

SURF-201913 Kickoff Meeting: Analysis of XJTLUIndoorLoc Multivariate Dataset for DNN-Based Indoor Localisation

Kyeong Soo (Joseph) Kim
Department of Electrical and Electronic Engineering
Centre of Smart Grid and Information Convergence
Xi'an Jiaotong-Liverpool University (XJTLU)

1

Plans

- WP1: Statistical analysis of XJTLUIndoorLoc dataset.
 - To quantify the dependency of measurement data on mobile devices.
 - To investigate the impact of mobile devices on indoor localization/trajectory estimation performance
 - To do additional measurements with new mobile devices.
- WP2: Handling device orientation information for geomagnetic field intensity.
 - To study the device coordinate frame and rotation data of smartphones based on their built-in accelerometer, gyroscope, and compass.
 - To investigate how to handle mismatch between the device orientation of geomagnetic filed data in the dataset and that of a new measurement during the online indoor localization/trajectory estimation phase.
- WP3: DNN-based indoor localization/trajectory estimation
 - To study advanced DNN-based indoor localization.
 - To study RNN-based trajectory estimation.

2

2

Factor Analysis*

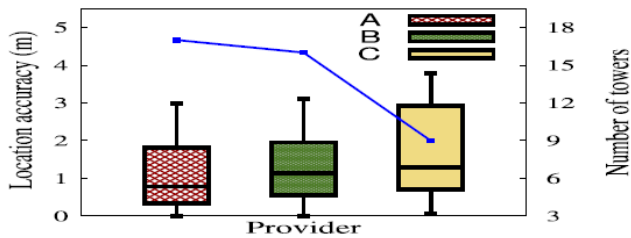


Fig. 10. Effect of cell providers on accuracy.

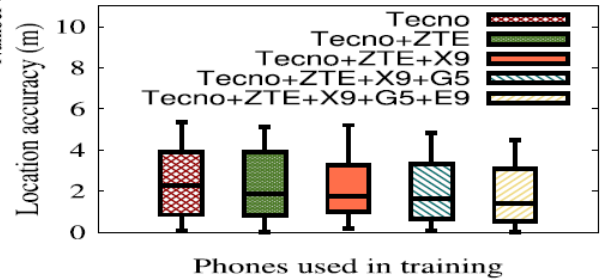


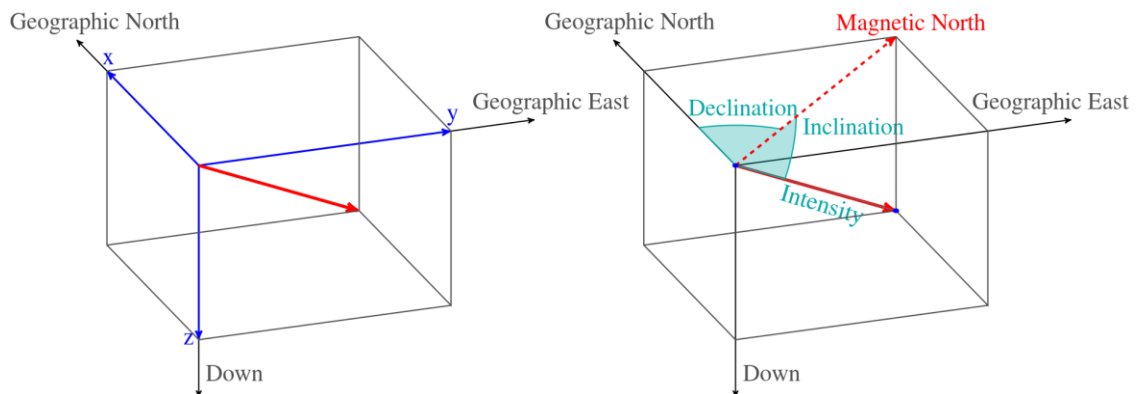
Fig. 11. Effect of device heterogeneity on accuracy.

* H. Rizk et al, "[CellinDeep: Robust and Accurate Cellular-Based Indoor Localization via Deep Learning](#),"
IEEE Sensors Journal, vol. 19, no. 6, Mar. 2019.

3

3

Common Coordinate Systems for Geomagnetic Field*



* "[Earth's magnetic field](#)," Wikipedia: The Free Encyclopedia, accessed: Jun./19/2019.

4

4