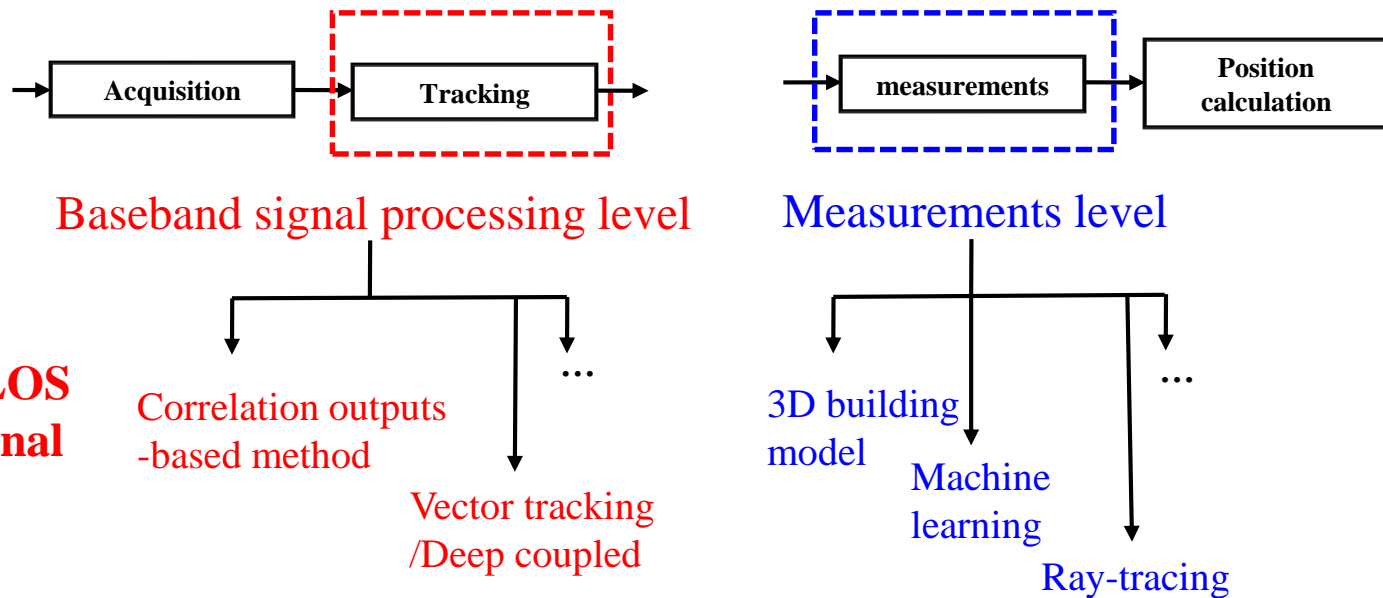


If we can classify the LOS/NLOS perfectly 100% -> Best Performance of 3DMA GNSS (also helps WLS and GNSS/INS integration)



**Classify
LOS/Multipath/NLOS
at the baseband signal
processing level!**

Our solutions - LOS/NLOS classification for smartphone

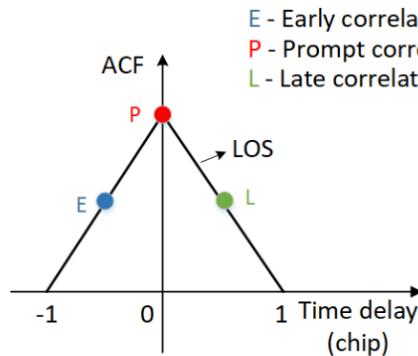
RINEX-level observables

- C/N_0
- Elevation angle
- Pseudorange residual
- Pseudorange rate residual

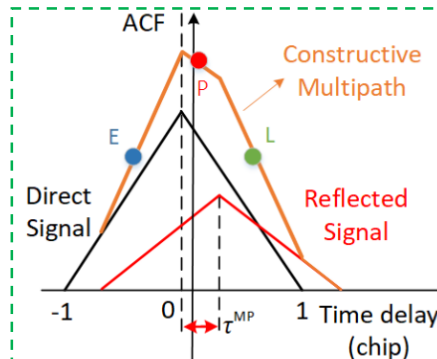
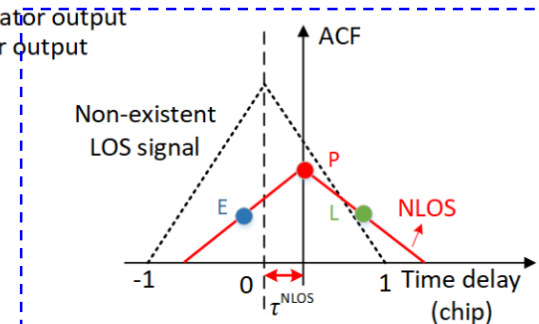
Correlator-level observables

- Correlation ratio
- Code tracking error
- ...

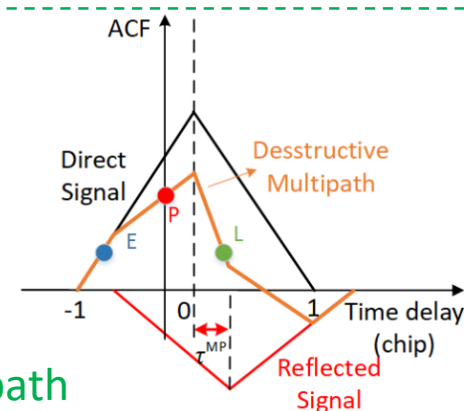
Xu B., Jia Q., Luo Y., Hsu, L.T.* (2019) [Intelligent GPS L1 LOS/Multipath/NLOS Classifiers Based on Correlator-, RINEX-and NMEA-Level Measurements](#), Remote Sensing, 11(16):1851.



NLOS

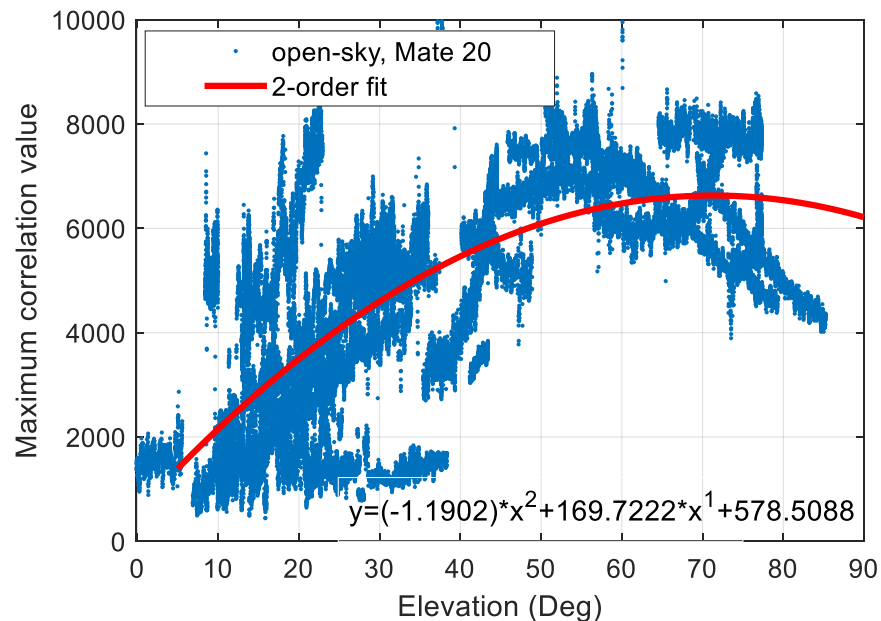


Multipath

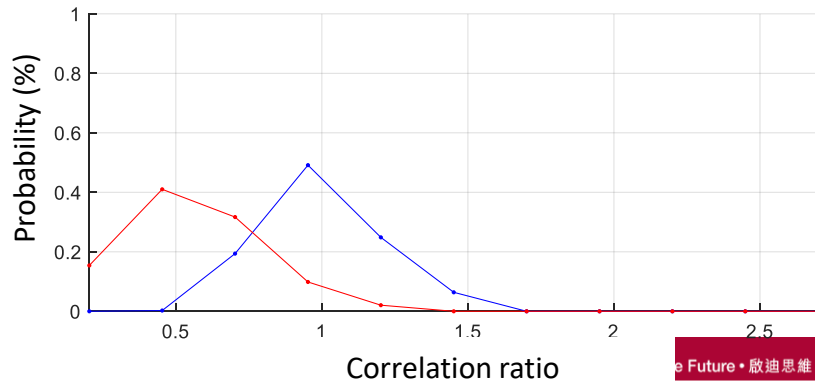
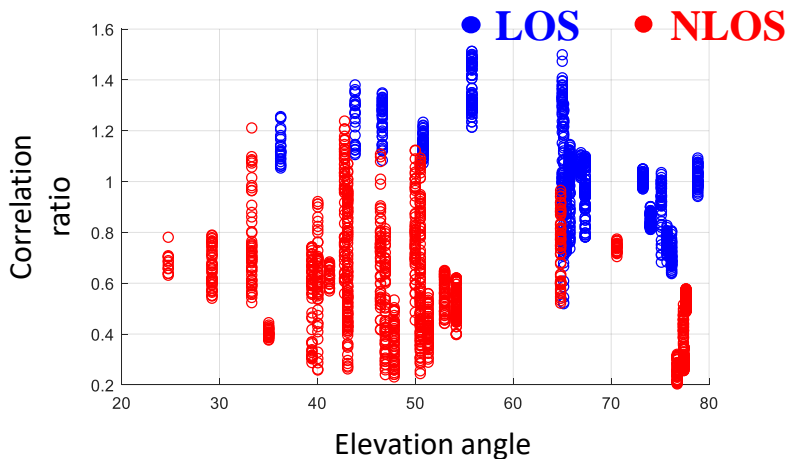


Correlator-level features for LOS/NLOS classification

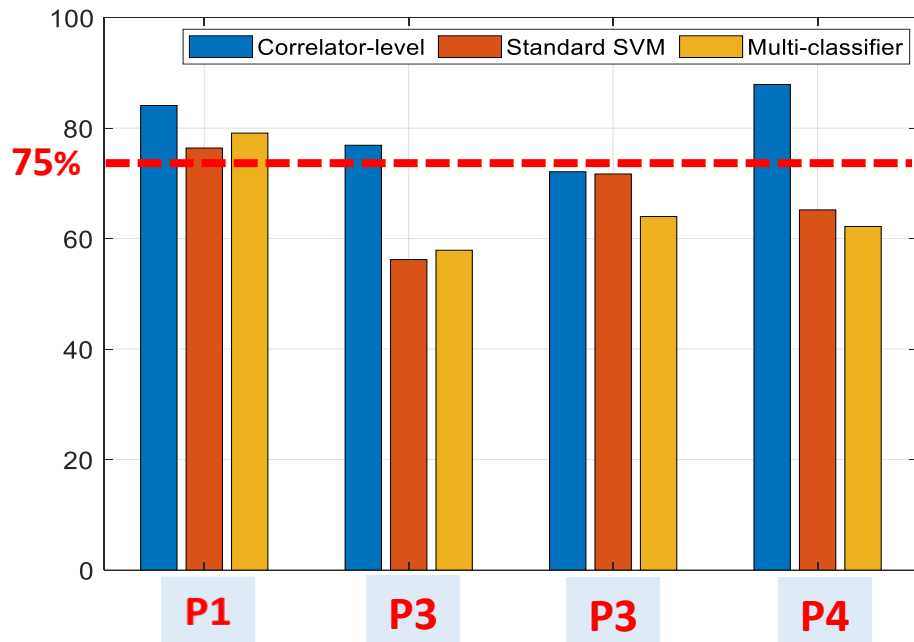
- Correlation ratio



Xu B., Jia Q., Luo Y., Hsu, L.T.* (2019) [Intelligent GPS L1 LOS/Multipath/NLOS Classifiers Based on Correlator-, RINEX-and NMEA-Level Measurements](#), Remote Sensing, 11(16):1851.



Experiments in HK - LOS/NLOS classification for smartphone



Correlator-level: Correlator-level features

Standard SVM: RINEX-level features

Multi-classifier: RINEX-level multi-layer classifier

