

# Reading List

The recommended papers of network localization are as follows. [1] reviews the state-of-the-art techniques for localization. The basic scheme of range-based approaches (trilateration) is presented in [2]. WHEEL [3] improves trilateration in respect of locating ability. Sweeps [4], borrowing the idea of searching and pruning, achieves even better performance, but resulting in non-polynomial asymptotic time complexity. [5] and [6] use RSS fingerprints and hop-count, respectively, as the distance metrics for range-free localization. Error control [7-12] is of great importance for range-based approaches since ranging errors are inevitable in practice. Many efforts are made from various aspects including geometry [7], matrix manipulation [8], probability [9], robust statistics [10], mixed strategy [11], and graph rigidity theory [12]. Novel ranging techniques [13, 14] are developed for ToA and TDoA measurement. The localizability issue (the ability of accurately and uniquely locating networked devices in theory) is discussed in [16] and [17].

## Survey

[1] Y. Liu, Z. Yang, X. Wang, and L. Jian, "Location, localization, and localizability," *Journal of Computer Science and Technology (JCST)*, vol. 25, no. 2, pp. 274-297, 2010.

## Range-based

[2] A. Savvides, C. Han, and M. B. Strivastava, "Dynamic fine-grained localization in ad-hoc networks of sensors," in *Proceedings of ACM MobiCom*, 2001.

[3] Z. Yang, Y. Liu, and X.-Y. Li, "Beyond Trilateration: On the Localizability of Wireless Ad-hoc Networks," *IEEE/ACM Transactions on Networking (ToN)*, vol. 18, no. 6, pp. 1806-1814, 2010.

[4] D. Goldenberg, P. Bihler, M. Cao, J. Fang, B. Anderson, A. S. Morse, and Y. R. Yang, "Localization in sparse networks using sweeps," in *Proceedings of ACM MobiCom*, 2006.

## Range-free

[5] L. M. Ni, Y. Liu, Y. C. Lau, and A. Patil, "LANDMARC: indoor location sensing using active RFID," *ACM Wireless Networks*, vol. 10, no. 6, 2004.

[6] M. Li and Y. Liu, "Rendered path: range-free localization in anisotropic sensor networks with holes," *IEEE/ACM Transactions on Networking (TON)*, vol. 18, no. 1, pp. 320-332, 2010.

## Error Control

[7] D. Moore, J. Leonard, D. Rus, and S. Teller, "Robust distributed network localization with noisy range measurements," in *Proceedings of ACM SenSys*, 2004.

[8] J. Liu, Y. Zhang, and F. Zhao, "Robust distributed node localization with error management," in *Proceedings of ACM MobiHoc*, 2006.

[9] Z. Yang and Y. Liu, "Quality of trilateration: confidence based iterative localization," *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, vol. 21, no. 5, pp. 631-640, 2010.

[10] H. T. Kung, C.-K. Lin, T.-H. Lin, and D. Vlah, "Localization with snap-inducing shaped residuals (SISR): Coping with errors in measurement," in *Proceedings of ACM MobiCom*, 2009.

[11] W. Xi, Y. He, Y. Liu, J. Zhao, L. Mo, Z. Yang, and X.-Y. Li, "Locating Sensors in the Wild: Pursuit of Ranging Quality," in *Proceedings of ACM SenSys*, 2010.

[12] L. Jian, Z. Yang, and Y. Liu, "Beyond triangle inequality: sifting noisy and outlier ranging measurements," in *Proceedings of IEEE INFOCOM*, 2010.

## Ranging Technics

[13] C. Peng, G. Shen, Y. Zhang, Y. Li, and K. Tan, "BeepBeep: a high accuracy acoustic ranging system using COTS mobile devices," in *Proceedings of ACM SenSys*, 2007.

[14] Bin Xu, Ran Yu, Guodong Sun, and Zheng Yang, "Whistle: Synchronization-Free TDOA for Localization", in *Proceedings of IEEE ICDCS*, 2011.

## Location Privacy

[15] J. Meyerowitz and R. R. Choudhury, "Hiding stars with fireworks: location privacy through camouflage," in *Proceedings of ACM MobiCom*, 2009.

# Localizability

[16] T. Eren, D. K. Goldenberg, W. Whiteley, Y. R. Yang, A. S. Morse, B. D. O. Anderson, and P. N. Belhumeur, "Rigidity, computation, and randomization in network localization," in Proceedings of IEEE INFOCOM, 2004.

[17] Z. Yang and Y. Liu, "Understanding node localizability of wireless ad-hoc networks," in Proceedings of IEEE INFOCOM, 2010.