

(Preliminary) mmW7724
People Tracking mmWave Radar System
with 77GHz Radar

Features

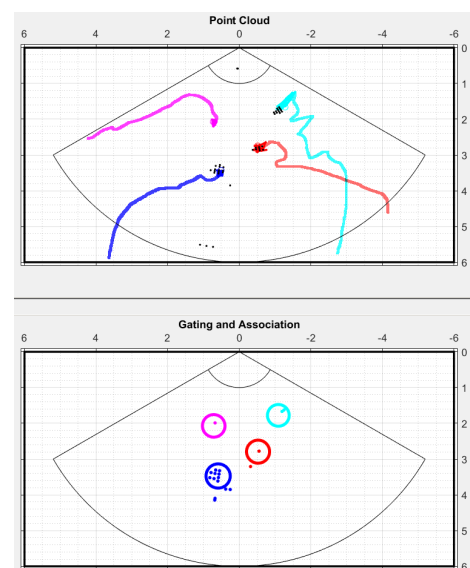
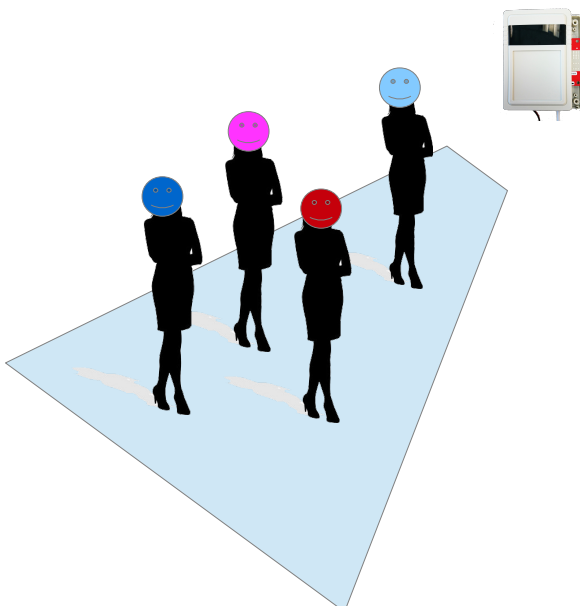
- Real-time people tracking scan range in $5 \times 10 \text{m}^2$
- High accurate counting over 90%
- Background adaptation to obstacle elimination
- No camera recording no violation of privacy
- Hidden installation see-through thin ceilings

System Context

- King City people tracking & counting algorithm
- TI mmWave radar 77GHz
- Embedded central processing unit for radar tracking calculation
- Networking option:
Ethernet port 10/100, Wi-Fi, NB-IoT
- DC or PoE power with 7.5W



MIoT People Tracking mmWave Radar System, powered by a high-resolution 77GHz radar, is a high accurate and real time people tracking machine for the industrial and commercial use. The 77GHz radar is originated from the long range collision detection function of an auto-pilot automotive. This commercial version mmW7724 tracks the multiple human bodies in the maximum range of 20 meters, and reports the exact location and the motion speed of the human bodies only. Non human is eliminated.





Operation of this mmWave tracking system is to send the continuous radar signal out and to measure the frequency & phase difference of the bounced back signal when it hits any object. The motion frequency tells whether the object is static, or it is a living human. The system records the history and present the track of any moving human bodies with the exact position, angle and the motion speed.

Advantage of mmW7724 over the conventional stereo cameras is the higher accuracy approx. 90% in the open field, a larger scan range up to 20 meters and the presentation of the moving tracks with the multiple objects. mmWave can see through a thin ceiling wall that is to allow the hidden installation.

Specifications

Radar	77GHz millimeter wave 2 transmit and 4 receive channels in FMCW mode Transmission power 12.5dBm maximum (typically one-tenth of some conventional Wi-Fi router) Safe radar to achieve ISO26262 Automotive Safety Integrity Level (ASIL B) Safe radar power far below FCC EIRP limit of 55dBm
Scan range	5x10m ² oriented, FOV 120° maximum range 20 meters practically
Scan object	human body above 1 meter typically the max number of scan objects is 10 typically non-human elimination
Scan method	the differential motion speed and phase of the objects in the frame rate of 50ms
Networking option	mmW7724E : Ethernet port 10/100 mmW7724W : Wi-Fi 2.4GHz mmW7724N : NB-IoT
Power input	DC jack 5V 1.5A or PoE power with 7.5W
Server requirement	similar specification as Dell 3670, prefer SSD as the OS drive
Software API	customized reports in HTTP in the programmable interval of 1 second typically
Module	water splash proof case, plastic 90mm(W) x 130mm(L) x 30mm(H) weight approx. 300g
Operating conditions	-10°C to +40°C, humidity 95% or less