

Report Date: 07/21/2022

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From: BEST (Beacon-based Evacuation System and Technology)

Bacon Beacon

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Summary

Additional experiments of Deep Learning(DL) were held. 2D Navigation successfully implemented. The Design and Experiments part of the article started.

What “BEST” completed this week

- Tensorflow lite successfully ported on iOS and Android Device[1] [2]. Feature of bearing started to add for the model [3]
 - 95% of accuracy when using bearing features
 - Actual experiment data was not as good as without bearing. Extra work on hyperparameter modification needed
 - Discussion of data augmentation was done. However, as the Navigation part is urgent, it should be stopped for a while
- Draft of design and experiments was made
 - Trying to add figures on paper. Need to understand how to make overview design and architecture design for IEEE format
 - Need to get data from experimental team member for evaluation
- two dimensional Navigation working
 - Now loads blueprints of K-SW buildings. Based on blueprint, current location may be seen due to indoor localization result
 - Will work on 3D AR Navigation using bearings and pointers [3]

Things to do by next week

- Implementation of 3D AR Navigation on navigation
 - Using 3D Arrow, users may escape easily
- Design and evaluation draft needed to be corrected
 - Need to insert figures and tables
 - Grammar and words should be checked

Problems or challenges:

- Navigation error on large scale of area
 - Some areas are too large, so if we load the map by center of those, the difference between real position and estimated position is too large that user cannot escape easily
 - when we start using measurement function after getting out of those area, the error decreases
- World Map function did not work as thought [3]
 - Started making map from underground, There is error creating map of 1st floor and 2nd floor
 - Reason is that when I rotate at stair, iPhone 12 cannot calculate the exact location
 - By Creating multiple maps and concatenate into one map, solved the issue

References

[1] Tensorflow, “Tensorflow Lite”, Tensorflow, “<https://www.tensorflow.org/lite/guide>” (accessed Jul. 15, 2022)

[2] Tensorflow, “Convert TensorFlow models”, Tensorflow, “https://www.tensorflow.org/lite/models/convert/convert_models” (accessed Jul. 15, 2022)

[3] Apple, “Apple Developer Documentation”, Apple.com, <https://developer.apple.com/documentation/> (accessed Jul. 15, 2022).