

POSITIONING ACCURACY AND MULTI-TARGET SEPARATION WITH A HUMAN TRACKING SYSTEM USING NEAR FIELD IMAGING

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Abstract - We analyze the performance of a novel human tracking system, which uses the electric near field to sense human presence. The positioning accuracy with moving targets is measured using raw observations, observation centroids and Kalman filtered centroids. In addition to this, the multi-target discrimination performance is studied with two people and a Rao-Blackwellized Monte Carlo data association algorithm. A reel-based triangulation system is used as the reference positioning system. The mean positioning error for five test subjects walking at different speeds is 21 centimeters. The discrimination performance is 90% when the distance between the two people is over 0.8 meters. With distance over 1.1 meters the discrimination performance is 99%.

Index terms: Floor sensor, Near field imaging, Human tracking, Multiple target tracking.