CA2T: Cooperative Antenna Arrays Technique for Pinpoint Indoor Localization

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Abstract:
Location-based service has a great potential in the indoor environment, making it important to develop accurate indoor localization techniques. In this paper, we consider AOA based indoor localization, which can generally achieve higher accuracy of localization than other approaches. We propose to use cooperative APs with antenna arrays for accurate indoor localization. With the proposed Cooperative Antenna Arrays Technique (CA2T), we first estimate the arriving angles for all the multipath components using the MUSIC algorithm, and then exploit the geometric relationship among the angles to identify the LOS angles. The user location can be computed with the LOS angles and the accurate, known distance between the two APs. The proposed scheme is validated with simulations and is shown to outperform an existing scheme with considerable gains.

Bio:
Xuyu Wang (S’13) received the M.S. degree in Signal and Information Processing from Xidian University, Xi’an, China in 2012 and the B.S. degree in Electronic Information Engineering from Xidian University, Xi’an, China in 2009. Since 2013, he has been pursuing the Ph.D. degree in the Department of Electrical and Computer Engineering, Auburn University, Auburn, AL, USA. His research interests include Indoor Localization, Cognitive Radio Networks, Deep Learning, Optimization, and Game Theory.