptop Interaction when multiple people are interacting with the same laptop.
  - ○ Corrected typos (missing articles)