Abstract

Within Beyond-5G and 6G wireless networks, Joint Communications and Sensing (JCAS) will allow small cells to perform sensing in addition to their traditional communication responsibilities.

We model indoor and outdoor clutter using a portable 28 GHz mmWave channel sounder traditionally used for propagation modeling in communication [1-3]. We collect 2,872,800 individual backscatter measurements in NYC and show preliminary results for JCAS clutter modeling and vehicle detection.

Indoor Backscatter Measurements

Statistical models confirm that higher average backscatter is characteristic of smaller rooms, with larger rooms exhibiting lower backscatter.

Outdoor Backscatter Measurements

Using the COSMOS FCC Innovation Zone [5], we collect 2,872,800 individual backscatter measurements in 190 locations spanning 10 intersections in NYC. We obtain a static clutter model for avg. power variation across azimuth.

Future Work

We are beginning work on using the JCAS measurement platform for traffic monitoring, pedestrian detection, and integration with Lidar sensors for multi modal sensing.

References


