Peak grouping

Two peak grouping schemes are implemented:

1. Peak grouping based on peaks of the neighboring bins read from detection matrix. For each CFAR detected peak, listed in MmwDemo_DSS_DataPathObj::detObj2DRaw, it checks if the peak is greater than its neighbors. If this is true, the peak is copied to the output list of detected objects MmwDemo_DSS_DataPathObj::detObj2D. The neighboring peaks that are used for checking are taken from the detection matrix MmwDemo_DSS_DataPathObj::detMatrix and are copied into 3x3 kernel regardless of whether they are CFAR detected or not.

2. Peak grouping based on peaks of neighboring bins that are CFAR detected. For each detected peak the function checks if the peak is greater than its neighbors. If this is true, the peak is copied to the output list of detected objects. The neighboring peaks that are used for checking are taken from the list of CFAR detected objects, (not from the detection matrix), and are copied into 3x3 kernel that has been initialized to zero for each peak under test. If the neighboring peak has not been detected by CFAR, it is not copied into the kernel.

Peak grouping schemes are illustrated in two figures below. The first figure, illustrating the first scheme, shows how the two targets (out of four) can be discarded and not presented to the output. For these two targets (at range indices 3 and 17 in figure below) the CFAR detector did not detect the highest peak of the target, but only some on the side, and these side peaks are discarded. The second figure, illustrating the second scheme, shows that all four targets are presented to the output, one peak per target, with the targets at range indices 3 and 17 represented with side peaks.

Peak grouping based on neighboring peaks from detection matrix

Peak grouping based on on neighboring CFAR detected peaks