

Data Structure

(1) Frame Header

Size: 48 bytes

```
frameHeaderStructType = struct(...
    'sync',                {'uint64', 8}, ... % syncPattern in hex is: '02 01 04 03 06 05 08 07'
    'version',              {'uint32', 4}, ... % 0xA6843
    'totalPacketLen',       {'uint32', 4}, ... % See description below
    'platform',             {'uint32', 4}, ... % 600MHz free running clocks
    'frameNumber',          {'uint32', 4}, ... % In bytes, including header
    'subFrameNumber',       {'uint32', 4}, ... % Starting from 1
    'chirpProcessingMargin', {'uint32', 4}, ... % Chirp Processing margin, in ms
    'frameProcessingMargin', {'uint32', 4}, ... % Frame Processing margin, in ms
    'trackProcessTime',     {'uint32', 4}, ... % Tracking Processing time, in ms
    'uartSentTime',         {'uint32', 4}, ... % Time spent to send data, in ms
    'numTLVs',              {'uint16', 2}, ... % Number of TLVs in thins frame
    'checksum',             {'uint16', 2}); % Header checksum
```

(TLV Header)

Size: 8 bytes

% TLV Type: 06 = Point cloud, 07 = Target object list, 08 = Target index

```
tlvHeaderStruct = struct(...
    'type',                {'uint32', 4}, ... % TLV object
    'length',              {'uint32', 4}); % TLV object Length, in bytes, including TLV header
```

(Type 6) Point Cloud TLV

Size: sizeof (tlvHeaderStruct) + sizeof(pointUnit) + sizeof (pointStruct)
x numberOfPoints

```
pointUnit = struct(...
    'elevationUnit',        {'float', 4}, ... % Multiply each point by this value - used for compression
    'azimuthUnit',          {'float', 4}, ... % Multiply each point by this value - used for compression
    'dopplerUnit',          {'float', 4}, ... % Multiply each point by this value - used for compression
    'rangeUnit',            {'float', 4}, ... % Multiply each point by this value - used for compression
    'snrUnit',              {'float', 4}); % Multiply each point by this value - used for compression
```

```
pointStruct = struct(...
    'elevation',            {'int8_t', 1}, ... % Elevation in radians
    'azimuth',              {'int8_t', 1}, ... % Azimuth, in radians
    'doppler',              {'int16_t', 2}, ... % Doppler, in m/s
    'range',                {'uint16_t', 2}, ... % Range, in meters
    'snr',                  {'uint16_t', 2}); % SNR, ratio
```

(Type 7) Target List TLV

Size: sizeof (tlvHeaderStruct) + sizeof (trackerProc_Target) x
numberOfTargets

```
targetStruct3D = struct(...
    'tid',                  {'uint32', 4}, ... % Track ID
    'posX',                 {'float', 4}, ... % Target position in X dimension, m
    'posY',                 {'float', 4}, ... % Target position in Y dimension, m
    'posZ',                 {'float', 4}, ... % Target position in Z dimension, m
    'velX',                 {'float', 4}, ... % Target velocity in X dimension, m/s
    'velY',                 {'float', 4}, ... % Target velocity in Y dimension, m/s
    'velZ',                 {'float', 4}, ... % Target velocity in Z dimension, m/s
    'accX',                 {'float', 4}, ... % Target acceleration in X dimension, m/s2
    'accY',                 {'float', 4}, ... % Target acceleration in Y dimension, m/s
    'accZ',                 {'float', 4}, ... % Target acceleration in Z dimension, m/s
    'ec[16]',               {'float', 16x4}, ... % Tracking error covariance matrix,
                                     [4x4] in range/azimuth/elevation/doppler coordinates
    'g',                    {'float', 4}, ... % Gating function gain
    'confidenceLevel'       {'float', 4}, ... % Confidence Level
```

(Type 8) Target Index TLV

Size: sizeof (tlvHeaderStruct) + sizeof(uint8) x numberOfPoints

```
targetIndex = struct(...  
'targetID',          {'uint8', 1});    % Track ID
```

Other Target ID values:

Value	Meaning
-----	-----
253	Point not associated, SNR too weak
254	Point not associated, located outside boundary of interest
255	Point not associated, considered as noise

ALERT:

(NOTE: here the number of points are for frame n-1)

The Target Index TLV consists of an array of target IDs.

A targetID at index i is the target to which point I of the previous frame's point cloud was associated.

Valid IDs range from 0-249.

(Type 11) Presence Indication TLV

Size: sizeof (tlvHeaderStruct) + sizeof(uint32)

The Presence Indication TLV consists of a single uint32 value to provide a binary indication of presence in the presence boundary box.

A value of 1 represents presence detected and 0 represents no presence detected.

ALERT: above Presence Indication TLV did not be used here

Appendix:

for more detail please refer
file path as following,

C:/ti/mmwave_industrial_toolbox_4_7_0/labs/people_counting/68xx_3D_people_counting/docs/3d_pplcount_user_guide.html

ALERT: mmwave_industrial_toolbox_4_7_0 should be installed before reading