2D+Depth RF Localization via a Low-Cost Receiver

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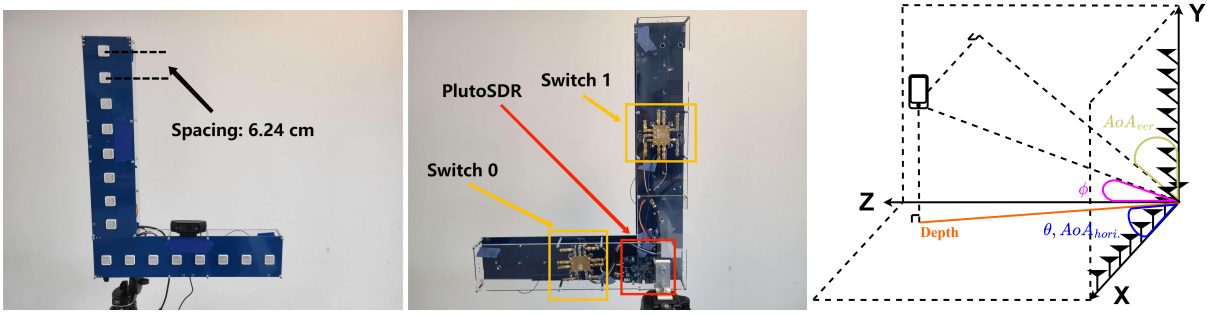
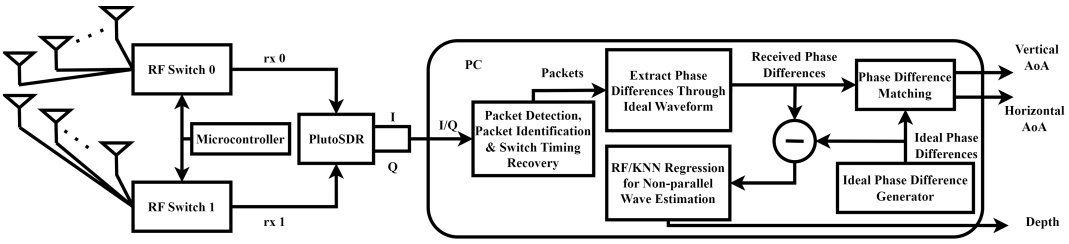
1 Intro



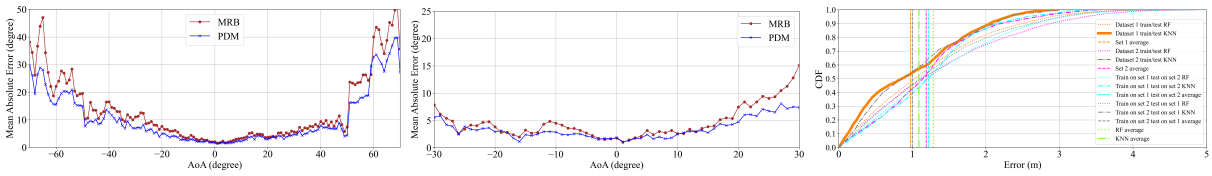
The system is able to conduct 2D localization through 2D-AoA, and further enable 3D localization through machine-learning based depth estimation. The hardware of use is one L-shape antenna array, as demonstrated in the pictures. The proposed system is able to do **3D localization on multiple objects with a single, low-cost hardware**.

2 Pipeline



System Input: Received Radio Frequency waveform.
System Output: Horizontal AoA, Vertical AoA, Depth

3 Results



Experiment specifics: tracking of randomly moving object in multipath-rich indoor environment, measuring maximum width 10.7m and maximum depth 7.9m.
Median Errors: 2.53 degrees (Horizontal AoA), 1.88 degrees (Vertical AoA), 0.86m (depth).